A study of the application of behavioral architecture in public libraries in Jakarta, Indonesia

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Abstract. This paper presents the study of the applications of behavioral architecture that related to physical quality of public library in Jakarta, Indonesia. The research is based on the reason why there are still many people who rarely visit the library. The fact that there are many people are interested in visiting the library is inversely proportional to its implementation, where they say it is rare to visit the library. This is based on several factors related to the design of the library. The question is what does the community want about a library that can interest them? Then this research focuses on finding out what the criteria of the library that the general public does not only attract but also encourage them to come by study using descriptive qualitative with questionnaires and observation methods. The results of the study are the placement and arrangement of the layout in the library room, especially in the main library room include the reading area should be follows the behavior and preferences of public and library users. Respondents prioritize comfort in the library space with an emphasis on the reading area as much as possible with more relaxed criteria, focused criteria, and general criteria.

Keywords: behavioral architecture, criteria of reading areas, physical quality, public library.

1. Introduction

According to the World Bank, education in Indonesia is still considered low, although the expansion of access to education for the community is considered to have risen quite significantly. World Bank representative for Indonesia Rodrigo Chaves said the low quality of education is reflected in Indonesia's ranking that is still in the highest position of neighbouring countries. This educational quality rating indicator is reflected in the number of illiterate cases. "For example, 55 percent of children aged 15 years in Indonesia are functionally illiterate, compared to less than 10 percent in Vietnam," he said on the Indonesia Stock Exchange (IDX), Wednesday (6/6). (CNN Indonesia, 2018, World Bank: Quality of education Indonesia still low) [1].

In the government's work plan in 2020, one of its priorities is the Mental revolution, cultural development and national achievement with activities prioritized on improving the culture of literacy, innovation, and creativity with a priority project of 1) improved cultural literacy; 2) improvements of access and quality of library-based social inclusion services; 3) strengthening of the books and literacy content; and 4) Strengthening the social institutions of literacy and innovation [2].

It can be concluded that reading will help to develop someone into more intelligent so that the state can print superior human resources. Then, how to get it while we had realized that not all peoples...
could buy the books, the answer is a public library that can be accessed by all peoples. However, this will be simple if the level of reading interest is high, but if the interest rate reading society is still low. Then what solutions need to be applied to solve it? The first thing to do is to know how to encourage people to not only be interested but also to have a curiosity that will strengthen the interest to come to the library. From the frequents of the community visiting the libraries, it will create a familiar sense of the library, so that gradually will trigger a sense of interest to see, open, and eventually read the book.

The public library is a public facility in which it stores various types of reading collections that are useful as literacy activities for the general public. The library is present to provide facilities for the community to improve the quality of the individual self and to help the welfare in the field of education. According to Allan Konya in his book titled Libraries; A Briefing and Design Guide, mentions that the public library should be easily accessible to the public to serve it. The library can join, or as part of a shopping center, community center, cultural center or educational center, and can provide additional facilities such as meeting room, lecture hall, theater or small cinema, restaurant, or café, as well as bookstores therein [3].

The issue that needs to be raised is how to present a public library that is physically and spatially attractive and acceptable to the community so that the purpose of holding the library achieved, which is to accommodate all activities for its users and the library can be in accordance with people's behavior in activities in the library, so that the function of the library becomes better and attracts the public's interest in using the library facilities in their activities.

Behavioral architecture is an architectural approach which in its application includes behavioral considerations in designing it. Between architecture and behavior has a close relationship, this can be seen from the aspects that shape human behavior due to the environment or architectural form and vice versa. In other words, human behavior can be directed towards a better direction if positive values from the environment or architectural forms can shape personalities and behaviors that have positive values [4].

2. The methodology
The research method used descriptive qualitative approach. The types of data collected in the research process divide into two types, primary data and secondary data. Primary data obtained directly through observation, field surveys, as well as the dissemination of questionnaires, and secondary data obtain from documents or literature based on textbooks, journals, articles, newspapers, and government websites [5]. The data collection technique was carried out through questionnaires to library visitors and the public to find out the extent of their perceptions of existing libraries in Indonesia, especially those in Jakarta. Data collection also carried out by observing the physical quality of the library building and observing the activities of library visitors related to their behavior in carrying out activities in the library. The research location held in a public library in Jakarta, namely The Public Library of DKI Jakarta in Taman Ismail Marzuki, and the National Library of the Republic of Indonesia in Gambir Merdeka Selatan.

3. Result and Discussion
3.1. The respondents and their interest
Data Respondents out of the 49 number of respondents were dominated by male with a total of 59% (29 persons), and women 41% (20 persons). The respondent's age range consists of the age of children (9 years old) until the age of maturity (53 years old), with students among 77% (38 persons) and general 23% (11 persons).

From the chart below (see figure 1), the interest of the community has a percentage of 39% interested to visit the library, 39% quite interested, 16% very interested, 4% somewhat lazy, and 2% lazy. This means that most people have a sense of interest in coming to the public library. The intensity of respondents visiting the library, inversely proportional to the interest to visit the library, can be seen that the largest number of 66% of respondents answered rarely, followed by 16% answered quite often, 11% often, 5% only once. This means the public view of the library is still not
able to strengthen their reason to visit the library, visitors who come to the library do likely have strong reasons that require them to come to the library.

Figure 1. Community interest diagram and community visits intensity diagram.

Source: personal questionnaire.

Respondents were given the freedom to choose more than one answer. As a result of the answer, respondents stated that their purpose for visiting the library was more dominant for information/reference (78.3%), and working on the task (43.5%). Where there is a connection between doing the task by looking for a reference so that it can be concluded the average library visitors do have a strong purpose that is to fulfill their educational needs. For the activities, most activity is done by respondents if they are in the library are reading and doing tasks. Where to get the visitor's book should go to the collection area then take the book that they want to read, then look for the seating area as their place to read. There is a possibility that some respondents read the book while working Tasks so they need to present a reading area and a reading area as well as work areas.

The level of comfort of 30 respondents to the library space is divided into 3 categories, namely the category satisfied (Y), neutral (N) and unsatisfied (T). With details, satisfied 26%, neutral/moderately satisfied 63.3%, and not satisfied =10%. From the survey results most respondents answered the neutral category, which means it is quite convenient, so it can be concluded that most of the respondents feel mediocre (not the 'comfortable/ too comfortable' category and not the 'uncomfortable/ too uncomfortable' category). And for satisfied of facilities on library respondents answer 10% satisfied, 67% neutral/moderately satisfied, and 23% not satisfied. As with the level of comfort, the most choice of respondents leads to neutral or moderately satisfied categories, which means that the facilities in the public library are still relatively ordinary (not the 'full-complete' category and not 'incomplete' category).

The result of the questionnaire that has been given to the respondent, managed to collect various answers and different perceptions. If the conclusion is taken in an outline, of the total respondents with age, and different backgrounds, most of the respondents have enough/and are interested in visiting the library. However, the sense of attraction is not in line with its implementation, where respondents replied that they are rare to visit the library if they do not have strong reason such as needs to finding reference materials for their duties. Some replied the library was too rigid, formal, and quickly feels boring even though they were interested in visiting the library but remained reluctant if they not in any urgent condition. Some respondents prefer to go to the bookstore compared to the library. According to the results of the survey, the quality of space in the public library can be categorized as an 'ordinary', means that it is adequate but does not include the 'good/too good' or 'bad/too bad' categories.

The criteria of space or supporting facilities expected to be present in the public library:
- Reading Room (48,1%), with criteria: more relaxing, more convenient, various furniture that provide with a sleep posture, given partitions, private, have a good view.
- Think Pod/Inspiration Room/ Discussion Room (16,6%).
The results of the questionnaire stated that most of the respondents would visit libraries if they had enough purpose and reasons, such as their obligation to work on the task or to find a reference. But the average respondents had a sense of interest to visit the libraries, the sense of interest could be seen that 39% of respondents answered interested and quite interested, meanwhile, 66% of respondents stated infrequently go to libraries. It is interesting because it has inversely proportional to their sense of interest, so there is a problem that must be sought to know further why this can happen. Then, in the category of questions regarding the quality of the library space, the results stated that there was an influence on the interest of respondents to visit the library. The mediocre library room facility tends to make the respondents come to the library if there is any need. If the respondents do not have any requirements, then they prefer to come to the bookstore or a more attractive place. To find out more about the conformity of questionnaire results with facts on the field, then observations were carried out.

3.2. Observation
From the observation, the differences between two libraries are quite significant. The National Library has more equipped facilities so that many people would visit this National Library. The Public Library of DKI Jakarta Province is still far from the prevailing standards, the availability of facilities is too old and outdated. The infrastructures of this building do not support the function of libraries as well, plus the technology is arguably far from progress, and it influencing the interest of visitors to come. Consequently, the library visitors in Jakarta become not evenly distributed, and it causes the accumulation of visitors in the National Library, because the community feels if the National Library is more worthy of a visit than the public Libraries of the province Jakarta. After observations related to the physical quality of the building, behavioral observations also carried out using behavior mapping techniques for library users in carrying out activities in the library. The behavior that is studied is the user's reading behavior in the main library room.

3.2.1. Behavior Mapping in Library of DKI Jakarta Provincial, TIM, Cikini
The results of behavior mapping at the Regional Library of DKI Jakarta Province, visitors are divided into two categories. Children's visitors and adult visitors (see figure 2).

![Figure 2. TIM Library visitor flowchart.](image)

Sources: personal analysis.
The flow of children's visitors starts from the entrance then goes straight to the 2nd floor to the children's library by using the elevator. The flow of adult visitors starts from the entrance and fills in the visitor list near the information desk, then goes to the locker area to leave the luggage, after that goes straight to the main collection room on the 1st floor and the references collection room on the 3rd floor. There is only one computer catalogue available that is rarely used by visitors. Usually, visitors would go straight to the book collection shelf. Then after getting their desired book, visitors would sit at tables that are scattered in the room and start using their laptop. Visitors who visit rarely borrow the book because the access is only allowed for residents who had Jakarta ID card. The chairs and tables in the TIM Library only had some variate, there are no crowds, and no chairs or tables that are being favourite by visitors (see figure 3 and figure 4).

3.2.2. Behavior Mapping in National Library of the Republic of Indonesia

Behavioral mapping was done in the most common rooms and the most visited by visitors, namely the Closed Collection Room on floors 12-12A and the Open Collection Room on floors 20-21.

On 12 and 12A floors, which are closed systems collection room where users are required to borrow and read on the place. The results of the mapping stated that after leaving elevator they would go straight to the computer catalogue to find their intended collections to order the book. After books had been ordered user will go to the information desk to notify the officer and wait for the queue number to being called. While waiting for the queue number, visitors will usually sit on a seat that does not far from the information table. After getting the book, users will sit at the table or reading chairs, or go straight to the 12A floor using the stairs to borrow the collections on the 12A floor. Users
usually would open their laptops to do tasks on the spot. In this closed collection room, users tend to have private seats that are reserved for one person and equipped with plugs and a table as a laptop. If users have finished, the books should be returned to the officer (see figure 5, figure 6 and figure 7).

![Figure 6. Users flow on 12 and 12A floor.](image)

*Sources: personal analysis.*

![Figure 7. Catalogue area.](image)

*Sources: personal documentation.*

![Figure 8. Behavior mapping on 20th and 21st floors.](image)

*Sources: personal analysis.*

The results on the 20th and 21st floor showed that users who come from the elevator usually go straight to the collection rack area and immediately looking for the collections on the 20th floor, then go up to the 21st floor using the stairs that located on the middle of the room. Some users would go to the catalogue first to search for references and then go to the collection shelf area to find the book they want. The 20th and 21st floors are open collection systems. Users can search and retrieve the desired collection of books without the permission of officers. In this main library, the average visitor occupies the work desks located throughout the room. From the observations, reading areas that have provided are not maximizing for the users because the shape and ergonomics are not too comfortable, where the available chairs/sofas are made too upright and stiff (see figure 8, figure 9, and figure 10).
Figure 9. Users flow on 20th and 21st floor.
Sources: personal analysis.

Figure 10. Open systems collection area (20th and 21st floor).
Sources: personal documentation.

4. Conclusion

Based on the results of analysis and discussion, there are continuity between the physical quality of the library, including the facilities, atmosphere, and tools available to the public interest to visit the library. The results obtained that facilities and convenience in the library are in the ordinary category, this is not a problem for the library visitors who do come because it has an urgent need for the task. But for the general public facilities in the library in Jakarta is still not able to encourage them to come to visit the library, while the most complete library that exists only in the National Library and makes many people come to the National Library at the same time and causes hassles and disruptive comfort that should be maintained in the library area and this causes the peoples rarely or even feel uninterested and lazy to come to the library if it has no urgent needs. Meanwhile from the other libraries in Jakarta has too rigid, formal, boring, and not interactive design.

Then from the results of the behavior mapping that has been carried out in several libraries in Jakarta, it can be seen that library users tend to choose a place for their activities according to their goals and types of activities. Users who want to read as well as working (doing assignments) they tend to choose a more territorial, private, and quiet place so that users will feel more focused on their activities. In contrast to users who come to the library purely for recreation while reading, they tend to choose a sitting area that is more relaxed and comfortable. From the selection of user seats, they also tend to choose a seating area that closes to the display rack area of the collection they aiming for. Respondents prioritize comfort in the library space with an emphasis on the reading area with several categorized, a more relaxed reading room that has various kinds of lounge chairs so that users can read in a relaxed position while discussing, focused reading room on users who come to work on tasks and general reading areas that close to the bookshelves collections.

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