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Spatial Re-Utilization in Traditional Markets: Optimizing Trading Spaces for Pasar Jambe, Tangerang

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ABSTRACT

Traditional markets are often considered less optimal compared to modern markets, particularly in terms of comfort, circulation, and waste management. Although it was supposed to be operational since 2022, Pasar Jambe has yet to function and is crucial for meeting the basic needs of 52,521 residents of Jambe District in 2023. This study aims to design an alternative layout that not only fulfills the buying and selling functions but also enhances user comfort and supports trading activities and utilities such as ventilation, lighting, and waste management for sustainability and local economic growth. A descriptive method with a qualitative approach is used to identify the spatial needs of the market. The results indicate that the trading area should have a minimum area of 2 m² with a minimum circulation aisle of 1.5 m² and a radial design that facilitates access to each kiosk. The kiosks are designed with two opposing faces for efficiency and can be divided into two types to maximize display functionality. A waste container capacity of 2,000L is necessary to manage a total waste of 6,756 L/day, along with waste bins at each kiosk. This design also incorporates high ceilings and an optimal ventilation system to maintain the quality of fresh products, as well as optimized lighting through wide openings and a transparent twin wall alderon roof, achieving 100 lux of illumination with a minimum ventilation of 20%.

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1. INTRODUCTION

The transformation of retail spaces in Tangerang, Indonesia, reflects a dynamic interplay between modern supermarkets and traditional markets, similar to trends in Latin America. While supermarkets offer convenience and standardized products, traditional markets remain vital for underserved communities, providing affordable goods and preserving cultural practices [1]. Daily interactions among traders, customers, and neighbors similarly play a crucial role in sustaining market vitality and shaping local economies. These interactions occur within dynamic spaces, reflecting a balance between traditional practices and the pressures of modernization [2]. Several issues related to the market layout, such as the comfort of trading spaces, circulation, waste management, air circulation, and lighting [3], become the focus of the design response proposed in the design plan for Pasar Jambe, based on the revitalization plan for approximately 28 traditional markets in Tangerang Regency into modern traditional markets. According to data from one of the service personnel of the state-owned enterprise Pasar Niaga Kerta Raharja, Pasar Jambe was supposed to have been operational in 2022; however, it has yet to commence operations. The condition of Pasar Jambe is currently unrepresentative of its intended function. It has become a dumping ground for community waste, with its

physical structure abandoned and in a state of disrepair. The Jambe District has formally requested the Tangerang Regency Department of Industry and Trade (Disperindag) to "reactivate" Pasar Jambe. The presence of an adequate traditional market is essential for meeting the basic living needs of the residents of Jambe District, which has experienced rapid growth, with a population of 52,521 (people across nine residential neighborhoods in 2023) [4][5].

Visitors of traditional markets generally are lower to middle-income communities. For sellers, the market serves as a venue for marketing their products, while for consumers, the market is a place to obtain daily necessities. The market also plays a positive role in enhancing the regional economy. As time has progressed, the market economic system has undergone changes, leading to what is now referred to as the dual market economic system, which combines traditional and modern markets [6].

The spatial patterns of merchants in a modernized traditional market, emphasizing that market economic activities are integral to urban space rather than merely confined to the physical structure [7]. Modern traditional markets are expected not only to fulfill the essential functions of buying and selling but also to enhance user comfort during these activities. When a market has good trading spaces and utilities, it can operate optimally, which is anticipated to help improve the local economy. The scope of this research is limited to two market activities: primary activities and supporting activities. The primary activities include trading activities, which encompass visitor movement, while the supporting activities involve service functions such as the utilization of ventilation, lighting, and waste management tailored to the planned building area.

Figure 1. Site location (source: author)

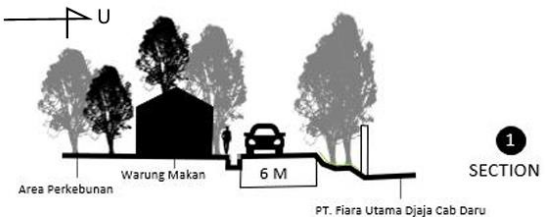

Figure 2. Section 1 (source: author)

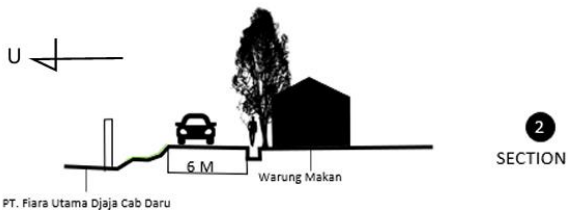

Figure 3. Section 2 (source: author)

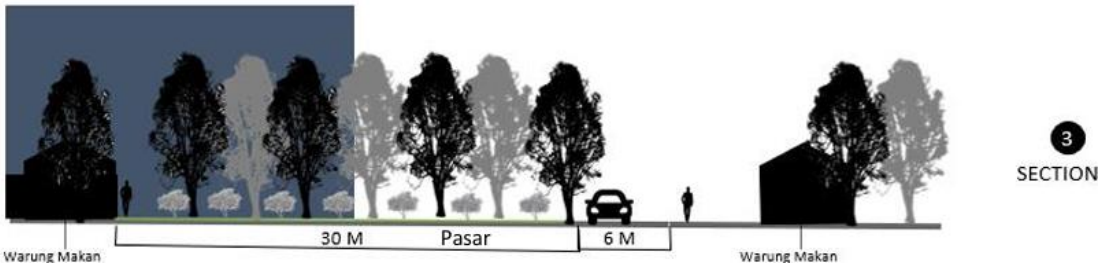

Figure 4. Section 3 (source: author)

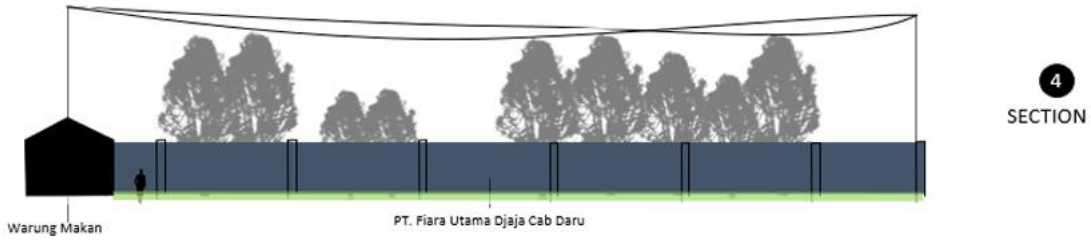

Figure 5. Section 4 (source: author)

The objective of this study is to provide an alternative design for Pasar Jambe, to restore its representativeness as a functional marketplace, specifically regarding the trading spaces and utilities that can have a sustainable impact, thereby meeting the basic needs of the Jambe District community and fostering economic growth within the region. A descriptive method with a qualitative approach is employed to identify the spatial needs of the traditional market, using the trading spaces and utility systems of Pasar Jambe as a case study. The discussion results indicate that, according to the classification of traditional markets as class 1 and type III [8] the trading area must have a minimum size of 2 m², and each stall must have an aisle for horizontal circulation of at least 1.5 m², as well as being divided based on the type and nature of goods.

Meanwhile, the waste container capacity should be 2,000L/container, with a waste output of 6,756 L/day (0.3 – 0.5 L/m²) based on the market building area of 11,260 m². Waste management must provide bins at each kiosk or along the aisle or stall, and the location of temporary waste collection points (TPS) should not be more than 10 m from the building. By dividing the zoning of dry and wet areas, ventilation will feel more comfortable. The access entrance to the building and corridors should be 3 m wide, with openings of 1 m and 2 m applied on several radial sides of the building to optimize ventilation and lighting. The implementation of materials such as twin wall for the roof covering allows more sunlight to enter without absorbing heat into the building.

2. METHOD

Data collection was conducted openly through observation and examining the phenomena of traditional markets in Indonesia, which are still inadequate in accommodating both primary and supporting market activities. This research formulates a spatial plan for the trading spaces in the market as well as user comfort, assessed from the functionality of utilities. The author attempts to identify the factors that contribute to the suboptimal nature of traditional markets in Indonesia and the need for markets as facilities for community trading, particularly in Jambe, Tangerang Regency. All identified factors will be analyzed in order to inform the design of the trading spaces and utilities of Pasar Jambe.

3. RESULTS AND DISCUSSION

Transactions between sellers and buyers take place in the trading spaces of traditional markets, which consist of kiosks and stalls. The layout arrangement of the market in relation to space requirements, circulation, and lighting is in accordance with the Minister of Home Affairs Regulation concerning trading facilities.

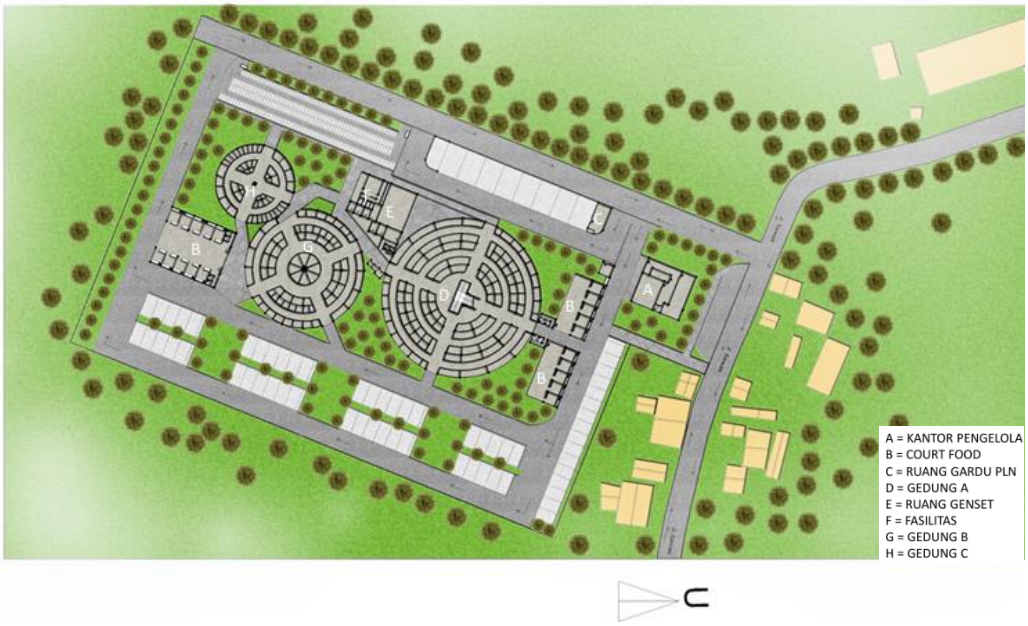

Figure 6. Pasar Jambe Masterplan, Trade Zone (A, B, C) (source: author)

Matters related to the standards for trading spaces, circulation, and lighting follow the procedures outlined below:

3.1. Activity Flow

There are five actors involved in the activities within the market building, namely sellers, visitors, buyers, managers, and operators. This research focuses on sellers and buyers, while managers, cleaning staff, security personnel, and visitors are considered supporting actors. The following is the flow of activities that occur in the market:

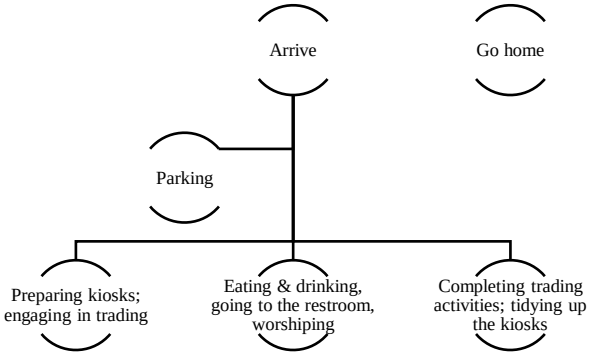

Figure 7. Activity of Actors (Sellers) (source: author)

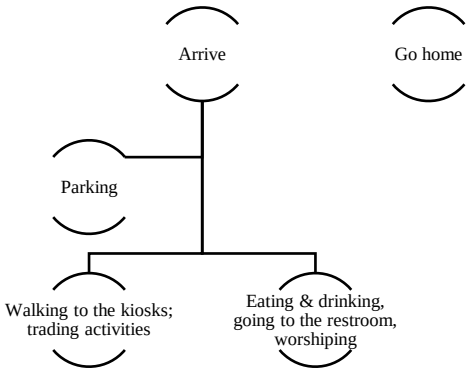

Figure 8. Activity of Actors (Buyer) (source: author)

3.2. Space Requirements and Dimensions

The purpose of the analysis is to determine the areas where groups of organized activities can function and operate properly [9].

Table 1. Space Requirements Based on Zones (source: author)

Zone	Spaces
A Zone	- Clothing/fabric, shoes/bags - Bamboo crafts - Groceries/cosmetics, toys, books - Electronics, cassettes - Pottery - Jewellery
B Zone	- Food/bread, tofu/tempeh - Vegetables - Spices - Fruits - Rice
C Zone	- Meat, fishes, chicken
Loading-Unloading Zone	(Close to the service area)
Manager's Zone	(Outside the main building)
Service Zone	(The parking zone is spread around the market, the prayer room is placed separately from the market building, and restrooms are located on the right and left sides of the building)
Visitors	(Food court, ATM center, open space)

Table 2. Proposed Room Dimensions [10]

No.	Name	Capacity	Unit	Standard (m)	Total (m^2)
Trade Zone (A, B, C)					
1	Kiosks	121	Unit	3 x 2 (proposed)	726
2	Stalls	189	Unit	2 x 2 (proposed)	756
Food Court					
3	Food court kiosks	20	Unit	4 x 3	240
4	Sink	6	Unit	1.5 x 1.5	13.5
5	Dining area	200	Unit	Chair 0.6 x 0.6 Table 1 x 1	122
Loading Area					
6	Loading dock	8	Unit	5 x 8	320
Mushalla					
7	Prayer Room	20	Peoples	0.8 x 1	16
8	Ablution	6	Peoples	1 x 1	6
9	Toilet	4	Unit	2 x 1	8
Market Management Office					
10	Staff room	18	Peoples	2 x 1	36
11	Lounge	5	Peoples	1 x 1	5
12	Head office	1	Peoples	5 x 3	15
13	Meeting room	1	Unit	6 x 8	48
14	Toilet	2	Unit	2 x 1	4
Public Restroom					
15	Toilet	14	Unit	1.5 x 1.5	31.5
Services					
16	Motorcycle	251	Unit	2 x 0.75	376.5

17	Car	60	Unit	3 x 5	900
18	Health room	1	Unit	3 x 2	6
19	Common room	1	Unit	2.5 x 2	9
20	Nursing room	1	Unit	3 x 2	6
21	Security post	1	Unit	2 x 2.5	5
22	CCTV room	1	Unit	4 x 2	5
23	Smoking area	1	Unit	2.5 x 2	4
24	ATM	1	Unit	1.5 x 1.5	6.25
25	PLN substation	1	Unit	4 x 7	28
26	Generator room	1	Unit	7 x 10	70
27	Pump room	1	Unit	4 x 4	16
28	MCB room (panels)	1	Unit	3 x 3	9
29	Temporary waste disposal (TPS)	1	Unit	4 x 7	28
	Total				3818.75
	Circulation (40%)				1527.5
	Total area				5346.25

3.3. Design of Radial Trading Space

Based on the classification of traditional markets, Pasar Jambe, which has an area of 11,260 m² and approximately 310 traders, falls under Class 1 and Type III. The analysis of space requirements and dimensions shows that each trading space must have a minimum area of 2 m², and each stall should have an aisle with a minimum width of 1.5 m² for horizontal circulation. Zones A, B, and C are designated for buying and selling activities, thus requiring kiosks and stalls to accommodate traders in placing their good.

Kiosks and Stalls

The radial layout of kiosks provides space efficiency by allowing easy access from various directions to each kiosk [11][12], making the trading space more efficient without the need for long aisles that could obstruct airflow. The radial design facilitates the circulation of people and goods, making the buying and selling activities feel more spacious, even with a relatively high number of kiosks. This design also helps minimize contact between wet and dry areas, maintains cleanliness, and prevents the risk of contamination in the market environment [13].

To prevent kiosks from obstructing airflow, the kiosks can be designed with two faces facing away from each other. The kiosks and stalls with two faces face outward for non-food items, while stalls in the center are designated for vegetables, meat, chicken, and fish, and are equipped with clean water. The kiosk block is divided into two types: two rows with two faces to maximize the function of the display space in the middle of the building, and four rows with one or two faces to allow traders to have more than one adjacent kiosk.

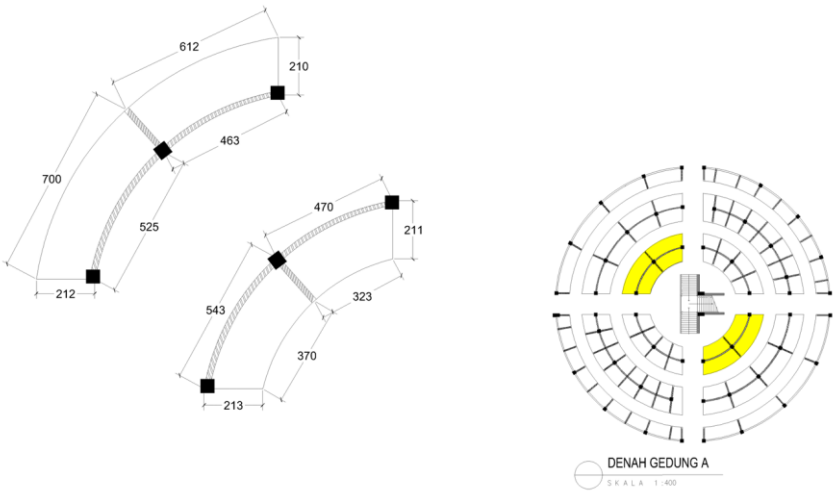

Figure 9. Two-Faced Two-Row Kiosk Layout Block 1 (Building A) (source: author)

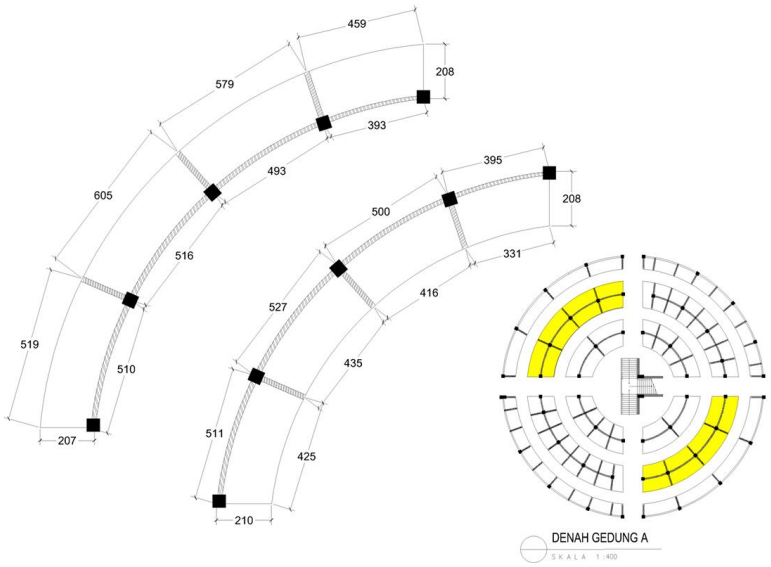

Figure 10. Two-Faced Four-Row Kiosk Layout Block 2 (Building A) (source: author)

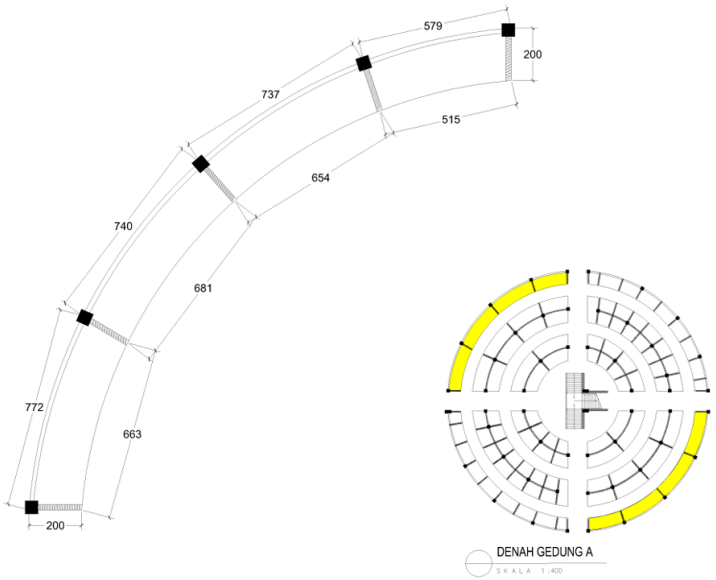

Figure 11. One-Faced Four-Row Kiosk Layout Block 3 (Building A) (source: author)

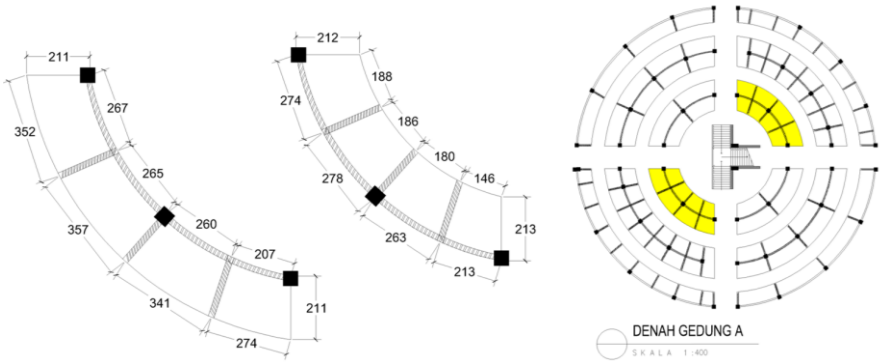

Figure 12. Two-Faced Four-Row Stall Layout Block 1 (Building A) (source: author)

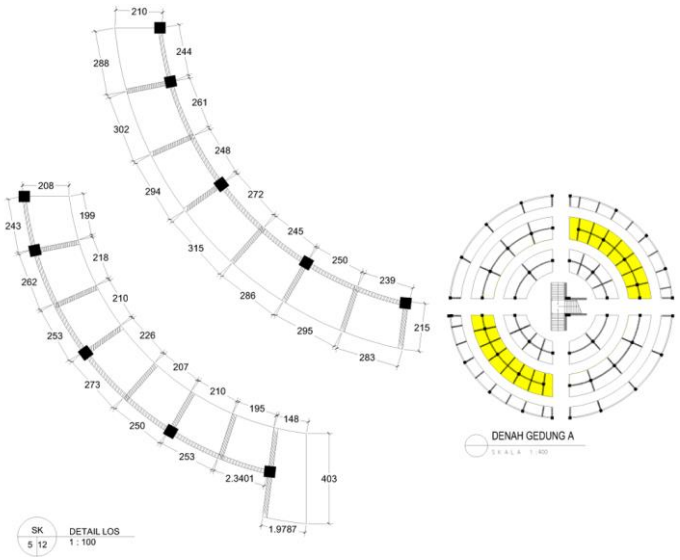

Figure 13. Two-Faced Eight-Row Stall Layout Block 2 (Building A) (source: author)

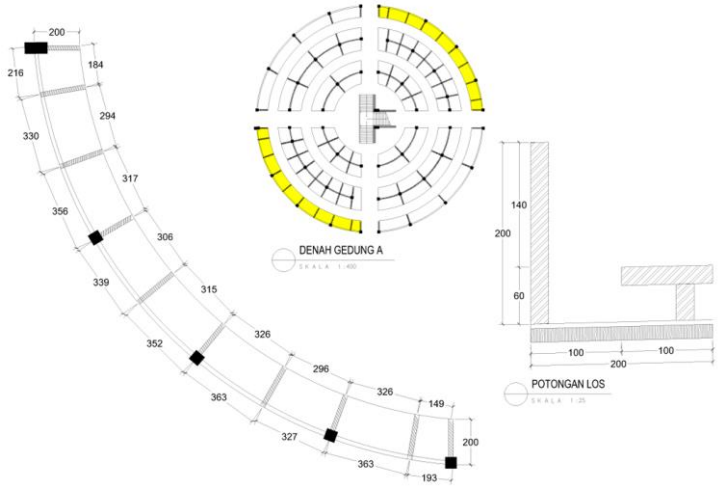

Figure 14. One-Faced Nine-Row Kiosk Layout Block 3 (Building A) (source: author)

3.4. Air Circulation and Waste Management

For air circulation, the ventilation is designed with ceiling height restrictions of 4.2 meters for the ground floor and 3.8 meters for the first floor. This is intended to ensure that the air in the trading spaces continues to circulate and helps lower the temperature, making the temperature inside the kiosks and stalls cooler, even in hot weather.

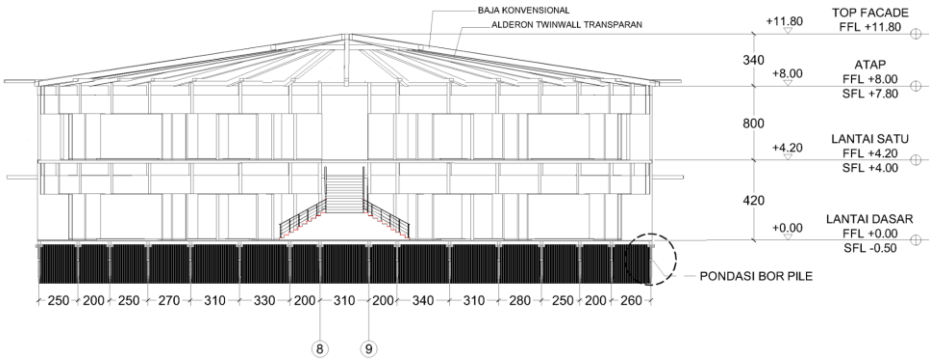

Figure 15. B-B Section (Building A) (source: author)

Optimal air circulation can reduce excess humidity, allowing fresh products to last longer and reducing the risk of product damage. The application of sufficiently high ceilings and a radial trading space design helps prevent unpleasant odors from being trapped in one area of the building. This ensures that airflow can continuously move, evenly refreshing the air around the kiosks/stalls, thus supporting comfort and the health of the market environment [14].

In waste management, Pasar Jambe provides temporary waste collection points (TPS) at each group of kiosks, with waste bins located at various points along the corridors. The provision of temporary waste collection points in the market offers many benefits in maintaining cleanliness and environmental sustainability [15]. One of its main functions is to control the spread of waste around the market, helping create a cleaner and healthier environment. TPS facilitates traders and visitors in disposing of waste in proper places, reducing the risk of waste accumulation that could lead to unpleasant odors and become breeding grounds for disease-carrying insects such as flies and rats. This is crucial to prevent disease transmission due to inadequate sanitation, especially in markets with high activity.

The existence of the TPS enables more efficient waste management, such as the separation of organic and non-organic waste. Organic waste can be processed into compost, thus reducing waste volume while providing material for greening. The TPS also encourages traders to maintain cleanliness around their stalls, which can enhance the market's image as a clean and comfortable place for visitors.

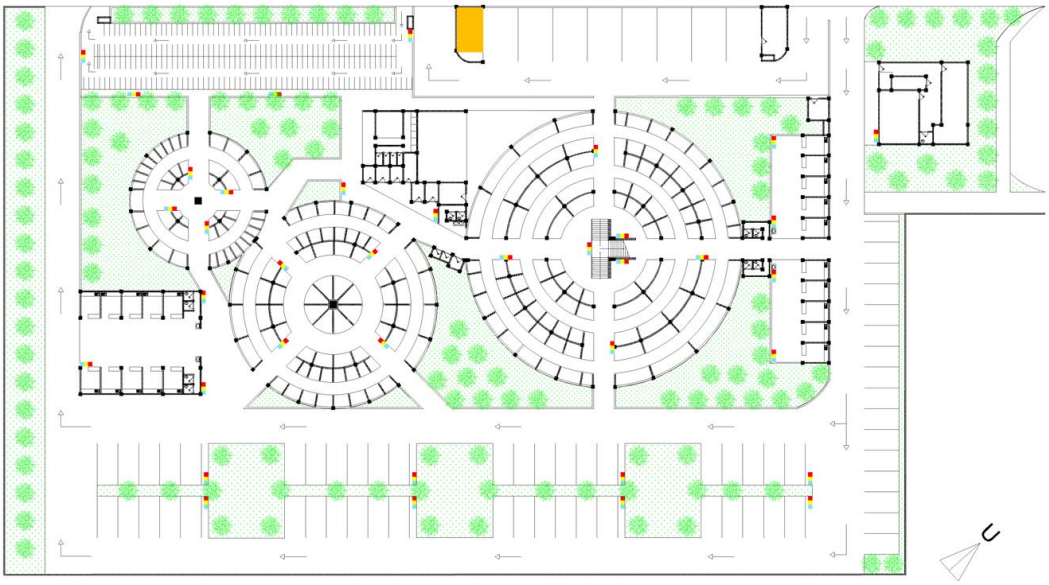

Figure 16. Distribution of TPS (Temporary Waste Collection Points) in Pasar Jambe (source: author)

After being collected at the Temporary Waste Collection Points (TPS), the waste will be transported to the intermediate waste storage (TPM) at Pasar Jambe, which consists of waste containers with a capacity of 2,000 liters per container. The total waste generated amounts to 6,756 liters per day (equivalent to 0.3–0.5 liters per square meter) based on the market's area of 11,260 m². For waste management, trash bins should be provided at each kiosk, along the corridors, or stalls, and the TPM should be located no more than 10 meters from the market building.

3.5. Natural Lighting

Lighting in the building is sourced from each side of the structure, which is equipped with sufficiently wide openings, namely 1 meter, while at some points there are additional openings with a width of 2 meters. Additionally, the roof uses transparent twin wall alderon material, which has many advantages, particularly in utilizing sunlight without allowing heat to enter the room. The total minimum ventilation area is 20% of the total floor area and is arranged to face each other (cross ventilation) with lighting of 100 lux.

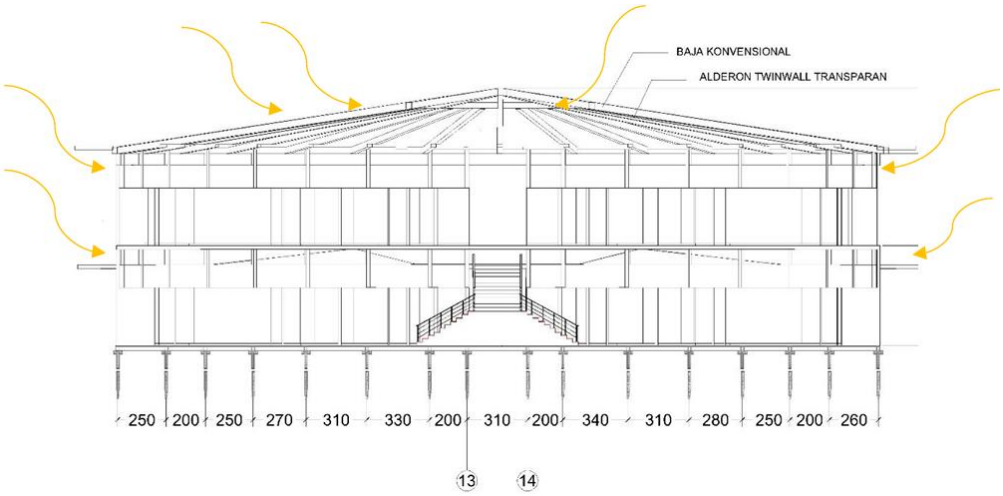

Figure 17. The circulation of natural light in Pasar Jambe (source: author)

4. CONCLUSION

Traditional markets are often perceived as inferior compared to modern markets. Various design-related issues, such as comfort, circulation, waste management, air circulation, and lighting, are key concerns in the revitalization plan for Pasar Jambe in Tangerang Regency.

The radial arrangement of the kiosks in Pasar Jambe provides space efficiency by facilitating access from multiple directions, thus optimizing the marketplace without obstructing airflow. To ensure that the kiosks do not block airflow, they can be designed with two facades facing away from each other. There are two types of kiosk blocks: two rows with two facades to maximize display functions, and four rows with two facades to allow vendors to have adjacent kiosks. Overall, this design aims to create a more comfortable and efficient environment for Pasar Jambe.

Optimal air circulation helps reduce excess humidity, preserving the quality of fresh products and minimizing the risk of damage. The use of high ceilings and a radial design in the marketplace space helps prevent unpleasant odors from accumulating, ensuring good airflow around the kiosks. Additionally, temporary waste collection points (TPS) are provided at each kiosk cluster and along corridors, serving to control waste spread and maintain cleanliness. TPS facilities facilitate the separation of organic and non-organic waste before being transported to medium waste disposal containers (TPM). Lighting within the building is optimized through wide openings on each side, measuring 1 meter, with some areas featuring openings of 2 meters. The roof is made from transparent twin wall Alderon material, effectively utilizing sunlight without letting in excessive heat. The minimum ventilation area reaches 20% of the total floor area, arranged for cross ventilation, with lighting achieving 100 lux.

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REFERENCE

[1] R. D. F. Bromley, “Market-place Trading and the Transformation of Retail Space in the Expanding Latin American City,” *Sage Journals*, vol. 35, no. 8, pp. 1311–1333, 1998.

[2] A. M. Leshkowich and K. W. Endres, “Introduction: Space, Mobility, Borders, and Trading Frictions,” in *Traders in Motion: Identities and Contestations in the Vietnamese Marketplace*, Ithaca, New York: Cornell University Press, 2018, pp. 1–16.

[3] Menteri Perdagangan Republik Indonesia, “Petunjuk Teknis Penggunaan Dana Alokasi (DAK) Bidang

Sarana Perdagangan," *Menteri Perdagang. Republik Indones.*, 2010.
[4] BPS Kabupaten Tangerang, "Tangerang Regency in figures 2022," pp. vii–429, 2022, [Online]. Available: https://tangerangkab.bps.go.id/
[5] Pusat Data dan Teknologi Informasi, "Informasi Statistik Infrastruktur 2023," Jakarta, 2023.
[6] S. U. Khoiriyah, "Perencanaan dan perancangan pasar tradisional kerek kabupaten tuban dengan pendekatan arsitektur perilaku," pp. 1--104, 2021.
[7] Raditya and A. Gamal, "Reading Weleri as a (Non)Traditional Market Area," *2nd Int. Conf. Smart Grid Smart Cities, ICSGSC 2018*, pp. 41–44, 2018, doi: 10.1109/ICSGSC.2018.8541269.
[8] Badan Standardisasi Nasional, *SNI 8152:2015*. Indonesia, 2015. [Online]. Available: https://www.bsn.go.id/
[9] R. Elbes, "Studi Redesain Pasar Kangkung Teluk Betung (Tema : Arsitektur Modern Tropis)," *J. Arsit.*, vol. 9, no. 1, p. 9, 2019, doi: 10.36448/ja.v9i1.1529.
[10] E. Neufert, *Data Arsitek Jilid 2*, 2nd ed. 1991.
[11] V. Badiger *et al.*, "Enhancement of Productivity by Ergonomic Design for Radial Piston Pump Assembly Workstation in an Industry," *Int. J. Innov. Eng. Technol.*, vol. 10, no. 4, pp. 143–146, 2018.
[12] U. Brandes and C. Pich, "More Flexible Radial Layout," *J. Graph Algorithms Appl.*, vol. 15, no. 1, 2009, doi: 10.1007/978-3-642-11805-0_12.
[13] G. E. Soukotta and R. R. Sukardi, "Penerapan Sistem Sirkulasi Pencahayaan Dan Penghawaan Alami Terhadap Bangunan Pasar," *Desa - Des. Archit. J.*, vol. 2, no. 2, pp. 63–68, 2021, doi: 10.34010/desa.v2i2.10241.
[14] G. elang Kusuma, "Konsep Sirkulasi Area Basah Dan Kering Pada Desain Pasar Umum," *AGORAJurnal Penelit. dan Karya Ilm. Arsit. Usakti*, vol. 18, no. 1, pp. 21–29, 2021, doi: 10.25105/agora.v18i01.7488.
[15] R. Ariyanto, "Pengertian Desa Menurut Ahli dan Undang-Undang." [Online]. Available: https://sedesa.id/pengertian-desa-menurut-para-ahli-dan-undang-undang/

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