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Ergonomic Study in the Trader's Area at Semat Sari Market, Tibuneneng Village

TINGKAT ERGONOMISITAS RUANG PEDAGANG DI PASAR SEMAT SARI, DESA TIBUNENENG

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Abstrak

Kinerja pasar erat kaitannya dengan aktivitas pedagang yang merupakan pemeran utama dalam aktivitas pasar. Namun, ruang gerak pedagang seringkali luput dari perhatian dalam pengaturan pasar. Penelitian ini mencoba mengetahui kualitas ergonomi ruang pasar untuk mengidentifikasi kenyamanan ruang gerak pedagang. Sebagai studi kasus, penelitian mengangkat Pasar Semat Sari, pasar tradisional terbesar di Desa Tibubeneng, Bali. Keberadaan pasar ini menjadi menarik karena memenuhi kebutuhan di dua desa dan membuat opersionalnya sangat sibuk. Penelitian menggunakan analisis spasial untuk mengidentifikasi alur gerak pedagang di lapak saat bekerja dan beristirahat. Penelitian menemukan terjadi ketimpangan antara besaran kebutuhan ruang pedagang dan ruang yang tersedia. Kondisi yang muncul memberi dampak negatif pada produktivitas kerja pedagang. Dampak lainnya kondisi ini dapat memengaruhi aspek psikologis dan fisik para pedagang.

Kata kunci: Pasar; pedagang; alur gerak; ergonomi; pedagang.

Abstract

The market performance is intricately linked to the activities of traders, who play a central role in market dynamics. However, the extent of traders' freedom of movement is often overlooked in market environments. This study aims to evaluate the ergonomic quality of market spaces to assess the comfort of traders' movement. As a focal point, the study examined Semat Sari Market, the largest traditional market in Tibubeneng Village, Bali. The market is noteworthy as it serves the needs of two villages, leading to bustling operations. Spatial analysis was employed to analyze the flow of movement of traders within their stalls during work and rest. The research revealed a disparity between the space required by traders and the available space, negatively impacting the productivity of their work. Additionally, this situation can have repercussions on the psychological and physical well-being of traders.

Keywords: *Market; trader; space; ergonomy; movement.*

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1 INTRODUCTION

Markets are shopping facilities that play a crucial role in daily life by meeting the everyday needs of the community. Beyond fulfilling needs, markets can enhance the local economy by providing employment opportunities for local traders, farmers, fishermen, and artisans. Another function of markets is to distribute the goods produced by traders to the community, which then becomes their consumers. Markets serve as spaces where individuals or groups can engage in economic activities (Carmona, 2003). In market activities, traders are the main drivers of trade operations. This creates a reciprocal relationship between markets and traders, as markets need active participants, and traders need a venue to distribute their goods.

The success of trade activities heavily depends on the performance of traders, and one key factor influencing this is the quality of their workspace. Comfortable working conditions can boost productivity and facilitate smooth operations. A lack of comfort in trading activities can negatively impact traders' productivity (Maryati, 2008). Poor quality of workspace can result in missed profit opportunities, lower quality of goods, limited self-expression, and negative effects on the physical and psychological well-being of traders.

Traditional markets still dominate Indonesia's market structure, with 14,182 traditional markets compared to only 1,131 modern shops (BPS, 2019). Unfortunately, many traditional markets do not prioritize the quality of trader spaces, especially in supporting their mobility. Traders play an essential role as the driving force behind trading operations, and the quality of their workspace significantly influences their performance. An ergonomically designed and comfortable space can enhance productivity and efficiency. Conversely, a lack of comfort can lead to decreased productivity, missed profit opportunities, lower quality of traded goods, limited self-expression, and negative impacts on the traders' physical and psychological well-being.

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In Tibuneneng Village, Denpasar, Bali, the Semat Sari Market is a government-managed central market that occupies a unique position between two villages, catering to the needs of both communities. It has garnered significant interest from the locals, making it a bustling hub for business and trade. However, the high demand for goods has led to the expansion of trading spaces into the market corridor, resulting in congestion that affects the movement of both traders and customers. The limited space has created an imbalance between market conditions and the needs of traders.

This research aims to observe the movement flow of traders and the spaces based on the work patterns carried out by traders in market stalls. The study seeks to examine the space requirements for traders to meet ergonomic aspects for comfortable movement.

2 LITERATURE REVIEW

A market is a platform for numerous sellers to engage in buying and selling transactions, often referred to as a shopping center, shop, trade center, or other similar names. Economic activities within the market are driven by the freedom of participants to compete, whether as buyers or sellers. Sellers have the liberty to select the goods or services they wish to manage and distribute, while buyers have the freedom to choose and purchase products that meet their specific needs and preferences (Santoso, 2017). In the historical context of urban market evolution, markets are considered as places of agreements and interactions between sellers and buyers at a micro level. At a macro level, traditional markets constitute an integral part of a city's essential infrastructure. Each market typically specializes in specific types of goods for sale, such as foodstuffs, clothing, and easily transportable small items with flexible inventory (Aliyah, 2017). Lee Sungkyun (2017) provides another perspective, explaining that traditional markets are densely packed commercial zones offering local commodities like agricultural produce, seafood, daily essentials, and apparel. These markets are generally classified into three types based on geographical coverage (name, regional, or local). They may also be categorized based on their operating times or periods and are typically positioned along transportation routes, near residential areas, and cultural activity centers.

In Indonesia, according to Peraturan Kementerian Perdagangan No. 21 Tahun 2021, markets are categorized into four types: Type A markets with a minimum of 400 traders and a land area of at least 5,000 m2, Type B markets with a minimum of 275 traders and a land area of at least 4,000 m2, Type C markets with a minimum of 200 traders and a land area of at least 3,000 m2, and Type D markets with a minimum of 100 traders and a land area of at least 2,000 m2.

Based on Peraturan Daerah SNI 8152-2015, traditional markets are equipped with main facilities that are further divided into primary facilities, supporting facilities, and additional

facilities. The primary facilities have specific technical standard requirements, outlined as follows:

1. Kiosks are dedicated spaces for orderly sales, featuring several partitions to create a secluded and protected selling area. Additionally, kiosks use tables or display tables for showcasing merchandise and facilitating transactions. In adherence to regulatory standards, the design of stalls should avoid obstructing the direction of the wind.
2. Stalls are trading places that are constructed using various trading equipment such as tables, storage areas, and traders' sitting rooms. They are more open than kiosks as they do not have partitions on the sides. According to ideal standards, stalls must be constructed in modular form.
3. Counters are the simplest trading facilities, consisting of a trader's sitting area, a tarpaulin base or short table for selling goods, and using a non-permanent roof. Counters or courtyards must be located in designated areas, not interfering with the main market access, and not obstructing the existence of kiosks or stalls.
4. Market accessibility must meet the following requirements:
   a. Market facilities must be accessible to everyone, including people with disabilities and the elderly.
   b. Loading dock access must be in an area that does not interfere with other access and cause congestion.
   c. Entrances must be provided to enable everyone to reach all market facilities, trading rooms, public facilities, and emergency access.
5. Zoning involves the arrangement of areas based on types of merchandise, as follows:
   a. Areas are divided separately for wet food ingredients, dry food ingredients, ready-to-eat food, non-food items, and poultry slaughterhouses.
   b. Easy access for all market users must be maintained to prevent accumulation in any specific area.
6. The loading dock area should be separate from the visitor parking area and the main access.

"Architecture Form, Space, and Order" by Ching (1996) discusses spatial planning and circulation. Ching identifies 5 spatial organization that shape how space users respond and interact with their surroundings, as follows:

1. *Centralized Organization*

   This organization tends to be placed in the center by grouping or surrounded by several secondary spaces. It has a relatively dense shape with regular geometric shapes.
2. *Linear Organization*

   This organization forms a sequence in one line from several repeating spaces. The linear form of organization is flexible and can respond to a variety of site conditions. This form can be adjusted according to topographical conditions. It can be straight, segmented, or curved. The configuration can also be horizontal, diagonal, or upright.

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3. *Radial Organization*

   Radial organization is a form that expands the center and combines both centralized and linear organizations. A distinctive feature of the radial organization is the pattern of the vanes (arms of a linear arrangement that develop around the sides of a central rectangular or square shape). This organization forms a dynamic pattern which is illustrated as a rotating motion around its center.

4. *Cluster Organization*

   This organization is a collection or group of spaces that are related or have one visual feature. There is no main place in the cluster organizational pattern; therefore the hierarchical level of each space must be defined again with the size, shape or orientation of the pattern.

5. *Grid Organization*

   The core or core that organizes a grid comes from the regularity of the patterns consisting of organized shapes. Grid can also change into other forms. The grid can be broken or split to form the main space or to respond to the existing site.

Meanwhile, Panero in "Human Dimensions" emphasizes the importance of studying ergonomic aspects (Panero, 1979). Ergonomics is a design technology that integrates human biology, anatomy, physiology, and psychology. According to Tarwaka (2014), the goal of ergonomics is to 1) enhance physical and mental well-being by preventing work-related injuries and illnesses, reducing physical and mental strain; 2) improve social interactions, organize work effectively, and enhance social security; and 3) achieve a harmonious balance between technical, economic, anthropological, and cultural aspects of each work system to promote high-quality work and life.

Panero uses measurements using human dimensions to determine the space required. This involves considering the distance between hands, leg stretching requirements, and other factors. It also outlines adult human body size standards for different activities, categorized by gender, which impact reachability (Panero, 1979). The core of ergonomics analysis lies in anthropometry. According to Sutalaksana (1979), ergonomics can be categorized into four groups:

1. Biomechanics: focusing on human activities during work and how to quantify them for each activity.
2. Display: pertaining to the surroundings that interact with humans during activities.
3. Environment: emphasizing the facilities and spaces commonly utilized by humans for their activities.
4. Anthropometrics: concentrating on the values and measurements corresponding to the natural dimensions of the human body.

The standardization of space requirement based on Regional Rules and Human Dimension as follows:

1. Referring to Peraturan Daerah Badung No. 3 Tahun 2017, the standard size of space for traditional market kiosk is 3 x 3 m2 and stall is 2 x 1.5 m2.

TABLE 1. STALL AREA STANDARDS ACCORDING TO SNI

Criterion	Type A	Type B	Type C	Type D
The area	>2m^2	>2m^2	>2m^2	>1m^2

SOURCE: SNI 8152-2015

2. The counter according to Neufert (1996) has the following standards:

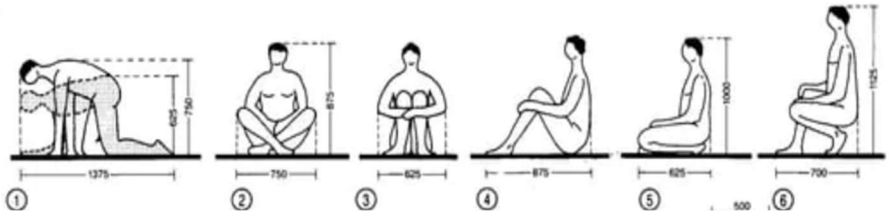

FIGURE 1 SITTING PERSON BODY SIZE

SOURCE: Neufert 1996

The minimum space required for a person sitting with both legs folded is 0.75 cm x 0.85 cm, and for a person sitting with the back or support of one leg, it is 0.70 cm x 1.15 cm. Considering these dimensions, the minimum space for one trader to move in the yard should be 0.75 cm x 1.15 cm.

3. Corridors according to Neufert have the following standards:

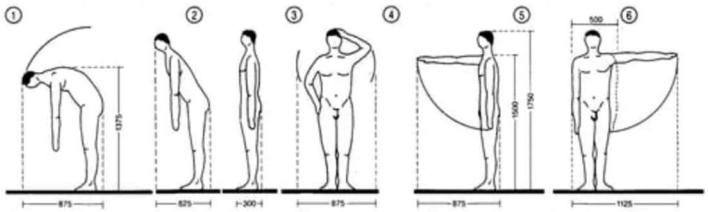

FIGURE 2 STANDING PERSON BODY SIZE

SOURCE: Neufert 1996

Based on the standards, the corridor should have a minimum width of 875 mm and a height of 1750 mm to ensure one person can comfortably pass through.

4. The circulation space for people and groups of people when standing according to Neufert is as follows:

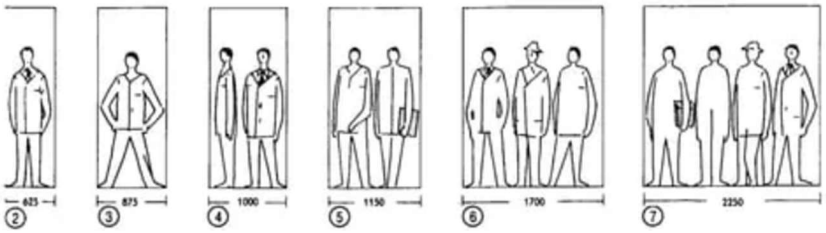

FIGURE 3 BODY SIZE OF STANDING PEOPLE

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SOURCE: Neufert 1996

5. For standing individuals or groups, the space requirements according to Neufert are as follows:
   a. 625 mm for a single-standing person
   b. 875 mm for a person standing with hands on the waist and legs open to the side
   c. 1000 mm for two people standing upright in different directions
   d. 1150 mm for two people standing in different styles
   e. 1700 m for three people standing in various positions

According to Panero (1979), the standard body size for adult humans for performing activities based on gender is as follows:

a. When stretching their arms straight forward at a slight angle, men should have a minimum distance of 97.3 cm, while women should have a minimum distance of 92.2 cm.
b. When stretching their legs straight forward, men should have a minimum distance of 117.1 cm, while women should have a minimum distance of 124.5 cm.
c. While sitting with arms straight up, men should have a minimum distance of 131.1 cm, and women should have a minimum distance of 124.7 cm.
d. When stretching their arms straight forward with their body positioned straight forward, men should have a minimum distance of 88.9 cm, while women should have a minimum distance of 80.5 cm.
e. When stretching one arm to the side with an upright body position, men should have a minimum distance of 86.4 cm, while women should have a distance of 96.5 cm.
f. When stretching one arm upwards with an upright body position, men should have a distance of 224.8 cm, while women should have a minimum distance of 213.4 cm.

Panero explains that the standards for adult human body size differ for men and women. The circulation and movement space for adult humans should have a minimum free distance of 88.9 cm x 124.5 cm (Panero, 1979). Although *Human Dimension & Interior Space* by Panero and Zelnik (1979) and *Architects' Data* by Neufert (1996) are relatively dated, these references remain fundamental in ergonomic and architectural design studies. They provide universal anthropometric standards that are still applicable for general human spatial requirements. In this study, both references are used as baseline measurements to allow comparative evaluation with local market conditions. Furthermore, these standards are complemented by regional regulations (SNI 8152–2015 and Perda Badung No. 3/2017), ensuring contextual relevance to Indonesian ergonomic practices.

3 METHODS

This study compares data gathered from observing the physical conditions of the market and analyzing the impact on traders' activities. The data collection involved systematic direct observation and the creation of visual images to further examine the observed phenomena. The results of the observations are represented in a schematic diagram based on ergonomic criteria. The data is then analyzed using theoretical variables and indicators to identify the spatial needs of traders that align with ergonomic principles.

4 RESULT AND DISCUSSION

The Semat Sari Market, established on January 14, 2008, is a village market administered by the Badung Regency government in Bali. Situated amidst the residential areas of Tibubeneng Village, specifically on Jalan Raya Semat in the North Kuta District of Badung Regency, Bali, the market serves as a cornerstone for two villages, namely Canggu Village and Kerobokan Village. Following Peraturan Kementerian Perdagangan No. 21 of 2021, the Semat Sari Market falls under type D, which is determined by the presence of at least 100 traders and an area exceeding 2000 m². The market boasts 125 traders and spans an area of 2,550 m². Operating hours for the Semat Sari Market are from 05:00 to 14:00 local time (WITA).

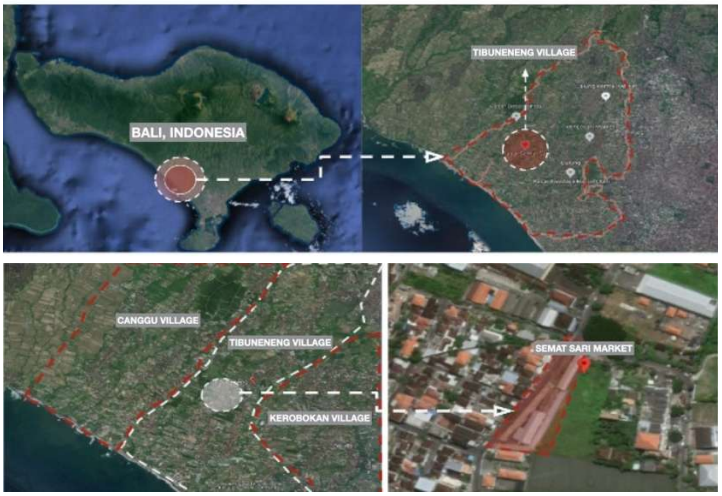

FIGURE 4. THE EXISTING OF SEMAT SARI MARKET

SOURCE: Farizi, 2022

The market accommodates 125 traders, each involved in the trading of various commodities, including wet and dry foods, fruits and vegetables, cooking ingredients, household items, accessories, religious items, and clothing. While each trader pursues their unique activities and interests, they all share the market corridor, which serves as a thoroughfare for both traders and visitors. This passage facilitates movement and links one stall to another. Aside from the corridor, the primary space essential for traders is the sales stall, as most trading activities are centered in these individual stalls.

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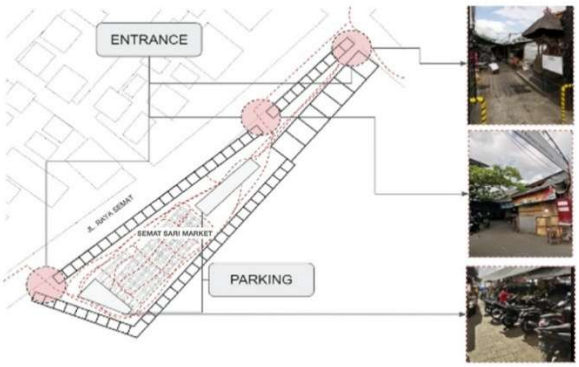

FIGURE 5 SEMAT SARI MARKET CIRCULATION MOVEMENT PATTERN

SOURCE: Farizi, 2022

A study will be conducted on the activities of traders at the market stalls, focusing on their actions while working and resting. Traders enter the stalls through the main market entrance and the market corridor. The market layout is straightforward, as the main entrance is located near a public parking area, providing convenient access for traders by both vehicle and foot traffic (see Figure 5).

The Semat Sari Market covers a building area of 1050 m2 within a total land area of 2550 m2. It includes 125 stalls of three different types based on size and merchandise. Specifically, there are 63 regular stalls, 5 shop stalls, as well as loss stalls categorized into dry food and wet food commodities, totaling 43 and 5 units, respectively. The market space follows a centralized organization, as described by Ching (1996), with a primary booth as the central room surrounded by secondary kiosks (see Figure 5).

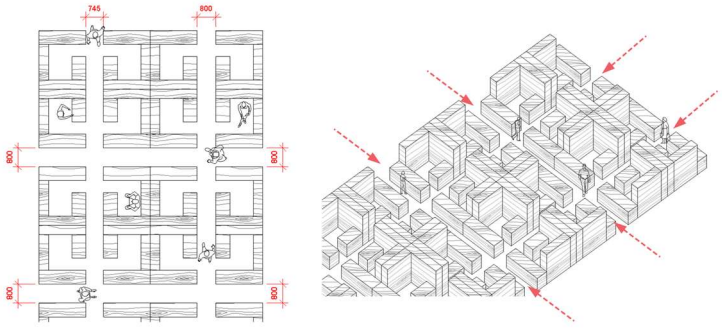

FIGURE 6 COMMODITY ZONING & STALL LOSS ARRANGEMENT

SOURCE: Farizi, 2022

The food area is organized using a grid arrangement with a repeating pattern to facilitate the movement of market activities in adjacent kiosks, resulting in a neatly arranged space. The most dominant movement activity occurs in the food product zone with the stalls, which are the center of attention. This area has a floor space of 330m² with a total of 48 stalls, occupying a total area of 240m², leaving 90m² for circulation.

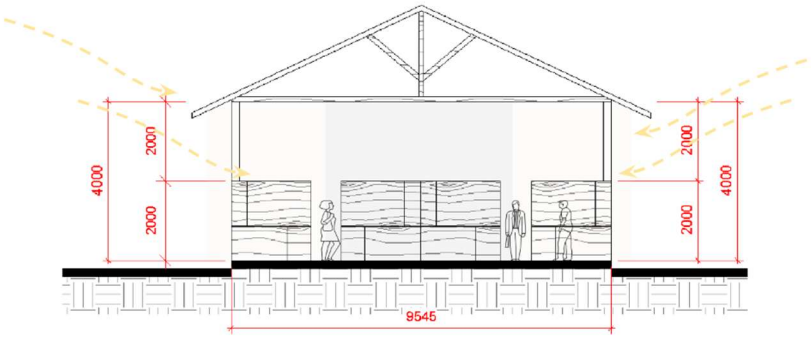

FIGURE 7 EXISTING CIRCULATION IN KIOSK LOSS ARRANGEMENT

SOURCE: Farizi, 2022

The average dimension of circulation in the food zone is 0.80 m (Figure 4). This circulation serves as a connecting access between the stalls and is commonly used by visitors, distributors, and traders. During rush hours, the corridor becomes quite congested, making it difficult for two people to pass each other. Additionally, when used by traders transporting goods to deliver merchandise to the stalls, the narrow corridor width further exacerbates this issue (Figure 5).

The vertical dimension in the food commodity zone is 4 m, providing sufficient height for a roof frame that serves as a public space. According to Neufert standards, the minimum corridor width should be 0.87 m to ensure optimal circulation for market activities. However, in the Semat Sari market, particularly in the food product commodity zone, the corridor width is only 0.8 m, making it challenging for traders and visitors to move around comfortably. The ideal corridor width for shared market activities should be 1.7 m, allowing for smooth movement and accommodating up to three people for one-way or face-to-face circulation.

FIGURE 8 WET FOOD KIOSK (LEFT); DRY FOOD KIOSK (RIGHT)

SOURCE: Farizi, 2022

It's also important to consider light and air when arranging the stalls to enhance the quality of the traders' space. Stalls located on the outer perimeter still have good exposure to light and wind, while those in the middle are less fortunate. To address this, stalls for wet food commodities, which are prone to dampness and odors, are strategically positioned on the

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outer edges to ensure better air and light conditions, creating a more comfortable environment for the traders both physically and psychologically.

Kiosks come in two different layouts to meet the specific needs of each trader. Wet food commodity traders are provided with tables that are 0.80 meters wide and 0.85 meters high for activities such as meat cutting, weighing, and display. On the other hand, dry food commodity traders have tables and shelves, partially surrounding the 2-meter-high kiosk, to store and exhibit their goods. The traders place their merchandise on tables with a width of 0.40-0.60 meters and a height of 0.85 meters. The space in the kiosk for both types of commodities is of the same size, measuring 2.5 by 2 meters.

According to Badung Regional Regulation Number 3 of 2017, the standard area for stalls is 2 by 1.5 meters, whereas for wet food commodity zones, especially for meat traders, it is 2 by 2.5 meters. Additionally, the market area, categorized as type D, fulfills the standard area requirement of 1 square meter according to SNI 8152-2015. The stall counter provides free space for traders to move, measuring 1.2 by 1.7 meters.

When considering the human dimension, it is important to ensure that a room is at least 1.7 meters in area to accommodate standard ergonomic dimensions. It should be noted that a stall with a minimum width of 0.62 meters can be shared by two traders, as their combined width of 1.2 meters allows for comfortable use. However, during breaks, the stall should only be used by one person, as the standard leg-stretching area is approximately 1.17 meters by 0.8 meters. The movement of traders during breaks is most practical when used by a single individual; accommodating two people may result in limited space. Overall, providing ample space in stalls supports the comfortable movement of traders and helps maintain good spatial quality for the storage of wet food commodities.

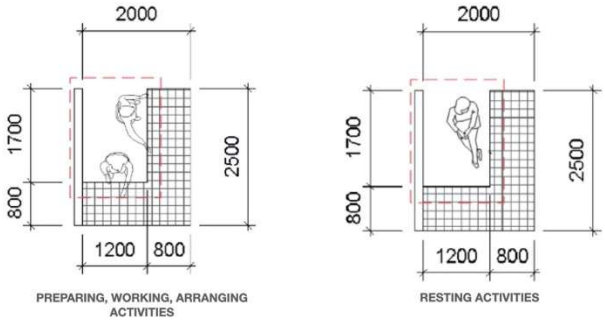

FIGURE 9 WET FOOD COMMODITY LOSS RANGE TABLE

SOURCE: Farizi, 2022

The layout analysis of the trader's reach to arrange merchandise on the kiosk table reveals that the table has a width of 0.80 m and a height of 0.85 m (Figure 9). The standard human hand span, as per Human Dimension, ranges from 0.92 m to 0.95 m, while the standard table height typically falls between 0.80 m and 0.85 m. This setup allows for efficient vertical and

horizontal movement by the trader, especially in the wet food commodity zone, which offers ample space measuring 1.2 x 1.7 m. The total dimensions of the wet food commodity zone stall are 2 x 2.5 m, with a height of 4 m, providing a total room volume of 20 m3.

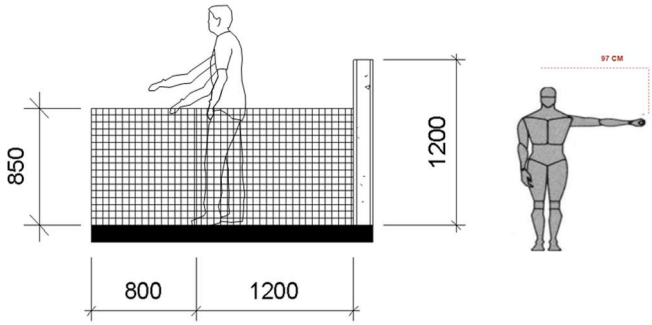

FIGURE 10 STALL ERGONOMICS LOSES WET FOOD COMMODITIES

SOURCE: Farizi, 2022

Similarly, the dry food commodity kiosks provide traders with a free space of 1.5 x 1 m for movement (Figure 10). There's a minimal width requirement of 1.7 m for the movement of goods, while the allocated space for traders' activities is limited to a maximum of 1.5 m in width and length. During breaks, traders have good leg-stretching space, requiring a distance of around 1.17 m x 0.8 m.

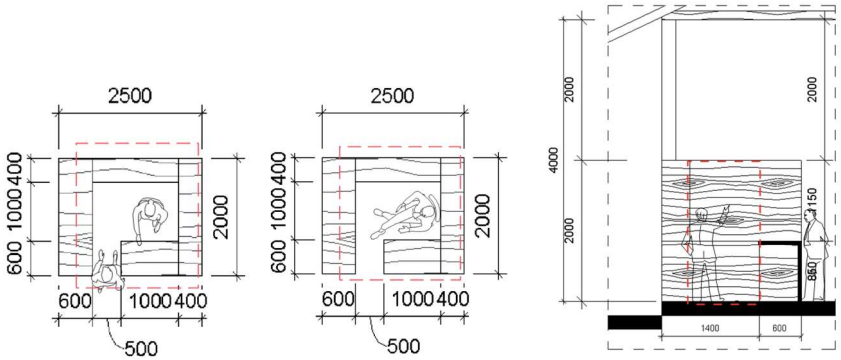

FIGURE 11 STALL ERGONOMICS LOSING DRY FOOD COMMODITIES (LEFT), AND STALL ERGONOMICS LOSING DRY FOOD COMMODITIES (RIGHT)

SOURCE: Farizi, 2022

The circulation area width at a trader's stall is 0.50 m, which can make it difficult for traders carrying merchandise to enter the stall. The standard minimum for human circulation requires a space width of 0.875 m, which indicates a 0.375 m difference from the current width. For this stall, the minimum good circulation is 0.8 m, allowing only for standing with both hands on the waist and legs apart.

The wet food commodity kiosk has dimensions of 2.9 x 2 m, providing increased space for trading and resting activities within a 1.9 x 1 m area designated for trader movement. The overall dimensions of the dry food commodity kiosk are 2.9 x 2 x 4 m, with a volume of 23.2 m3, creating a larger space for trading and other activities within the stall.

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The non-food commodity zone serves as a secondary space within the market. Traders utilize stall stalls to vend items such as essential goods, prayer equipment, local traditional gear, clothing, and accessories. The kiosk space is larger than the stall, measuring 3 x 2.5 m (Figure 11). This variation in size is to accommodate the diverse space requirements of each trader. For instance, grocery traders need storage space as their merchandise cannot be sold off in a single day. At Semat Sari Market, the kiosks are sized at 3 x 2.5 m, which supports the storage and transaction needs of the traders. Notably, the standard kiosk size according to Badung Regional Regulation Number 3 of 2017 is 3 x 3 m, indicating non-compliance with Semat Sari market standards.

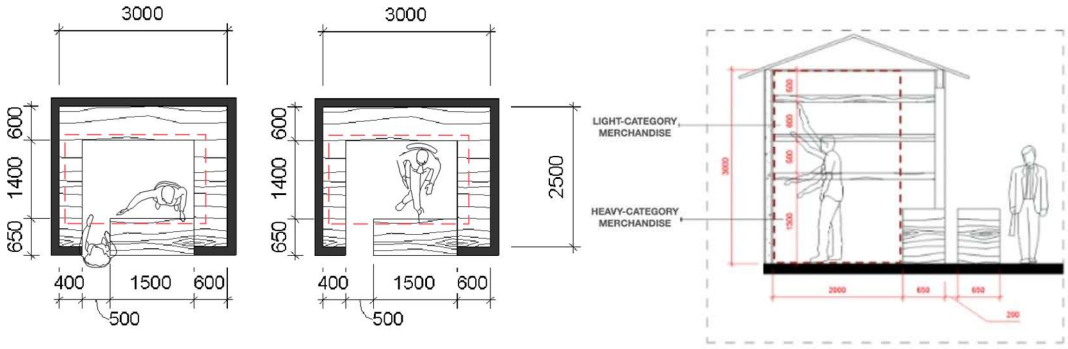

FIGURE 12 NON-FOOD COMMODITY KIOSK STALL (ABOVE) AND NON-FOOD COMMODITY KIOSK (BOTTOM)

SOURCE: Farizi, 2022

Considering the movement activities, the kiosks provide a free space of 2 x 1.4 m for traders to navigate (Figure 11). While this meets the needs of traders for undertaking tasks, according to Human Dimension standards, the room width should ideally exceed 1.5 m. This ensures sufficient space for activities such as stretching arms, turning while working, and enabling traders to comfortably rest and recuperate.

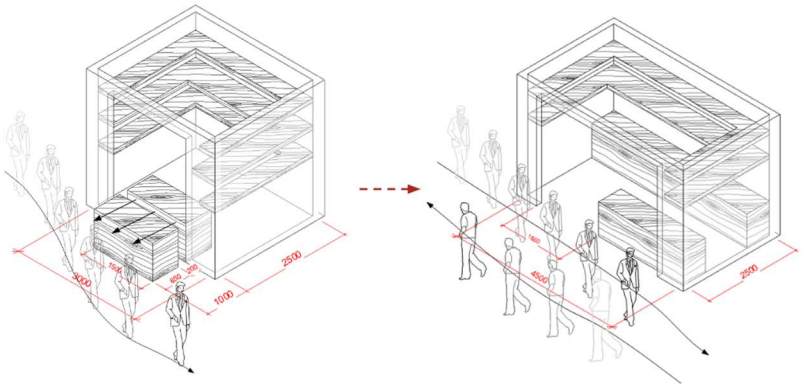

FIGURE 13 EXPANSION OF KIOSK STORES WITH ERGONOMIC EVALUATION OF TRADERS IN KIOSKS

Source: Farizi, 2022

The kiosk is similar to a standard circulation with a width of 0.5 m, whereas the standard circulation width, according to Neufert, should be 0.8 m. The vertical free movement space for

traders has a height of 3 m, with a storage shelf reach of 2.1 m. Considering the average reach of a man's hand is 2.24 m, the distance between traders and shelves for arranging and storing goods adheres to ergonomic standards. Non-food commodity traders classify their merchandise into two types: heavy and light. Heavy trade products such as wheat flour, rice, oil, and sugar are positioned on the bottom shelf, while light trade products such as ready-to-eat food, cooking ingredients, and so on, are placed elsewhere.

TABLE 2. EVALUATION TRADER SPACE REQUIREMENTS

No.	Kiosk Type	Area	Before Dimensions	After Dimensions	Jilid m3
1	Kiosk	Wet Food	2,5x2x4m	2,5x2x4m	20
2	Kiosk	Dry food	2,5x2x4m	2,9x2x4m	23,2
3	Stall	Not food	3x2,5x3m	4,5x2,5x3m	33,75

SOURCE: Farizi, 2022

At Semat Sari Market, the arrangement of stalls results in limited movement, despite the wider space. Traders extend their wares 1 m to the front of the stall by adding a 1.5 m wide table, hampering the circulation space around the kiosk (Figure 12).

It is important to assess the dimensions of the kiosk space, particularly the habit of the kiosk that extends its merchandise into the market corridor. The current kiosk stalls are inadequate in meeting the needs of traders in terms of facilities and space dimensions, as they lack the necessary storage space for non-food traders. The existing kiosks have dimensions of 4.5 x 2.5 m, and an additional 1.5 x 2.5 m of space should be allocated for storage for non-food trader kiosks. Therefore, the kiosks should have dimensions of 4.5 x 2.5 m x 4 m, resulting in a volume of 45 m^3.

Based on Table 2, it can be seen that the variation in kiosk types leads to differences in spatial volume that directly influence traders' physical comfort. The limited dimensions of wet and dry food kiosks reduce movement flexibility, while the larger non-food kiosks provide greater opportunities for storage and resting space. This indicates that improvement should focus on optimizing circulation width and storage areas to support ergonomic posture and ease of movement. In addition, traders' comfort is also affected by temperature, air circulation, and lighting. These are factors that should be integrated into future design improvements to enhance both physical and psychological well-being.

5 CONCLUSION

According to the findings of the research on the layout of the stalls, Semat Sari Market demonstrates a consistent spatial configuration. The market features a centralized pattern and grid system to divide trader stalls and circulation areas. However, the current configuration of the market does not adequately support user comfort due to non-standard corridor width dimensions. This has led to congested circulation routes and poses challenges

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for traders who require smooth and comfortable movement within the market. When considering the stalls and kiosks utilized by traders, it is evident that the size of the spaces does not meet ergonomic standards in terms of facilitating work and rest. This mismatch between space size and trader requirements directly impacts trader performance. Prolonged interactions within spaces that do not meet ergonomic standards can lead to psychological and physical fatigue, decreased enthusiasm for trading, a negative outlook, and uncontrolled emotions. To meet the safety and comfort standards required in market spaces, traditional markets like the Semat Sari market should focus on enhancing the ergonomic design of individual trader stall spaces. There is significant potential for the Semat Sari market to thrive with the right development. It's crucial to recognize that ergonomic design not only influences the smooth operation of the market but also significantly impacts the physical and psychological well-being of the traders. Future research should incorporate additional variables related to traders' comfort, local cultural behavior, and interaction patterns during trading activities. Understanding these social and cultural dimensions will enrich ergonomic assessments and provide a more holistic perspective on spatial design for traditional markets. Therefore, it's essential to prioritize architectural efforts that not only cater to trading activities but also contribute to the overall productivity and health of the traders.

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