Understanding physical settings of street vendors in Surakarta, Indonesia

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Abstract. This study discussed the physical settings of street vendors in Surakarta and how they affected customers’ comfortability. Methods used were observation, place centered mapping, photo documentations, and informal interviews. Analysis was done qualitatively until a conclusion was obtained. Results of the study were types of prepared-food street vendors in Surakarta, namely: warung tenda, angkringan, street food carts (unmodified and modified carts), and unmovable stalls (semi-permanent and permanent stalls). Street vendor’s physical settings influenced customers’ physical and social comfortability. Physical comfortability was derived from street vendors’ location which usually under shade trees, consumer area was in open area, and not covered by tarp, has cool temperature, customers can sit comfortably, and customers can sit lesehan. Social comfortability was obtained when customers have a space to socialize; regardless the space was physically narrow. Factors related to social comfortability are the seller’s hospitality; customers can have a chat for hours, and low price food. In urban scale, it is hoped that this research can help the municipal government in formulating better policies related to street vendor management, specifically in developing clusters of street vendors (Shelter PKL).

Keywords: Customers, social comfortability, street food carts.

1. Introduction

Street vendors/Pedagang Kaki Lima (abbreviated as PKL), are traders who carry out trading and non-formal business activities within a certain period of time by utilizing public facilities, either by using movable facilities or equipment, and/ or dismantled pairs [1]. The number of street vendors in the city of Surakarta, is currently growing. Street vendor is a dualism that is always presents in urban life. Street vendors are the drivers of the informal sector economy, but on the other hand, they are the source of discomfort and chaos in the city.

McGee and Yeung in [2] said that the street vendors which provide various commodities can be grouped into four types, i.e. unprocessed and semi processed food, prepared food, non-foods, and services. Furthermore, Rahayu et al. [3] stated that there are five categories of street vendors in Surakarta, including raw foods, prepared foods to take home, prepared food for eat in the place, non-foods, and services. Manning and Effendy in [2] stated that street vendors choose most beneficial, strategic and packed with customers areas in city center, such as in trade center area, education area, or office area. Carr in [4] revealed that people who pass by on a road and the existence of sidewalk are among the factors that bring street vendors to come and do their activities in that location.
The municipal government is trying to reduce the number of street vendors by making pockets of street vendors (Shelter PKL). Based on Surakarta Government [1], the government has the authority to manage the street vendors’ location in order to improve the welfare of street vendors, maintain public order, and clean the environment. However, the results in Rahayu and Wulandari [5] indicated that the managements of street vendors have not fully succeeded in achieving comprehensive goals. Many street vendors who were relocated chose to move from the relocation sites.

To minimize conflicts in the managements of street vendors, it is needed to re-understand of the characteristics of street vendors. Therefore, this study explores the most basic characteristics of street vendors: how are the physical settings of street vendors in Surakarta, and how they affect customers’ comfortability. By studying the physical settings of street vendors, it is hoped that we will have a better understanding of street vendors, and there will be better knowledge for the municipal government in providing space that matches the characteristics of street vendors.

2. Literature reviews
Space, as one architecture component, is very important in relation to environmental and behavioral architecture because of its function as a place of human activity [6]. Hakim in [7] said human relations with space can be divided into two, namely: i) dimensional relationship which concerns in dimensions related to the human body and its movements for human activities; and ii) psychological and emotional relationships (proxemics) which determine the measurements of space requirements for human activities. A person's response to his environment depends on how the individual concerned perceiving his environment [8]. Humans’ behavior in their environment can be observed from behavioral-environmental phenomena; user groups; and place activity. Hall in [7] stated that human ability to understand space depends on how the interaction between human and the built environment (which is made to meet their needs), and how the influence of space (or built environment) on human behavior.

According to Weisman in [7], there are three components that influence the interaction between humans and their environment, namely: i) organization, is an institution or owner that has a relationship with settings, ii) individuals, are actors both groups and individuals who use physical settings and have certain interests, and iii) the physical setting, is where humans carry out their activities. The interaction framework of the three components is called The Environment-Behavior System (figure 1).
According to Schoggen in [9], physical setting is defined as the order of an environment that can affects human behavior. It means that in the same place, human behavior can be different if the physical settings are different. Weisman in [7] stated that physical settings can be seen in two ways, namely i) components, are parts of space that are visually visible, such as building structures, materials, etc and ii) properties, define characters from a physical setting intrinsically, such as color, density, etc.

Environment as experienced is the experience of individuals in physical settings that affect the quality of human life such as stress levels, comfort or feeling happy. The form of interaction between humans and physical settings will produce the “attributes”. The attributes are environmental qualities which are felt as human experiences. Attributes can also be interpreted as extrinsic characters related to the environment. Windley and Scheidt in [7] said that there are 11 environmental attributes that reflect interaction between humans and the environment, including sensory stimulation, comfort, activity, crowdedness, sociality, privacy, control, accessibility, adaptability, legibility, and meaning.

3. Methodology
The research areas were public spaces in Surakarta. Based on grand tour, it was found that the location and population of street vendors in Surakarta were highly vary. To provide data variations, the intended public spaces can be divided into six categories, namely health services, places of worship, commercial areas, educational services, office areas, public open space. The distribution of the research areas can be seen in figure 2.

![Figure 2. The distribution of the research areas.](image)

This research used a purposive sampling with the aim that the selected samples represent the existing population. According to Gobel [10], the use of purposive sampling techniques is intended to select a group of subjects based on certain characteristics or traits and are considered to have a close relationship with the characteristics of the population that have been previously known. The number of street vendors as samples in this research was determined until the information obtained was saturated. Several criteria used to determine the sample in this study were:

i. This study only discussed the street vendors of prepared food, with the consideration that their populations were higher than non-prepared food street vendors.

ii. The prepared-food street vendors’ location areas were near public spaces.

iii. The selected prepared-food street vendors were consistently located at a certain area in a period of time. The prepared-food street vendors which moved from place to place and a new prepared-food street vendors located in a new area were not included as subjects of this study. The intention of this condition was to have a definite physical setting pattern formed from a pattern of repetitive activities over a period of time.
This research also used a place-centered mapping to know how sellers and customers used or accommodated behavior in a certain time and place situation. The physical settings analysis in this study refers to Weisman theory [7]. Environmental attribute examined in this paper is comfortability. To find out whether customers feel comfortable when in a particular street vendor, interviews with several customers are needed. Some information inquired from the interviews were:

i. With whom customers came to a street vendor. The purpose of this question was to find out the other goals of customers, other than to eat or buy food in a street vendor.

ii. Time spent by customers on a street vendor. This question was to find out the customers’ comfortability as indicated by the time length that customers can spend on a street vendor.

iii. How comfortable the customers were while in the area. The comfortability in question was both physical comfortability (if the space was not narrow, crowded, or stuffy), and social comfortability (things that make customers able to spend hours there).

iv. Factors that made customers felt comfortable, both physically and socially.

The physical settings in this research based on the field observation conducted during September 2018 to January 2019. Data was collected through several methods, namely: field observation, place centered mapping, photo documentation, and informal interview. The analysis was carried out qualitatively by holding a dialogue between the data based on observations, behavioral mapping and interviews, until the findings that lead to a conclusion were obtained.

4. Results and discussion

Total samples obtained in this research were 85 prepared-food street vendors. Figure 3 shows that prepared-food street vendors were mostly in commercial areas, such as traditional markets, malls, and shops (25 %). Percentage of respondents in educational service areas (schools and campuses), health service areas (hospitals), and worship area are 23 %, 19 %, and 6 % respectively. The percentage above certainly cannot be compared with the number of street vendors who reach thousands of stalls.

![Figure 3. The percentage of sample in each public space category.](image)

Based on their trading facilities, the prepared-food street vendors in Surakarta are divided into four categories (figure 4 above), namely (i) warung tenda (40 %), (ii) angkringan (25.9 %), (iii) street food carts which comprised of unmodified carts (7.1 %) and modified carts (14.1 %), and (iv) unmovable stalls, which comprised of semi-permanent stalls (7.1 %) and permanent stalls (5.9 %). Figure 4 (below) illustrates street vendors distribution in each location. Warung tenda was the easiest street vendor type to find. It is mostly available in commercial, health services and educational services area.
4.1. “Warung tenda” type

“Warung tenda” is a term to describe prepared-food street vendors who use portable stalls, covered with tarps or cloth tent (figure 5). Aside from being a space boundary, this cover also showed the identity of the owner and the menu available. Many warung tenda were located on sidewalk or attached to a fence of a commercial, health or education building. Based on observations, warung tenda generally opened during daytime.

![Figure 4. The categories of prepared-food street vendor (above) and the street vendors distribution in each location (below).](image)

| Category                  | Warung Tenda | Angkringan | Unmodified carts | Modified carts | Semi-permanent Stall | Permanent Stall |
|---------------------------|--------------|------------|-------------------|----------------|----------------------|-----------------|
| Health services           |              |            |                   |                |                      |                 |
| Places of worship         |              |            |                   |                |                      |                 |
| Commercial areas          |              |            |                   |                |                      |                 |
| Educational services      |              |            |                   |                |                      |                 |
| Office areas              |              |            |                   |                |                      |                 |
| Public open space         |              |            |                   |                |                      |                 |
Figure 5. The use of tarps in “warung tenda” as the identity of the shop owner and the type of food he sells.

Figure 6. The space arrangement of “warung tenda” type.

The space arrangement of warung tenda consisted of two areas: seller’s and consumer’s area. The seller's area was a cart as a place to cook food (usually equipped with a small stove), while the consumer’s area consisted of table, chairs, and/or mat. Warung tenda which sell foods in broth always provide wooden tables and chairs (either in long wooden or plastic chairs). There was no consumer who sits on mats on the floor to eat (“lesehan” in Javanese). Warung tenda which sell foods without
broth do not always provide wooden tables and chairs. In the health services and education service areas, especially on campuses, this type of street vendors only provided mats. This space arrangement can be seen in figure 6.

4.2. “Angkringan” type

Angkringan is a Javanese term to describe a push cart that sells variety of village-style meals, such as nasi kucing (a small portion of rice topped with side dishes), and beverages such as black coffee, wedang jahe (a hot ginger beverage), etc. In Surakarta, it is also known as wedangan or HIK (Hidangan Istimewa ala Kampung/ Kampung-Special Cuisine). Generally, angkringan opens between 6 pm until late at night. Most angkringan were found under a shade tree, which made it easy for customers to find them. Angkringan did not use cloth tent to show owner’s name. Instead, they used tarp tents and were only used when it’s raining. There was no separation between seller’s and consumer’s area. All activities were carried out on a specially-designed cart. As shown in figure 7, usually this cart dimension is 90 cm x 150 cm to 90 cm x 200 cm, made of unpainted wood, and is equipped with one to two wooden benches which can be seated by six to ten persons. There were no angkringan that provide additional tables and chairs for customers. Instead, the sellers provided additional mats for customers (“lesehan” in Javanese).

4.3. Street food carts type

Based on observation, the street food cart type is divided into two, namely:

4.3.1. Unmodified cart. This cart is movable. Non-rice meals and traditional beverages (e.g. wedang asle and wedang ronde – two types of ginger-based beverage) are types of menu sold by these street vendors. As observed, this type was often found on sidewalks in public open spaces, e.g. city parks
and stadiums. It is also found that street vendors which sold non-rice meals can be found during daytime, while those which sold traditional beverages can be found at evening. This cart type was not equipped with a tarp or cloth, and did not provide wooden tables and chairs for dining in. They only provided plastic chairs or mats placed under shade trees. Figure 8 shows that unmodified cart space arrangement consisted of seller’s and consumer’s area. The seller's area was a cart, while the consumer’s area consisted of plastic chairs or mats.

Figure 8. The space arrangement of unmodified carts type.

4.3.2. Modified carts. Modified cart is a cart combined with motorcycle or bicycle. Modification of the cart allows the vendor to move conveniently and find more customers. Generally, these street vendors sold snacks as their commodities. These modified carts were often found on the sidewalks of educational areas, and mostly were located under shade trees because the cart is not equipped with tarps or cloth. The selling hour was adjusted to school hour. Generally, customers only buy take-away snacks. Hence, sellers usually do not provide table, chair or mat. There was no specific and clear boundary for the customers’ area. Space arrangement of the modified carts type can be seen in figure 9.
4.4. Unmovable stalls type

Based on observations, unmovable stalls type can be divided into two, namely:

4.4.1. Semi-permanent stalls. These are street vendor stalls that have a wall and roof boundary, made of wood, plywood, zinc, or asbestos. Most of them opened at daytime. Semi-permanent stall was usually attached to public buildings’ walls. It is rare to find semi-permanent stalls that do not line up with other stalls. All of semi-permanent stalls did not provide mats, but wooden tables and chairs for customers. Its space arrangement consisted of seller’s and the consumer’s area, as seen in figure 10.

4.4.2. Permanent stalls. Permanent stalls in Surakarta are usually provided by municipal government through relocation programs. Thus, the location of them was fully determined by municipal government. Those who occupied these stalls paid retribution to the municipal government. Permanent stalls were gathered on several allocated sites in Surakarta; among other was “Shelter PKL” in Manahan (figure 11). This stall type has typical characteristics, i.e. features brick walls, metal roof and uniform paint color: yellow and green. Unlike semi-permanent stalls, this type of stalls was not attached to the public buildings’ walls. These stalls were located on a vacant land between the sidewalk and the fence of public buildings, and were designed in rows with the same dimensions: 2.5 m × 2.5 m or 3 m × 3 m. In addition to wooden tables and chairs, some sellers also provided additional mats placed on sidewalk. There was a space arrangement between the seller’s area and the consumer’s area (figure 11).

Figure 9. The space arrangement of the modified carts type.
Figure 10. The space arrangement of semi-permanent stalls.

Figure 11. The space arrangement of permanent stalls.
Comfortability factor as an environmental quality obtained from informal interviews with 155 customers. It was found that most customers came to street vendors with their friends, except for the warung tenda type. At the warung tenda type, customers came to street vendors with their colleagues (figure 12 above). These findings indicated that customers have other goals aside from dine in or bought a take-away. As illustrated on figure 12 (below), customers spent 1 h to 3 h on warung tenda and unmovable stalls type, more than 3 h in angkringan type, and less than 1 h in street food carts.

![Chart](image)

**Figure 12.** With whom customers came to the street vendor (above), and the time spent by customers on a street vendor (below).

Figure 13 (left) shows that warung tenda and unmovable stalls type were considered physically uncomfortable by customers. While in angkringan and street food carts type, customers felt physically comfortable. From figure 13 (right), it was found that customers felt socially comfortable in almost all types of street vendors, except for street food carts.

From observations, most street vendors in Surakarta occupy 100 cm to 150 cm of paved sidewalk. The sidewalk is 10 cm to 20 cm higher than highway. Parking area for customers is on the edge of the highway, near the street vendors. Prepared-food street vendors, specifically street vendors who allow consumer to dine in, require supporting utilities such as water and electricity. Some street vendors prepare gallons of drinking water for cooking and drinking, while water for washing dishes is obtained from nearby public buildings. There are also street vendors who get clean water both for cooking and washing dishes from public buildings where they are located. They ask for permission from the authorities of nearby public buildings so they can get the tap water on the yard of the buildings. Clean water obtained can be free or with some fee, depends on agreement with the authorities. While for the electricity, most street vendors provide small accumulators to turn on the lights. Angkringan use traditional lamps called “thintir” (small oil lamps) or kerosene lamps. Dim atmosphere is the unique
characteristic of *angkringan* in Surakarta. Different findings were found on permanent stall type. Water and electricity for these street vendors have been provided by municipal government. Each stall has been equipped with tap water and lights. Stall rent cost is bundled with electricity and water cost.

![Figure 13](image-url)

*Figure 13.* Customers’ physical comfortability (left), and customers’ social comfortability (right).

| Prepared-food street vendors | Physical settings | Properties | Comfortability |
|-----------------------------|-------------------|------------|---------------|
|                            | Components        |            |               |
|                            | Floor | Wall | Roof | Furniture | Visual | Sound | Temperature | Physically | Socially |
| Warung tenda type           | Sidewalks, Mat | Cloth, tent | Cloth, tent | Cart, table, wooden benches or plastic chairs | Outside (towards the highway) |  |  | Cool, located under a shade tree | No | Yes |
| Angkringan type             | Sidewalks, Mat | - | Tarps (tent only if it rained) | Cart, wooden benches | Outside (towards the highway) |  |  | Yes | Yes |
| Street food cart type       | Sidewalks | - | - | Plastic chair | Outside (towards the highway) |  |  | Cool, located under a shade tree | Yes | No |
| Modified carts              | Sidewalks | - | - | - | Outside (towards the highway) |  |  | Yes | No |
| Unmovable stalls            | Sidewalks, Side streets | Wood, plywood | Zinc, asbestos | Cart, table, wooden benches or plastic chair | Outside (towards the highway) |  |  | Stuffy, hot | No | Yes |
| Semi-permanent stall        | Sidewalks, mat | Brick walls | Metal roof | Cart, table, wooden benches or plastic chair | Outside (towards the highway) |  |  | Stuffy, hot | No | Yes |

From the table 1, the space occupied by *warung tenda* and unmovable stalls were physically uncomfortable. Distance between customers was considered too close. Customers stated that there was no attractive view besides outward view towards highway. Moreover, no appealing physical thing was
found on its space arrangement. Nonetheless, customers seemed to feel socially comfortable. This finding was directly proportional to length of time spent by customers (figure 12 below).

Factors related to customers’ social comfortability (figure 14), namely:
i. The seller’s hospitality (42 %). The hospitality offered by sellers was one of the attractions for customers. Customers could not chat comfortably with sellers in cafes or food courts inside mall.
ii. Customers can have a chat for hours (39 %). Unless seller closes his stall, customers were free to socialize for hours.
iii. Low food prices (19 %).

The opposite happened with street food carts type. The customers felt physically comfortable but socially uncomfortable. Physical comfort was established by vendor’s location, temperature and minimum use of tarps so customers did not feel crowded or stuffy. Factor that made customers felt socially uncomfortable was because sellers did not provide seating area for customers. Unlike on other street vendor types, on street food carts type, customers only spend less than an hour because customers only came to buy a take away.

![Factors That Influenced Consumers’ Social Comfortability](image)

**Figure 14.** Factors that influenced customers’ social comfortability.

![Factors That Influenced Consumers’ Physical Comfortability](image)

**Figure 15.** Factors that influenced customers’ physical comfortability.

Research found that customers on *angkringan* felt physically and socially comfortable. Conditions influencing physical comfortability (figure 15) are: street vendors were located under shade trees (24 %), consumer’ area was open and not covered by tarps (21 %), cool temperature (20 %), customers can sit comfortably (17 %), and customers can sit *lesehan* (19 %). The availability of mats brings social comfort for customers as they can socialize in a relaxed and pleasant way (*lesehan*). The 54 % of customers came to dine in while hanging out with friends. Seller’s hospitality, no time limit
for socializing, and cheap food made angkringan as one of most favorite places to hang out. Customers came from various backgrounds, e.g. workers, pedicab drivers, students, and labours.

5. Conclusion
This research concludes that based on its physical trading facilities, prepared-food street vendors in Surakarta can be categorized into four types, namely: warung tenda, angkringan, street food carts (unmodified and modified carts), and unmovable stalls (semi-permanent and permanent stalls). Each of these street vendors has different physical setting characters.

Street vendor’s physical settings influenced customers’ physical and social comfortability. Factors influencing physical comfortability, namely: street vendor’s location which is usually under shade trees, consumer area that was open and not covered by tarps, cool temperature, customers can sit comfortably, and customers can sit lesahan. Social comfort was obtained when customers have space to socialize; regardless of the width. Factors related to social comfortability are: seller’s hospitality, customers can have a chat for hours, and low prices.

This research suggests understanding the need and architectural dynamics of street vendors in Surakarta from behavioral point of view. In urban scale, it is hoped that this research can provide inputs for municipal government in formulating better policies related to street vendor management, specifically in developing clusters of street vendors (Shelter PKL).

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