

Examining the Wahidin Street Vendors' Tent Frame using Community Development Approach

Imelda Irmawati Damanik*, Yohanes Satyayoga Raniasta, Tutun Seliari
Faculty of Architecture and Design, Universitas Kristen Duta Wacana, Yogyakarta, 55224, Indonesia

*Correspondence should be addressed to Imelda Irmawati Damanik; imelda@staff.ukdw.ac.id

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Abstract

Street Vendor Tents (Pedagang Kaki Lima in Bahasa Indonesia, PKL) are an important element of informal economy activities, because it is one of the vacancies that can be found in various corners of the urban area, such as Dr. Wahidin Sudirohusodo street. Therefore, design for street vendors' tent is become important, because it will influence the image of the area with very active vibrant activities.. Designing street vendor's tent is not an easy matter, because it is related to the government's policies and also related to the technical structure. The study is co-working with PPKLY and APKLY. This partnership used community development approach, carried out by focus group discussion (FGD) because basically the street vendors understand their needs. The companion will provide an affordable design and lead the design to keep it in line with government policy. We hope the frame's trial will develop a sustainable design which it is suitable for the PKL needs and also able to strengthen the image of the city area. Thus, the informal economic activities of street vendors can go hand in hand with the government's policies and meet the requirements of cleanliness, safety and have an aesthetic that strengthens the image of the area. And of course, this frame's assembly must be easily understood by street vendors, because they are the ones who will use it.

Keywords: *tent frame, street vendor, community development, urban area, design module*

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Introduction

Yogyakarta is destination for education and tourism for local and foreigner. Duta Wacana Christian University (UKDW) is private university that located on the center of the Yogyakarta. The site of UKDW lies on Dr. Wahidin Sudirohusodo Street, which is directly connected with Jend. Sudirman Street, is the main street of Yogyakarta from the east-west of the city. Dr. Wahidin Street is vital for city mobility, especially in terms of economy and education. The existence of UKDW has become magnet for regional development because campus become push factor for undergraduate to come and live around UKDW's area. This has positive impact on the surrounding community, especially on economic aspects (Budihardjo, 1982). In order to support campus, along Dr. Wahidin Sudirohusodo Street grows commercial spots and street vendors. The value of the street is fit with space requirement for street vendors and develop a form of informal sector on the pedestrian street. The street vendors carry on their activities throughout the day, selling variety food and beverage for public and the undergraduate student. They have certain kind of thought in choosing the site and settle (Suparwoko, 2016).

The street vendors contribute a significant image of the area with specific activities that build collective memory (Cullen, 1985). The existence of street vendors along pedestrian path become prominent street scape that indicating human activity in urban culture and social context (Rapoport, 1977). Although they have role as informal sector, street vendors also received support from government by formulating policy to arrange the street vendors on public facilities. In other hands, the street vendors join the Yogyakarta Street Vendor Association (Asosiasi Pedagang Kaki Lima Yogyakarta - APKLY), as forum for their aspirations, so they can work as partner with the government to improve the image of the city, especially on the Dr. Wahidin Sudirohusodo street. They bring out a slogan '*indah tanpa memindah*' (beauty without moving) that reflection of social capital. The value of the slogan also show the innovation and production attitudes and actions of street vendors (Usman, 2015). The Persatuan Pedagang Kaki Lima Yogyakarta (PPKLY), also a street vendor's association has been collaborate with Urban Environment and Settlement Lab since 2018, to elaborate their dream on beauty and efficiency of the tents, with spirit of environmental friendly design regarding to specific activities (Seliari et al., 2021). The information about tent and how it works is local knowledge, they understand the components, such as the essential needs of movements, strength of material, character of consumers, and the advantages of the site (Ife, 2016). The participation of the street vendor is important to define the tent's design with local

knowledge. In practise, the situation build awareness that designing the tent need time, so it should be done in several stage, because tent has several components, such as frame's structure and tent's cover. To embody a eco-friendly, aesthetic and functional tents need a comprehensive plan, so the tent is not only useful but also builds sense of belonging between street vendors, they're not only the users but also as the designer and the taker care of the tent. This spirit will alive to support the tent and become one of images of the city.

Furthermore, the next challenge is a display of the tent's stall. The current condition of the stall is relatively untidy and unattractive; they rely on the taste and the price of the menu to attract consumers. The tent is built individually, according to ability on financial, space on the pedestrian and, type of menu, so there are no identical tents, they have various shapes, sizes, and materials. The red line that tied up the tent is the simplicity of the design.

The frame of the tent's structure is done in the previous stage, but hasn't been tested, yet. The purpose of service activities is to accommodate design ideas, spatial contexts, and adjustments to applicable regulations. Several research findings state that the arrangement of street vendors will provide qualifications that provide opportunities for street vendors to support regional economic performance in the informal sector (Putra, 2015; Wijayaningsih, 2018). As actors who assemble and utilize tents, collaboration with street vendors is very important in the design process of the tent frame connections, so that the result of frame designs are tested and in accordance with real needs in the site. The collaboration will be carried out in collaboration with the Association of Street Vendors Yogyakarta.

Methods

The Focus Group Discussion (FGD) is chosen method to gather the idea of the tent. Based on existing, the community service will done with community development method and using Focus Group Discussion to gather street vendor point of view. The community development provides an opportunity for the communities, street vendors, to process the opportunities and take decision according to business perspective, government policy and hygienic standard for the food and beverages. Opening up the opportunities is fully to achieve common goals on various scales, because the aim of community development is to educate people (street vendors), so they have ability to transform and to empowered theirself (Einsiedel, 1960).

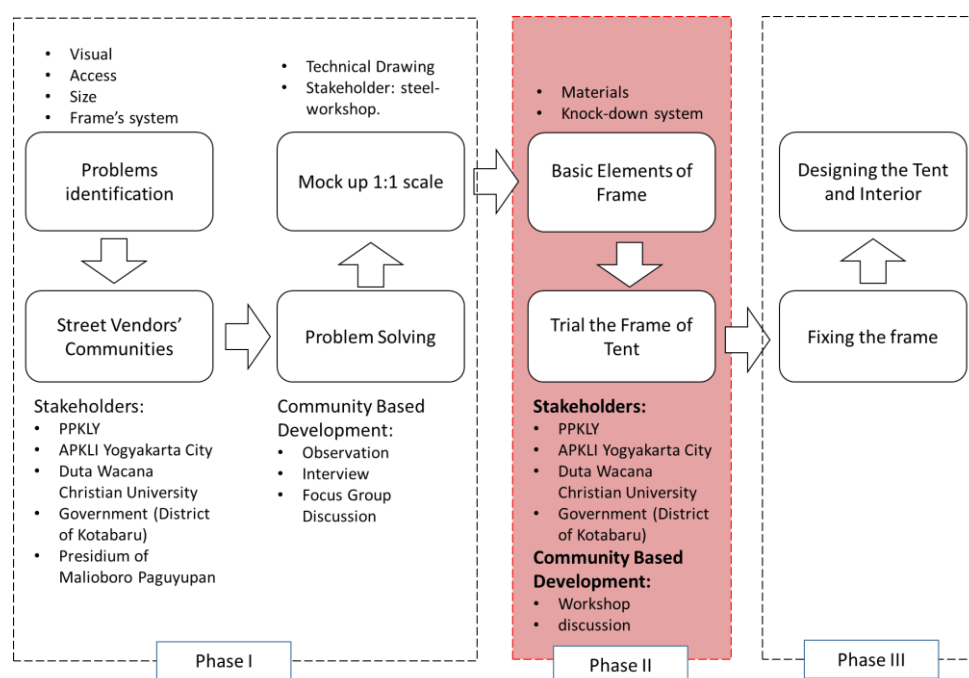


Figure 1. Phases of the Collaboration

Considering the content of community development, the substances of service activity to design the eco-friendly tent for the street vendors is carried out in several stages (Clarke, 2017), so that the aims of community development can be implemented comprehensively (Figure 1).

The stages of the community development are:

A. Phase I:

01. Survey; to collect the data of tent and frame
02. FGD for brainstorming design of tent
03. Technical Drawing

B. Phase II

04. 3D simulation of the frame
05. Mock up 1:1 scale
06. FGD and workshop for testing on installation; assemble and disassemble the frame.

C. Phase III

07. Workshop for coverage and interior design

The paper focuses on the Phase II (Figure 1), the discussion will describe the activities on the basic elements of the tent on phase II, which are (04) of digital 3D simulation, carried out the design engineering of the frame connection (05) Making 1:1 scale mock-up; cooperate with workshops and (06) organize workshops with street vendors, to test on the installation and dismantling of the frames. The aim of the workshop is to get a responses from users, such as

updating the material to improve the strength of the frame structure, and also to optimize the function and aesthetic.

Results and Discussions

Results

A. The Basic Development of Frame's Element

The development of the tent design has been initialled with identification characteristics Dr. Wahidin street vendors, especially to understand the values on selling activities within the tent, the behavioural pattern of the consumer, the size and the shape of the tent (frame and cover). From the survey, there are three typologies of street vendors' tents. Determination of the typology is based on the size of the tent, the type of tent attribute needs based on the type of food and beverage (menu) of street vendors. The 3 typologies are:

- Type 1: Street vendors' tents with a width of 1.8-2 meters, a length of 7-9.6 meters, they lay in front of the campus
- Type 2: Street vendors' tents with a width of 2.4 meters, a length of 3-12.5 meters. North side of campus
- Type 3: the form of street vendors is in the form of a kiosk.



Figure 2. Types of Street Vendors at Wahidin Sudirohusodo Street.

Street vendor gave some requirements to be considered for the design, such as:

A. The main problems are:

- Tent installation: efficiency of installation time, practicality / effectiveness, visual design of the tent, and strength, rainwater resistance.
- Pedestrian access
- System: PKL typology (type of merchandise), water treatment, waste, presentation method.

B. Strategies will be carried out to minimize and resolve these problems with:

- Setting up street vendors

- Designing Tent Design

There are 2 stages that are carried out simultaneously, (1) 3D simulations, (2) working drawing details, parallel with communicating all stages to partners, the steel workshops. Some technical information has been conveyed to the workshop, such as the size of the tent, the design of the existing tent, the existing frame system as well as the expectations of the traders regarding the practicality, convenience and flexibility of the tent. The steel workshop provides advice on materials, material modules used and connection ideas.

The initial idea developed with the workshop was a connection and lock system (Figure 3). From the discussion it was proposed to divide the size of the poles into of the height, to facilitate the transportation process from the tent storage to the location/site. So far, these poles, both those used in vertical and horizontal structures, are transported with a length of 2.5-3m. Seller will maintain a certain distance when crossing the road and require a certain area when assembling the tent frame.

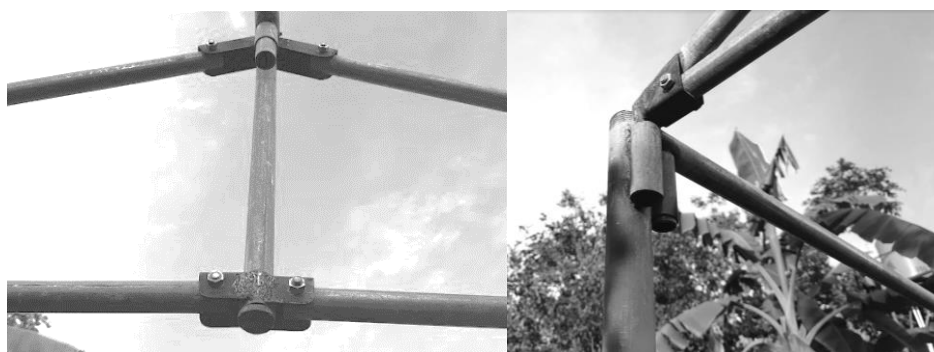


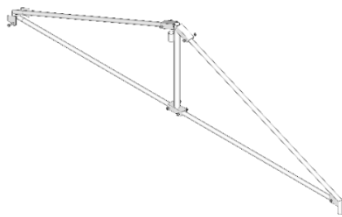
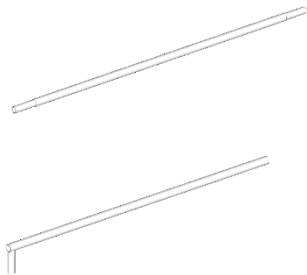
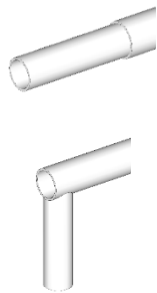






Figure 3. Connection Details

B. Trial Assembling the Frame Structure

The final frame was tested before it was introduced to the street vendor seller. The partner, the steel workshop helped the trial of assembling the frame structure. The trial used module I only, because the connections system of the frame Module II is relatively similar with Module I. The steel worker explained the assembling process, one by one the connection of the frame. The steel worker gave advice for the connections, especially for the efficiency of the materials, the simplicity of assembly and dispersing the frame and the size for easier mobility. The elements of the tent frame (Table 1) are; there are 5 elements that can assembled into 2 module; each of elements were drawn in 3D and details. Each elements has its function and certain position,

with measurement of scaffolding, all elements are estimated have stable strength and safety of steel contractions. On other hand, the most important is time to build and disperse. The assembling's time was recorded to compare with the assembling's time of the existing tents. After the frame stood steadily, it was tested with the shake to know the strength of the connection. Then connections are taken off from the frame structure, and also the time for dispersing is recorded as comparison with the existing tent.

Table 1. The Elements' of Frame that Test on Trial

		3D	Detail
Frame Elements	Roof Truss		
Module I	2		
Module II	2 + 1		
Notes	<ul style="list-style-type: none"> • 2 sets of 4 elements in 1 connection • 1 set of 1 detail peculiar connection 		
Frame Elements	Horizontal Tie Easel/Truss Pole		
Module I	3 sets		
Module II	3 sets + 3 sets		
Notes	Each element divided into 2 parts		
Frame Elements	Main Vertical Pole		
Module I	4 sets		
Module II	4 sets + 2 sets		
Notes	Each element divided into 2 parts with peculiar connection		
Frame Elements	The Center-Vertical Pole		
Module I	2 sets		
Module II	2 + 2 sets		
Notes	<ul style="list-style-type: none"> • As the edge of access of tent • Each element divided into 2 parts with peculiar connection 		
Frame Elements	Roof Batten		
Module I	4 sets		
Module II	4+ 4sets		
Notes	Roof retainer		

With the help from the steel worker, it takes 14 minutes to assembly and takes 8 minutes to unassembled the frame's connections. The roles is to make a group of the elements of frame and arrange them to the flow of assembly process, so that each stage connection is easier to understand and the result is from started until it finished can run efficiently (Figure 4).



Figure 4. Tent Pre Trial Briefing, from the Service Team to Street Vendors

From the trial, several ideas to improve the frame and as an evaluation for the assembly process, such as:

- It is necessary to have a pole connection's code, so that it makes easier to identify the part that is connected to the roof trust and other parts of roof structure.
- It is necessary to provide a place to lock or to attach the tent covering material, which will be designed in more detail later.
- The flexibility of the centre pole greatly helps the position of the tent module to determine circulation and access routes, both for traders and for buyers.

Discussions

A. Implementation Of The Tent Frame Trial Workshop

The workshop materials have been composed of previous activities, namely in the form of tent frames, module I and module II, as well as technical drawings of each frame element, arranged in such a way, as a reference in the installation of the tent. In addition to preparing materials, pandemic conditions must also be anticipated, so that this activity meets health protocols. The following are the stages carried out in the workshop activities:

B. Adjusting the Workshop Implementation Procedure

The implementation of the workshop must look for the right method so that it is to the regulations applied at UKDW during this pandemic. What is being done is to limit the number of participants who will participate in the workshop. In addition, the provision of hand sanitizer, additional masks, wet tissues, and using gloves. The space used for this activity should also be wide and open so that in carrying out activities, it is still possible to maintain a distance. Another procedure is to arrange the event as efficiently as possible so that the activities are carried out in just 1-2 hours.

C. Planning of Tent Trial Activities

Considering that this activity will involve parties from potential tent users, the assistants coordinate to prepare a workshop activity plan. The results of the coordination (Figure 5) are:

- a. The activity was carried out at the Agape Atrium, UKDW, using the 3 available tables.
- b. The tent frame will be placed in sections on the table, making it easier to explain before assembling.
- c. Each table is given 1 set of technical drawings of the tent frame, so that along with observing the elements of the tent, workshop participants can also see how it is installed from the available images.
- d. There will be a desk equipped with the administration of workshop activities, such as attendance sheets, sheets of paper for discussion, and health protocol tools.
- e. Every workshop participant will use a double mask, so a KN-95 mask is provided which can be used in addition, if there are participants who have not prepared 2 masks.
- f. In the assembly process, all participants wore gloves, to better protect their hands when touching all the tools used in the experiment.
- g. To document the trial process, the installation of the tent truss will be video recorded from 2 angles and documented by 2 assistants. The goal is that the facilitator can re-observe the trial process to get more complete and clear details.



Figure 5. Trial of setting up a tent by Street Vendor of Wahidin Street together with the UKDW Service-Team in the Atrium of the UKDW Agape Building.

In general, technical drawings provide an initial picture of the tent frame, which makes it easier for participants to identify the elements of the tent and the position of each element in the structure of the tent frame. Then, the next step is to set a strategy to start assembling the elements of the tent frame. Participants discuss which parts will be assembled and connected, step by step, until module I can stand firmly. Then proceed with the structure of module II (Figure 5). In this process, a document in the form of a technical drawing becomes a key reference for the assembling process as described below (Table 2):

Table 2. Stages of Assembling the Street Vendor Tent Structure:

Num.	Tent Element	Assembly Process
01.	Vertical Pole	Phase I: install the 2 lower and upper elements of the post to get a height of 2 m. Phase II: check whether this pole has connection details for the horses of Module I, or Module II and the pole that is the reference for tent access.
02.	Truss/Easel	Phase I open the truss connection until it stretches horizontally. Phase II: do the checking, the horses of module I and module II Phase III: connecting/assembling with horizontal elements, connecting the truss/easel. Phase IV: connecting/assembling with the poles according to the type of pole-type easel.
03.	Horizontal Tie Easel/Truss Pole	Phase I: install 2 pole elements. Phase II: Connecting/assembling the tie rods with the truss, at 3 points of strengthening the upper structure/roof.
04.	Roof Batten	The battens are attached to the truss after the entire tent frame has been installed and the tent is in an upright position.

In the installation process, there are difficulties, which are caused by:

- a. Connection frames whose module sizes are only a few millimeters apart. The diameter of the main circle and the connection is only 0.3 mm difference. Meanwhile, the entire frame of the tent is painted to protect it from corrosion. This takes quite a long time. Connections that have been installed, can be disconnected if other connections cannot be connected perfectly. For that, it takes a lot of manpower and personnel to make sure all the connections are in the right position, holding and raising, and lowering them to match the positions of other connections.

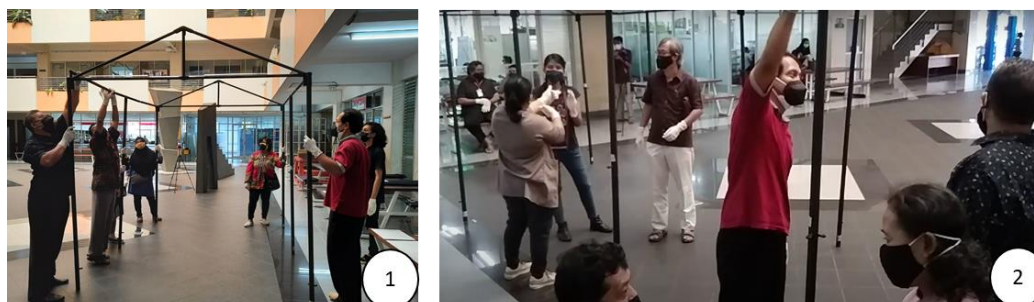


Figure 6. The frame is Standing Well and Checking the Connection, (2) Testing the Strength of the Frame and Discussion

- b. The number of connections makes it impractical to assemble the tent frame, but the frame is rigid. This condition is also a challenge because the tent is being tested for the first time for street vendors, so it is necessary to check the details of the connection, especially the connection that connects Module I and Module II. In the process of assembling Module II, all participants and assistants together carry out the process of connecting to assemble one element and then assemble it according to the construction of the tent.
- c. The space for the raft frame is also something that needs to be considered. Given that the frame will be installed on a sidewalk, the space for assembling it should also follow the size of the available sidewalk. Considering the process that requires quite a lot of people, about 6-8 people, the tent assembly space is automatically wide. In the conventional tent assembly process, it only takes 2-3 people to assemble the tent from start to finish, with space for a movement that has been adjusted to the area of the five feet. In the evaluation discussion, the participants gave their opinion that a habitual factor made conventional tents workable in a short time and with a relatively small number of assemblers. Meanwhile, the tent system that is being tested is still being studied, not yet used to it, so it takes quite a long time, more people assemble, and wider assembly space.
- d. The connection code system is good, but due to the relatively small size of the tent material module, it is then painted, resulting in a thicker size. This results in difficulties. For this reason, it is proposed to consider the use of paint and also consider the risk of corrosion/rust.

D. Tent Frame Trial Result

From the evaluation discussion above, the conclusion of the comparison between the trial tent and the conventional tent is as follows (Table 3):

Table 3. Comparison Evaluation of Tent Frames (New) with Conventional Frames (Old) according to Street Vendor

No.	Tent Part	Trial Frame	Conventional Frame
1.	Pole	length 2m, divided into two parts	length 1.7-1.8 m
	Recommendation: The dimensions of the trial tent poles is good because it is easy to carry them to the selling location compared to the dimensions of the conventional tent frame poles. However, the joint material modules are tiny in size difference and in a painted condition, making it difficult to connect them. For this reason, it is necessary to pay attention to finding a more suitable dimensions module, choosing a thinner paint and the possibility to provide a connection in the form of folds.		
2.	Roof Truss	4-foldable frame elements	Static triangle shape
	Recommendation: Good. The condition of the painted frame and the dimensions of the joint modules can make installation and assembly difficult. For this, the advice is the same as the pole recommendation.		
3.	Assembly	-need 6-8 people to assemble -time : 25-40 minutes -dimension : >2-3 x 1.5m	-need 2-3 people to assemble -time : 15-20 minutes -dimension : 2-3 x 1.5m
	Recommendation: Changes to the pole connection system will speed up the installation and assembly time of the tent frame. Technical drawings of the tent parts have been beneficial for understanding the parts of the frame, and if used frequently, it will facilitate the assembly process.		

The results above conclude that the installation and assembly process, which becomes the essential difficulty, is the connection between the frame elements. The facilitator will discuss with the partner who made the frame (workshop partner). Discussions with the workshop will focus on the possibility of developing a folding joint for the connection of pole elements and alternative materials (both types and modules used).

Conclusion

The tent frames trial provides information on the different perspectives on truss development in both practical and design contexts. At the workshop with the street vendors (PKL) community, all discussions resulted in tent concepts that were expected to suit the needs of street vendors at Dr. Wahidin Sudirohusodo street, Yogyakarta City. However, when translated into a practical form, it is adjusted to the availability of materials, material dimensions, material connection systems, and material preparation strategies to increase the mobility value. This activity partner is a steel workshop, translating it into a practical form. The result is a framework tested by a workshop with the street vendors (PKL) community, shows many shortcomings in the discussion.

This phase give an opportunity to learn the new system of the frame, to give evaluation for time consume of assembly, strength of the tent, size and ergonomic, and working space. The street vendors have empiric experience on building a tent according to their specific requirement of space, so the team adopted their evaluation. The street vendor seller also developed their sense of aesthetic, as a capital for the next phase; designing the cover of the tent.

For this reason, the next activity plan is to follow up on the results of the tent trial workshop. The discussion results will be conveyed to the workshop partners to see opportunities for further development, especially on the recommendations prepared at the end of chapter D. The challenge is the availability of materials, which has been predicted since the beginning of the tent manufacture. It also pays attention to the tent frame structure, which is easier, faster, and lighter.

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