Determination of location criteria of PKL Center as tool for success relocation

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Abstract. Street vendor is an informal sector that performs its economic activity by using an area which is not in accordance with the government’s spatial planning and considered as an additional to the urban issues, however the street vendor is an essential aspect in Indonesian urban cities. The relocation of street vendors is aiming for location management in accordance to carry out training program about the services activities of the informal sector by the government. At 2016, Surabaya is actively on beautifying the urban area by relocated the street vendors, including all street vendors along Arif Rahman Hakim Street. Those street vendors have been relocated to several Street Vendor Centers along the same street. The effort of minimizing any the changes of those street vendors to return to the side of the road to vend is by measuring the effectiveness of the street vendor’s relocation, targeted on these points: 1) identifying the street vendor’s characteristic, 2) measuring the effectiveness level of the previous relocation, and 3) formulate a location’s criteria which is suitable for the street vendors of Arif Rahman Hakim Street in order to improve the effectiveness of the relocation. Thus, it can be concluded that these street vendors is in good term. And relatively concluded, the relocation of Arif Rahman Hakim Street’s street vendors is quite effective.

1. Introduction
The street vendor is an informal sector which performs their economic activity using side walk area which caused by inexistence of a respected place from the government. Meanwhile, as stated by McGee and Young [1], the description of street vendor, or “hawkers”, is people who sell their goods in the form of goodies or services at a public area, especially on side walk or road side. The street vendor is the fastest solution that comes in handy to cope with the life expectations by vending, with low funding and skills. This kind of attempt is considered as a salvation which is able to provide jobs for workers who do not accepted to the formal sector [2]. Street vendor as the addition of urban issues, in fact, has the potential of increasing jobs opportunity, implementation of small investment flows, relatively more absorbing of wage component by beverages production, and is on the job training site for the prospective entrepreneurs. Street vendor is indeed an essential part of Indonesian cities.

The problems arise when the street vendor is developing and occupying the strategic public area within a city. From McGee and Young [1], the strategic location is one of the street vendor characteristics. The existence of uneven expanding and spreading of the street vendor leads to the necessity of an area that is able to accommodate. The unregulated and shabby location of the expanded street vendor can withdraw the image of a particular area. Street vendor also considered as the reason of public facility disruption and the reason of public anxiety of traffic jam occurrences.
The reason of these problems is the unprepared location that should be provided by the government. The existence of location is the key of street vendor problems. Surabaya government is gradually carrying out a relocation program for the street vendors to be moved to available Street Vendor Centers.

This relocation of street vendors is aiming for location management in accordance to carry out training program about the services activities of the informal sector by the government. In accordance to Peraturan Daerah Kota Surabaya No. 9 Tahun 2014 about providing locations for street vendors, this relocation is decided by the Surabaya government to organize the street vendors.

In 2016, Surabaya government is actively beautifying the urban area by relocating street vendors around the city. Arif Rahman Hakim Street is one of the street vendor control and eviction program targets. This street is a strategic location because it is included in Keputih Village region which is close to ITS circle and ITS’s students settlements. The street vendors along the street accommodate the necessity of the local residents and the ITS’s students. But they also give a negative effect of declining environment quality along Arif Rahman Hakim Street. The occurrence of the still increasing number of street vendors makes the street become narrower and causes traffic jam. Thus, arranging and controlling the street vendors through relocation is carried out.

These street vendors are relocated to several places. The prepared areas are at Convention Hall and Deles region, which both are prepared by the government and located on the same street. However, to accommodate in limited areas, the vendors should pass a selection stage. Those vendors who do not pass the selection are relocated to personal or private maintained Street Vendors Center areas. Some of those centers are successfully increasing the street vendor’s income, even though most location are not, such as both relocation areas on Arif Rahman Hakim Street. The consequence is some vendors returning to the road side or sidewalk.

The effort of minimizing any the changes of those street vendors to return to the side of the road to vend is by measuring the effectiveness of the street vendor’s relocation, targeted on these points: 1) identifying the street vendors characteristic, 2) measuring the effectiveness level of the previous relocation, and 3) formulate a location’s criteria which is suitable for the street vendors of Arif Rahman Hakim Street in order to improve the effectiveness of the relocation. This research is very beneficial for the government for its suggestion in urban area arrangement in accordance to urban spatial planning without disrupting the economic development of the informal sector.

2. Methods
This community service activity based research is going through these stages of:

2.1. The stages of literature study
Literature study is done to understanding the related theories of informal sector and street vendor topic. Thus, the affected variables and sub variables of the determination of Street Vendor Center’s location are obtained as seen in Table 1 and the variable of relocation effectiveness is shown in Table 2.

2.2. Stages of data collection
The data collection process divided to secondary and primary data. The secondary data mentioned is an implementation report of the street vendor relocation and the relocation planning, especially the street vendors along Arif Rahman Street. The primary data is the observation result and in-depth interviews with vendors and related agencies which is done in the research location. Meanwhile, for the samples, there are 4 (four) location as the research’s observation object, they are:

a. Street Vendor Center cluster of Deles (A),
b. Street Vendor Center cluster at Convention Hall (B),
c. Street Vendor Center cluster next to BRI building (C), and
d. Street Vendor Center cluster at Wisata Kampus.
Table 1. Variable and Sub-Variable in determining Vendor Street Center’s Location

| No | Variable and Sub-Variable                                      | Code |
|----|----------------------------------------------------------------|------|
| 1  | Strategic Location                                            |      |
|    | - near the people’s activity                                 | A1   |
|    | - near the bus or railway station                            | A2   |
|    | - near the housing                                           | A3   |
|    | - near the settlements                                       | A4   |
|    | - near the public transportation                             | A5   |
|    | - near the activity center, CBD, etc.                        | A6   |
| 2  | Cluster Area                                                 | B    |
| 3  | Visibility                                                   | C    |
| 4  | Availability of parking lot                                 | D    |
| 5  | Availability of electricity                                  | E    |
| 6  | Availability of clean water                                  | F    |
| 7  | Availability of drainage system                              | G    |
| 8  | Availability of trash container                              | H    |
| 9  | Availability of a place to pray                             | I    |
| 10 | Availability of toilet                                      | J    |
| 11 | Availability of menu                                        | K    |
| 12 | Availability of tables and chairs                            | L    |
| 13 | Availability of wash basin                                  | M    |
| 14 | Facility of goods storage                                   | N    |
| 15 | Facility of centered cashier                                 | O    |
| 16 | Queue Number                                                 | P    |
| 17 | Fire extinguishers tool                                     | Q    |
| 18 | Stands Pattern/Layout inside the Vendors Center              | R    |

Table 2. Indicator and Variable in Measuring Relocation Effectiveness

| No  | Variable and Sub-Variable                  |
|-----|-------------------------------------------|
| Adaptation Indicators                      |  |
| 1   | Sales and Marketing Adaptation            |
| 2   | Way of Sell Adaptation                    |
| 3   | New Place Adaptation                      |
| 4   | New Costumer Adaptation                   |
| 5   | Way of Serving the New Customer Adaptation|
| 6   | New Way of Cooking Adaptation             |
| Productivity Indicators                    |  |
| 1   | Sales Improvement                         |
| 2   | Profit                                    |
| 3   | Number of Customer                        |
| 4   | Expenses                                  |
| 5   | Number of Goods                           |
| 6   | Number of Variation                       |
| 7   | Goods Inovation                           |
| 8   | Ease of Shopping Raw Materials            |
| Job Satisfactory Indicators                |  |
| 1   | Chances of Improving                      |
### Table

| No  | Variable and Sub-Variable                  |
|-----|-------------------------------------------|
| 2   | Security                                  |
| 3   | Incomes Improvement                       |
| 4   | Customer Improvement                      |
| 5   | Improvement of Sales Environment Quality  |
| 6   | Job Daily Condition                       |
| 7   | Facilities                                |

#### 2.3. The stage of analysis

The stage of analysis is based on the divided of the research targets, that including:

i. **First Target:** Identification of the area of relocation’s characteristic using quantitative descriptive analysis,

ii. **Second Target:** Identification of the street vendor’s characteristic through in-depth interview which is analysed using content analysis,

iii. **Third Target:** Measurement of the effectiveness level of street vendor’s relocation through in-depth interviews which analysed with content analysis, and

iv. **Fourth Target:** Formula of the location’s criteria which is suitable for street vendors from Arif Rahman Hakim Street in order to improve the relocation’s effectiveness using descriptive comparative.

Those analysis stages are expected in resulting a recommendation of street vendor’s location criteria which is in accordance to the area’s spatial planning, aiming on the improvement of street vendor’s relocation’s effectiveness level.

#### 3. Results and discussion

##### 3.1. First target: identification of the relocation area’s characteristic

Based on observation object, from 4 (four) locations there is only one location which is managed by the government and built on government’s land. It is the Street Vendor Center of Convention Hall cluster. However, all the existed Street Vendor Center is under Dinas Koperasi’s management. Based on the analysis result, it was obtained that there are characteristics of a street vendor’s relocation area which is seen from variables and sub variables, derived from the determining process of Street Vendor Center’s location which are shown in all four centers. The characteristics are:

a. The building has the fore and aft, out spread, and in the form of U letter,

b. The location is around the resident’s activity places, far from transportation station, reachable from the vendor’s settlement, near from the residents’ settlement, accessible by public transportation, and close to public activities centers,

c. The building expans around105 - 1200 m²,

d. The building is highly visible,

e. The cluster provides parking lot,

f. The building supported by electricity and clean water,

g. The building does not have internal drainage channel,

h. The building has dump stall, musholla, and toilet,

i. The cluster does not have communal menu list,

j. The building provided with tables and chairs,

k. The cluster does not including centered cashier and queue number, also

l. Only one cluster has APAR (lightweight fire extinguisher)

##### 3.2. Second target: identification of street vendor center

According to the survey’s result, it is occurred that:

a. The vendors dominated by 40 years old and up people,

b. Most of the vendors are citizen of Surabaya,
c. The vendors are residing around Arif Rahman Hakim Street, such as Gebang, Keputih, Klampis, and Semolowaru areas,

d. The business ownership are personal, not franchise,

e. Most of the vendor’s latest educational degree are high school,

f. In majority, vendors sell foods and beverages, also

g. Vendors earn more than 300,000 rupiahs a day.

3.3. Third target: measurement of the relocation effectiveness level of the street vendors center

The measurement take on by indicator’s scoring about adaptation, productivity, and job satisfactory, also from every variable on table 2. From the scoring result on table 3, it can be seen that in every locations, the effectiveness value of every variables are different.

For adaptation variable, street vendor center near BRI building is the most effective center with 3.96 score from 1 to 5 scale. As explained by respondent of the survey, this street vendor center’s vendors are able to adapt in a new place by adapting to a new selling system, new trading method, and new service ways.

In productivity variable, Deles Street Vendor Center and Street Vendor Center next to BRI building have the best productivity level compared to the other two. The productivity values of each are 3.39 and 3.38. The most distinguished values are profit increasing, customer number increasing, and the easiness of purchasing raw materials. Meanwhile, other street vendor centers are unable to increase their productivity.

The last variable is related to job satisfactory. For this variable, Street Vendor Center at Convention Hall has the best value of 4.08 from 5 scale. The vendors of this center consider that their relocation resulting in the increasing of safety working, opportunity to develop, also better environment and facilities quality. Other street vendor centers reach 3.5 or above in this variable.

Overall, the highest effectiveness level is gained by Deles Street Vendor Center with the average value of 3.6. The Street Vendor Center next to BRI building reaches 3.59. And for both of Street Vendor Center at Convention Hall and at Wisata Kampus get the average values of 3.44 and 3.31.
Table 3. Scoring Result of the Relocation Effectiveness Assessment

| Indicator                  | Variable                        | Deles  | Convention Hall | Nest to BRI | Wisata Kampus | Total NRV | Total NRI | Total Average |
|----------------------------|---------------------------------|--------|-----------------|-------------|---------------|------------|------------|---------------|
| Adaptation                 |                                 | NRV    | NRI             | NRV         | NRI           | NRV        | NRI        |               |
| Sales and Marketing Adaptation | 3.59                          | 3.38   | 4               | 2.5         | 3.53          |            |            |               |
| Way of Sell Adaptation     | 3.64                           | 3.13   | 4               | 2.5         | 3.5           |            |            |               |
| New Place Adaptation       | 3.82                           | 3.38   | 3.5             | 2.5         | 3.61          |            |            |               |
| New Costumer Adaptation    | 3.68                           | 3.75   | 3.75            | 4           | 3.25          | 3.72       |            | 3.64          |
| Way of Serving the New Customer Adaptation | 3.68 | 4       | 4.25           | 4           | 3.83          |            |            |               |
| New Way of Cooking Adaptation | 3.68                         | 4.38   | 4.25            | 4           | 3.92          |            |            |               |
| Productivity               |                                 | NRV    | NRI             | NRV         | NRI           | NRV        | NRI        |               |
| Sales Improvement          | 3.14                           | 2.38   | 3.25            | 3           | 2.97          |            |            |               |
| Profit                     | 3.05                           | 2.28   | 3.5             | 3           | 2.94          |            |            |               |
| Number of Customer         | 3.27                           | 2.38   | 3.75            | 3           | 3.11          |            |            |               |
| Expenses                   | 3.27                           | 2.38   | 3               | 2.5         | 3             |            |            |               |
| Number of Goods            | 3.36                           | 2.38   | 3.5             | 3.5         | 3.17          |            |            |               |
| Number of Variation        | 3.64                           | 2.5    | 3               | 3.5         | 3.31          |            |            |               |
| Goods Innovation           | 3.68                           | 2.75   | 3.25            | 3.5         | 3.42          |            |            |               |
| Ease of Shopping Raw Materials | 3.68                      | 3.5    | 3.75            | 3.5         | 3.64          |            |            |               |
| Job Satisfactory           |                                 | NRV    | NRI             | NRV         | NRI           | NRV        | NRI        |               |
| Chances of Improving       | 3.5                            | 2.63   | 3.75            | 2.5         | 3.28          |            |            |               |
| Security                   | 3.32                           | 4.88   | 3               | 4.5         | 3.69          |            |            |               |
| Customer Improvement       | 3.91                           | 3.88   | 4.08            | 3.5         | 3.86          |            |            |               |
| Improvement of Sales       | 4                              | 4.13   | 3.75            | 4           | 3.50          |            |            |               |
| Environment Quality        | 4                              | 4.13   | 3.75            | 4           | 4             |            |            |               |
| Facilities                 | 4.09                           | 4.88   | 3.25            | 2.5         | 4.08          |            |            |               |
| Average of Each Cluster NRI | 3.61                          | 3.44   | 3.59            | 3.31        |               |            |            |               |

Description:
NRV = Average Value of Variabel
NRI = Average Value of Indicator
3.4. Fourth target: determining the suitable location for the street vendors

In this research target, criteria of a location which is suitable for street vendors at Arif Rahman Hakim Street will be formulated. The determination of the criteria is done by comparing the result of the first, second, and third research targets which are shown on table 3 and table 4. The comparison between effectiveness value and location characteristic are:

a. It is occurred that the highest value as many as 17 variables are accomplished by the location’s characteristics of Deles Street Vendor Center. If it is analyzed by the relocation effectiveness value, it is shown that the adaptation value reach 3.68, which is the most dominant among other effectiveness values. Therefor, in that particular location of street vendor center which has adequate facilities, the vendors are very adaptable,

b. The comparison result of the Street Vendor Center next to BRI building has 16 achieved variables with the most dominant effectiveness adaptation value of 3.95. It is proven that the vendors of this center is very adaptable,

c. The Street Vendor Center cluster at Convention Hall fulfills about 15 variables with the most dominant effectiveness adaptation value of 3.67. In this center with adequate facilities, the vendors are adaptable, and

d. The lowest effectiveness adaptation level of Street Vendor Center with the most dominant value of 3.28 is gained by Street Vendor Center of Wisata Kampus. This center also has adequate facility with satisfy vendors.

As for the comparison between effectiveness value and the street vendors characteristics are described below:

a. It is occurred that the vendors at Deles Street Vendor Center has most of the positive values, such as has a lot of vendors, moderate rent cost, high income, and has appropriate kiosk space, which resulting on the highest productivity value of 3.38 and job satisfactory value of 3.60,

b. The cluster of Street Vendor Center next to BRI building has only few vendors, high renting price, moderate income, which give 3.37 score for the high productivity value and 3.46 for the job satisfactory value,

c. With low productivity value of 2.57 and the highest job satisfactory value of 3.64, Street Vendor Center at Convention Hall has the most vendors with the moderate income, and

d. Fewer vendor numbers with the highest income and the highest rent cost, the Street Vendor Center at Wisata Kampus get moderate productivity value of 3.18 and 3.28 for moderate job satisfactory value.

The comparison between the effectiveness value and the spreading pattern/diagram are as follows:

a. It is occurred that the vendors at Deles Street Vendor Center has most of the positive values, such as has a lot of vendors, moderate rent cost, high income, and has appropriate kiosk space, which resulting on the highest productivity value of 3.38 and job satisfactory value of 3.60,

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d. Fewer vendor numbers with the highest income and the highest rent cost, the Street Vendor Center at Wisata Kampus get moderate productivity value of 3.18 and 3.28 for moderate job satisfactory value.

Based on the discussion above, it can be concluded that the location center of street vendors relocation must meet these following criteria:

- In order to improve the adaptation in the new street vendor’s center, then:
  - a. Have a strategic location
  - b. The new street vendors center must not far from the old location
c. Have a minimum space 3x3.5 meter square for each stand
d. Have a spacious stand for cooking

- **In order to improve the productivity of the vendors, then:**
  a. Have a maximum rental fee Rp 600.000,00 per month
  b. Pay the retribution for a maximum amount Rp 20.000,00 per month
  c. Have a LONG or CIRCULAR layout of vendors center
  d. Have many variations of be sold goods (foods, beverages, others)
  e. Have less than 30 vendors in one vendors center
  f. The new street vendors center must not far from the old location

- **In order to improve the job satisfactory, then:**
  a. Have adequate facilities
  b. Have adequate utilities
  c. Have a high visibility of the street vendors center’s building
  d. Have an independent street vendors center’s manager
  e. Have a clear and licenced street vendors center’s land

### 4. Conclusions
As the result of the analysis and the activities’ achievement target, it can be concluded that:

1) The characteristic of the relocation area in general are has the fore-and-halt building type, out spreaded, and in the form of U letter pattern, is near from strategic locations but far from transportation station, expanding around 105 - 1200 m², good visibility, has parking lot, has electricity and clean water access, and has some other facilities in the building. However, it maintained without internal drainage, without communal menu list, without central cashier, and only one cluster with APAR (a light-weight fire extinguisher).

2) The majority vendor’s characteristic are people on their 40’s or above, citizen of Surabaya, reside around Arif Rahman Hakim Street such as Gebang, Keputih, Klampis, and Semolowaru, has previous job as street vendors, own a personal vending non franchise business, with the latest educational degree of high school, vend food and beverages, and earn more than 300,000 rupiahs a day.

3) The relocation of street vendors along Arif Rahman Hakim Street is quite effective with the scoring value as high as 3.46 (1-5 scale), which can improve the vendor’s productivity by providing facilities for the Street Vendor Centers. Even though in detailed analysis, every centers need special adjustments and treatments which are different from one another and according to the relocation effectiveness value for every variables in the indicator, in order to improve the adaptation, productivity, and job satisfactory aspect.

4) The criteria that must be fulfilled in order to improve the adaptation in the new street vendor’s center are: have a strategic location, the new street vendors center must not far from the old location, have a minimum space 3x3.5 meter square for each stand, and have a spacious stand for cooking.

5) The criteria that must be fulfilled in order to improve the productivity of the vendors are: have a maximum rental fee Rp 600.000,00 per month, paying the retribution for a maximum amount Rp 20.000,00 per month, have a Long or Circular layout of vendors center, have many variations of be sold goods (foods, beverages, others), have less than 30 vendors in one vendors center and the new street vendors center must not far from the old location.

6) The criteria that must be fulfilled in order to improve the job satisfactory are: have adequate facilities, have adequate utilities, have a high visibility of the street vendors center’s building, have an independent street vendors center’s manager, and have a clear and licenced street vendors center’s land.

7) The necessary thing to do for street vendor’s relocation are:
- Carrying on the market research upon the street vendor’s location. This is the first step of determining the Street Vendor Center cluster location without affecting the vendor’s customers,
- Performing socialization and simulation activities for vendors, also actively communicate with the vendors. The obligated contents in the socialization, despite the regulation, the retribution cost, and provided facilities,
- Training the vendors after the relocation, thus the vendors are adapted to the new location, and
- Creating promotion medias about the new relocation centers to prevent losing customers and maintaining the vendor’s productivity.

The main challenges of utilization of those technologies are the security aspect of the technologies itself because the implementation of applications to increase a city’s adaptability will also increase in its vulnerability, because technologies, especially in form of computer systems, are prone to malicious attacks, i.e. from hackers and computer viruses. Therefore, implementation of new technologies in promoting a resilient city must be taken very cautiously.

This paper shows the possibility constructing a System dynamics-based flood modelling based on input both from raw data and 1D flood modelling. The visualization functionality of System dynamics should give an added value to the flood modelling practice, because planners and decision makers can evaluate the existing condition of flood hazard and generate scenarios to various possible conditions. Even though the 2D and 1D2D hydrologic modelling is not possible to be transformed into a System dynamics, the visualization of the water network can give a lot of advantages.

For our future work, we planned to construct a complete model of System dynamics-based flood modelling, based on the existing 1D flood models for a particular city. By constructing a multiple System dynamics-based flood modelling from various 1D flood, we hope that we can evaluate the accuracy of the flood modelling if it is constructed using a System dynamic approach. An integrated model of System dynamics and 1D flood modelling is also possible, that would bring a complete new approach in flood modelling for urban environment.

5. Recommendations
Based on the result of the research’s analysis, it can be recommended to the government that the effort of improving the effectiveness of the street vendor’s relocation in accordance to the spatial planning through:
- Direct involving of the vendors in determining the relocation place including facilities providance, reachable vendors, and accessibility for the customers. This recommendation is to anticipate any losing customers from vendor’s previous location also prevent the vendor’s to find other location outside the provided are by the goverment, in the worse scenario is returnal of the vendors to the previous location,
- The spreading pattern of the Street Vendor Center cluster built as in relocation area’s criteria, at least as shown in the following picture:
Maximize the number of the vendors and the variation of the to be sold goods, around 30 - 40 vendors with the facility of 3 x 3.5 meters standard kiosk which sell various foods and beverages.

Offers the standard rent cost around 15,000 - 20,000 rupiahs a day fo a kiosk, or 400,000 - 500,000 rupiahs a month,

Set the parking cost of 2,000 rupiahs for two wheelers and 5,000 rupiahs for four wheelers, to attract customers using affordable price, also

Street Vendor Center’s managers have targets of getting more visitors by profiding facilities as shown in the criteria table, maintaining the foods and baverage’s quantity, the facility’s cleanliness and, the security of the center’s area, also carry on the promotional activities.

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