Performance level of Kampung Cerdas concept using Importance-Performance Analysis (IPA) methods in Kampung Genteng Candirejo, Surabaya

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Abstract. Indonesian government is committed to manifest a sustainable city and compatible with the new agenda, which is the 2030 Agenda for Sustainable Development as stated in SDGs Goal 11. One of the strategies to complete sustainability in a city is implement smart city concept into the community level or known as Kampung Cerdas. Aligned with realisation of Surabaya Smart City program, supports from urban settlements area, especially kampung in Surabaya that represent locality and community characteristics of Surabaya city are very essential. Kampung Genteng Candirejo as an example that has focusing to develop smart people/community. This article aims to describe the factors that affect the development of smart city implementations in urban settlements and community of Kampung Genteng Candirejo Surabaya through several stages: (1) identify the characteristic of Kampung Cerdas in Kampung Genteng Candirejo urban settlements through observation and interviews (2) factor analysis and performance level in Kampung Genteng using Importance Performance Analysis (IPA) methods. The instrument that is essentially needed for this step is community assessment about performance and priority about their living environment that were collected by conducting the likert scale-questionnaires. The result represented through four quadrants of performance based on smart city dimension of Kampung Cerdas.

Keywords: smart city, IPA methods, kampung, Surabaya, sustainable development

1. Introduction

Kampung Cerdas concept is a local adoption for smart city concept (Rahmawati et al, 2017) that tried to describe smart city indicators locally by adapting the urban settlements or known as kampung in Surabaya city. Surabaya is one of the cities that applies smart city concept for its sustainable development. Awarded for several Smart City competitions or ratings such as in the 2011 Smart City Award by Warta Ekonomi, 2015 and 2017 by the Vice President, Jusuf Kalla; the predicate was obtained on the basis of 4 indicators, that is Smart Governance, Smart Economy, Smart Living, and Smart Environment. Surabaya also known for its potential for developing urban settlements with international achievements. However, there are not many policies that regulate such matters. This is an opportunity in the realization of the city of Surabaya towards Smart City through the field of urban settlements. The Surabaya city government aspires to make this city a smart, humane and ecologically sound city without neglecting local conditions. Local conditions mean the settlement or kampung in Surabaya. In That way, Surabaya has its own uniqueness in developing urban settlements. Silas (2012)
stated that the city of Surabaya was a city built by village agglomeration which continued to grow along with the times.

In line with realizing Surabaya Smart City, support from urban settlements is needed, including the city of Surabaya which represents the context of locality and characteristics of a city. Kampung has developed into an area that not only has a good environment, but also is able to empower their people. Surabaya has its own uniqueness for its Kampung. At present, the development of the Kampung has stepped on the potential and existence of sustainable settlements. This can be found in many Kampung in Surabaya, for example is Kampung Genteng with its strategic area which is located in the middle of the city, this village starts to maintain its existence amid the development of modernization of the city by making the kampung liveable. Kampung Genteng has succeeded in empowering and driving its economy through local innovations such as processing fruits into sweets, snacks and fruit drinks that are well-known and has high-demand in the market, the majority of which are driven by women in the Kampung Genteng (Utama, 2016), also its innovation in herbs into … so that kampung Genteng Candirejo also known as Kampung Herbal.

Based on the results of previous research, Kampung Genteng currently has several characteristics of Kampung Cerdas and has the potential to be developed through the concept of Kampung Cerdas. The measurement of the index conducted certainly has a difference between the measurement of the smart city index in the Kampung context. The development of Kampung Cerdas in Kampung Genteng still has various problems and shortcomings in terms of the concept of Kampung Cerdas through community perceptions. Therefore, we need a level of performance and priority for the Kampung Cerdas concept in Kampung Genteng.

2. Methods

![Figure 1. Research Methodology Flowchart](image)

This article aims to analyse the level of importance and performance based on the community towards the Kampung Cerdas concept in Kampung Genteng and determine the quadrant priority scale of Importance Performance Analysis (IPA). The use of the IPA method serves to find out which attributes are poor performance, which attributes must be maintained. From here, it can be determined the proposed improvement of important attributes but the performance is still poor. From this analysis the value of the expectation level is obtained and the value of the level of community interest that follows will be included in the development priority quadrant. The data was obtained from the Likert scale questionnaire which was distributed to 30 community tile Kampung Genteng. The sampling technique used is quota sampling. Observation and interviews were also conducted to reach the first stage of the process, that is to describe the characteristics of the Kampung Genteng Candirejo as Kampung Cerdas in Surabaya.
3. Result and discussion

The findings show that there are 22 performance level in Kampung Genteng Candirejo based on Kampung Cerdas indicators, that are have a gap between community expectations and reality as the following. The difference of the performance level is also strengthen by the characteristic that is formulated as the first stage of the article’s framework. This part of the article will discuss each stages’ results, that is the characteristics of Kampung Cerdas and the performance level of Kampung Cerdas in Kampung Genteng.

3.1 Kampung Genteng Candirejo and its Innovations (results of Stage 1)
There are several characteristics of Kampung Genteng which are group based on Kampung Cerdas dimension, among

a. Smart Governance
   Smart Governance or Government Participation like participation in problem solving, public and social services, transparent government, strategic policies and looking ahead (Giffinger, 2011), some smart governance has been implemented in the Kampung Genteng including :
   ➢ Online service have been implemented in Kampung Genteng
   ➢ Surabaya has an environment development program for kampung, like MDS (Merdeka dari Sampah) and Green and Clean

![Figure 2. Urban settlement development program from governement](image)

b. Smart People
   Smart People or social and individual capital is like individual quality, ability in life in a sustainable, cultural and local customs, flexible, creative, open minded community and participate (Giffinger, 2011), some smart people has been implemented in the Kampung Genteng including :
   ➢ The Community is very enthusias with every development program, and also participate with program

c. Smart Living
   Smart Living or quality of residence as though cultural facilities, health conditions, individual safety, quality of housing, facilities education, tourist attractions, social kinship (Giffinger, 2011) some smart living has been implemented in the Kampung Genteng including :
   ➢ Kampung genteng has a integrated health program for elderly people and toddler.
   ➢ For convenience and safety, Kampung Genteng have smoking area, playground and gathering area
d. Smart Mobility

Smart Mobility or transportation and technology as though accessibility local, national and international; infrastructure information technology; sustainable, innovative and a safety transportation (Giffinger, 2011) some smart mobility has been implemented in the Kampung Genteng including:

➢ Kampung Genteng have been located in city center, we can reach a accessibility and public transportation

e. Smart Environment

Smart Environment or natural resources as though environmental conditions, pollution, security, and resource management sustainable (Giffinger, 2011) some smart environment has been implemented in the Kampung Genteng including:

➢ Kampung Genteng have environment program like 3R, IPAL, and hydroponics

f. Smart Economy

Smart Economy or competition as though high innovation, presence entrepreneurship, economic image and sales quality, productivity, market affordability, towards internationality, and capability adapt to the times (Giffinger, 2011) some smart economy has been implemented in the Kampung Genteng including:

➢ Kampung Genteng has many small business like herbal drink and traditional snack
➢ Kampung Genteng opens Kampung Smart Eco tourism

Figure 3. Health program for elderly people and toddler in Kampung Genteng

Figure 4. The environment program in Kampung Genteng
3.2 Performance Level of Kampung Cerdas in Kampung Genteng (results of Stage 2)
Importance-performance analysis (IPA) is one way to determine the performance of a characteristic of an issue (Martilla & James, 1977). The data was obtained from the Likert scale questionnaire which was distributed to 30 community in Kampung Genteng. From the results of the calculation of the difference in average of the importance and the performance it is concluded that the satisfaction score is still lacking. There is a gap between community expectations and reality as the following table 1.

| Variable                          | V | Reality (X) | Expectation (Y) | GAP  |
|----------------------------------|---|-------------|-----------------|------|
| Online Service                   | 1 | 3.97        | 4.47            | -0.57|
| Strategic Policy                 | 2 | 4.40        | 4.83            | -0.43|
| Digital Infrastructure           | 3 | 3.37        | 4.47            | -1.10|
| UKM Innovation                   | 4 | 4.03        | 4.87            | -0.83|
| Quality of Production            | 5 | 4.33        | 4.63            | -0.30|
| Affordability of market          | 6 | 4.07        | 4.50            | -0.43|
| Usage Internet of Business       | 7 | 3.40        | 4.47            | -1.07|
| Community Education              | 8 | 4.37        | 4.67            | -0.30|
| Community Participation          | 9 | 4.50        | 4.90            | -0.40|
| Society and Technology           | 10| 3.67        | 4.77            | -1.10|
| Society and Policy               | 11| 3.60        | 4.60            | -1.00|
| Community Health                 | 12| 4.20        | 4.77            | -0.57|
| Security                         | 13| 4.13        | 4.93            | -0.80|
| Utilities and Facilities         | 14| 3.90        | 4.77            | -0.87|
| Condition of the building        | 15| 3.23        | 4.57            | -1.33|
| Disaster warning                 | 16| 3.73        | 4.70            | -0.97|
| Recycling Management             | 17| 4.03        | 4.43            | -0.40|
| Recycling with Technology        | 18| 4.17        | 4.33            | -0.17|
| Technology Provision             | 19| 3.30        | 4.57            | -1.30|
| Internal Communication           | 20| 4.20        | 4.63            | -0.43|
| Accessibility of transportation   | 21| 4.27        | 4.50            | -0.23|
The results of the mapping on the Cartesian diagram are as follows:

![Cartesian Diagram](image)

**Figure 6.** The IPA results of the mapping on the Cartesian diagram

The quadrant shows the location of the priority variable priority. The X axis is a community assessment of the reality number variable *Kampung Cerdas* concept. For Y axis is the level of community expectations for the variable *Kampung Cerdas* concept. The quadrant results are grouped as follows:

- **Quadrant A (High Priority)**
  Quadrant A is the quadrant that has high priority or first to be repaired. In this quadrant there are variables that have a high expectation value (Y axis) but a reality value (X axis) that is low. Variables included in this quadrant are Variables 10 (Society and Technology), Variables 16 (Disaster Warning), Variables 14 (Utilities and Facilities).

- **Quadrant B (Maintain Achievement)**
  The variables in this quadrant have high expectation values (Y axis) and high reality values (X axis) too. It means a balance between reality and expectations of variable performance. The variables included in this quadrant are Variable 2 (Strategic Policy), Variable 4 (SME Innovation), Variable 8 (Community Education), Variable 9 (Community Participation), Variable 12 (Health), Variable 13 (Security).

- **Quadrant C (Low Priority)**
  Quadrant C is a quadrant that has low expectations (Y axis) and a reality (X axis) that is low. This variable needs to be improved but has a low priority. The variables included in C quadrant are Variable 3 (Digital Infrastructure), Variable 7 (Internet use), Variable 11 (Society and policy), Variable 15 (Building Condition), Variable 19 (Provision of Technology).

- **Quadrant D (Excessive)**
  Quadrant D is a quadrant that has low expectations (Y axis) but has a high level of performance or is done very well by the community. Creating variables in this quadrant is a variable that has high performance (X-axis) to excessive but still needs to be a distinctive feature of the study area. The variables included in this quadrant are Variable 20 (Internal Communication), Variables 5 (Quality of Production), Variables 21 (Accessibility of transportation), Variables 6 (Affordability of Markets), Variables 1 (Online Services), Variables 17 (Management of Recycling), Variable 18 (Management with technology).

The influential variables describe the character of each, which needs to be adjusted to the development of urban villages according to the character of an area. From the results of the quadrant, it can be seen that the superior variables of Kampung Genteng, based on the Smart City dimension, include the variable management of recycling and environmental management with technology which
is modified by the smart environment. In addition, the highest reality figures are owned by public education, community participation, and public health, which are all included in the dimensions of smart living.

4. Conclusion
Kampung Cerdas has reformulate the criteria of smart city concept into local condition which consists of smart living, smart people, smart government, smart environment, smart mobility, and smart economy. This article has enrich the previous research findings into a more specific and actual conditions through an observation and analysis of a kampung that located strategically in the city of Surabaya. From the results of the performance analysis, there are 4 groups of variables based on priority. The variables that require a strategy in its development are the variables that are in the top priority quadrant including Society and Technology, Disaster Warning, Utilities and Facilities. Kampung genteng also has superior variables including Strategic Policy, UKM Innovation, Community Education, Community Participation, Health, Security. From these results it is hoped that the government and village officials can develop Kampung Genteng with strategies according to determined priorities. Hopefully by prioritizing the characteristics of Kampung Cerdas it could strategically reach the sustainable urban settlements as the part of sustainable cities and communities as stated in the SDG Goal 11.

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