

The Assessment of Happiness Index at Kampung Arab in Malang City

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Abstract

The complexity of problems in the kampung-kota are reasonably wide from a pragmatic and practical to a more conceptual, thus the sustainable development concept of kampung-kota needs to be reviewed. One of the method for assessing kampung-kota in adapting sustainable development concept is by measuring public welfare using happiness index. On that basis, the happiness index of Kampung Arab in Malang is measured using the approach of Indonesian Central Body of Statistic (BPS) with its 10 aspects of life and the approach based on fuzzy logic. The research aims to assess the happiness index and to recommend development which may improve community's happiness. The rating results of each aspects shows the rates of health condition at 98,71%, education and skills aspect at 72,55%, profession aspect at 75,57%, household income at 65,50%, security aspect at 69,35%, social relationship aspect at 91,36%, leisure time availability aspect at 91,65%, house condition aspect at 80,44%, the state of environment at 65,86% and the harmonious family aspect at 99,54%. One of the recommendations is that the strength in social relationships aspect in Kampung Arab can be used as the basic in the increase of other aspects trough empowering community groups and established organization.

Keywords: kampung, happiness index, community development

INTRODUCTION

Since long the state policy only concentrates on the economic field, but now it directed to improve the welfare of the people which includes health and happiness [1].

Life satisfaction is a measurement that describes the level of happiness, while happiness also measures the welfare because at a higher level, happiness is a reflection of living condition and the level of prosperity that has been achieved [2].

The happiness index is a composite index which composed by the level of satisfaction towards 10 essential life aspects. The ten aspects of life substantially and simultaneously reflect the level of happiness which includes satisfaction on health, education, employment, household income, family harmony, leisure time, social relations, housing condition and assets, environmental conditions, and security conditions [3].

Urban village is a settlement that has a dominant function in Indonesia as an informal housing for the poor. Urban village comes with

its problems, often unable to match the tempo of urban modernization resulting in stagnation that causes problems in urban village. Currently, more than 50% of Indonesians live in urban areas and most urban communities live in villages, so villages dominate up to 70% of land use from major cities in Indonesia [4].

The problems of urban villages are complex, ranging from practical pragmatic areas to more conceptual issues so urban villages need to adapt the concept of sustainable development in order to keep functioning without problems [5].

This study aims to assess the happiness and direct the development of happiness level of Kampung Arab community in Malang City.

MATERIAL AND METHOD

This study used mixed method which combines quantitative and qualitative research design. The quantitative aspect was done on the assessment of happiness index of Kampung Arab and continued with qualitative aspect in formulating descriptive development directives based on literature study and secondary survey to related institution. (Calibri 10 Justify)

Data Collection

The methods used in collecting primary data is interview and questionnaire method. The interview carried out by using

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guidelines/references on information that needed for this study, which adjusted with Happiness Index survey guidelines by Badan Pusat Statistika (BPS). The research questionnaire was adopted from BPS' Happiness Index survey guidelines which has been adjusted before.

Secondary data were collected using literature studies and related organizations or institutions. Secondary data includes previous research on Happiness Index calculation using BPS as the reference and data of urban village quality improvement programs that have been conducted in the study area.

Analysis Method

A. Happiness Index

The happiness index is a weighted index which includes indicators of individual satisfaction towards the ten essential variables. Happiness index calculation refers to the framework of Badan Pusat Statistik as follows:

$$IK = \sum_j \sum_i \frac{bi \cdot Xij}{n}$$

where:

bi = the weight value for the i-variable, as the loading factor derived from the factor analysis method

Xij = the value of the i-th variable for j-household

Xij = the value of satisfaction of each individual in every aspect of happiness, which is converted on a scale of 0-100 with the following formula:

$$IKH = \frac{(i-1)x 100}{range}$$

n = number of samples/individuals

IK = happiness index

On a scale of 0-100, if the scaled index 0-100 is divided into four groups, which are 0-25.00 (unhappy), 25.01-50.00 (less happy), 50.01-75.00 (happy) and 75.01-100.00 (very happy) [3].

B. Fuzzy Logic

Consisting of three phases, namely fuzzification process, inference system (rule base), and defuzzification process. In determining the membership set of four physical sustainability factor and the level of physical

sustainability, the fuzzification process will use up, down, and triangle linear membership functions. The linear curve is used because the sustainability level is expected to change up and down linearly [6] [7].

The linear membership function goes up using the formula:

$$\mu[x] \begin{cases} 0; & x \leq a \\ (x - a)/(b - a) & a \leq x \leq b \\ 1; & x \geq b \end{cases}$$

X = membership value

a = lower limit value

b = upper limit value

While the linear membership function is down using the formula:

$$\mu[x] \begin{cases} 0; & x \leq a \\ (b - x)/(b - a) & a \leq x \leq b \\ 0; & x \geq b \end{cases}$$

X = membership value

a = lower limit value

b = upper limit value

The membership function of the triangle curve is a combination of linear membership functions up and down (Figure 1.), The membership function of the triangle curve use the formula:

$$\mu[x] \begin{cases} 0; & x \leq a \text{ atau } x \geq c \\ (x - a)/(b - a) & a \leq x \leq b \\ (b - x)/(c - b) & b \leq x \leq c \end{cases}$$

X = membership value

a = lower limit value

b = upper limit value

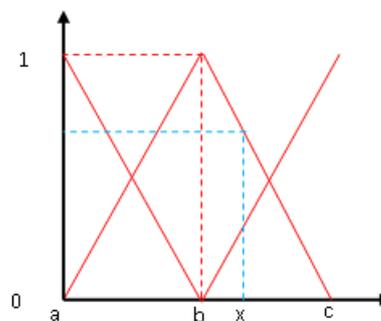


Figure 1. FLL Triangle Curve

RESULT AND DISCUSSION (Calibri 10 Bold, Left, Capslock)

General Description of Kampung Arab

A. Health

Health condition of a village is seen from public health complaints and whether each person in the village have health insurance or not. The people of RW 10 Kampung Arab Malang City who have health complaints such as fever, cough, cold, asthma, diarrhea, headache, toothache during the last one month are 50% of the whole community, so the other 50% have no health complaints.

The percentage of Health Insurance Ownership in RW 10 of Kampung Arab is 64% in the form of BPJS while 36% of them does not have health insurance, this is because they assume health insurance is not useful during emergency. The percentages can be seen in **Table 1**.

Table 1. Health Percentage

Sub Variable	Percentage	
	Have	Do Not Have
Health Compaints	50%	50%
Health Insurance	64%	36%

B. Education

The educational level of RW 10 people of Kampung Arab are 53% at the level of SD/SMPS/MTs, the SMA/SMK at the level of 37%, and 10% at the level of D3/S1. The effort to increase the knowledge of the community is rare with the intensity of 0-1 times a month with a percentage of 68% while the intensity of 2 times a month by 32%, more details can be seen in **Table 2**.

Table 2. Education Percentage

Sub Variable	Percentage		
	SD/SMP	SMA/SMK	D3/S1
Level of Education	53%	37%	10%
Efforts to Improve Knowledge	Rarely	Often	
	68%	32%	

C. Job

The type of job of RW 10 people in Kampung Arab which belongs to medium criteria is in the field of sales and services with the percentage of 69%, this is because most of them sell Arabic cuisines such as Maryam Bread, Samosa, et. In their home or sold online. While the other type of job belongs to a low status of 13% and high

status of 18%. The percentages can be seen in **Table 3**.

D. Income

The income of most people of RW 10 in Kampung Arab belongs to the medium criteria with the range of Rp.1.500.000 – Rp.2.500.000 as the monthly income with a percentage of 66%, low group of 18%, and high group of 16%. The percentages can be seen in **Table 3**.

Table 3. Percentage of Job and Income

Sub Variable	Percentage		
	Low	Medium	High
Job	13%	69%	18%
Income	18%	66%	16%

E. Security

The crime intensity in RW 10 Kampung Arab is low because most respondents stated that there has been no crime in the last month with a percentage of 47%.

F. Social Relations

Kampung Arab villagers with a percentage of 47% follows 5 to 6 organizations in their neighborhood. While 45% belongs to low criteria by following 2 to 4 organizations, and people who follow 7 to 9 organizations are only 8%.

The frequency of the community member following the activities held by the organization is often with intensity of 2 times a month by 50%. The percentage can be seen in **Table 4**.

G. Spare Time Availability

The availability of spare time among the villagers of Kampung Arab is low with the amount of free time of 3-10 hours a week by 45%.

Table 4. Percentage of Job, Income dan Availability of Spare Time

Sub Variable	Percentage		
	Low	Medium	High
Participation in Organization	45%	47%	8%
Spare Time Availability	45%	29%	26%
Intensity of Following Organization Activities	Rarely	Often	Always
	39%	50%	11%

spare time used to gather with neighbors and family. The percentage of spare time availability of Kampung Arab villagers can be seen in **Table 4**.

H. Home and Assets Condition

The ownership of residences mostly concluded to high percentage of 53%. This is because most of the citizens residence belongs to themselves or the property of the parents.

The availability of own defecating place with 58% and the facility used for drinking water is tap water, according to citizens that the water quality is quite well made drinking water with a percentage of 84%. Percentage can be seen in **Table 5**.

Tabel 5. The Percentage of Home and Assests Condition

Subvariabel	Percentage		
	Low	Moderate	High
Residence Ownership Status	8%	39%	53%
Defecating Place Availability	Public	Personal	
	68%	32%	
Drinking Water Facility	Moderate	High	
	84%	16%	

I. The State of Environment

The state of the environment of the Kampung Arab views from three aspects, namely the quality of groundwater, air quality and intensity of disaster. Water quality land belongs to good level by percentage of 66%, the air belongs to the healty air quality with percentage of 71% and the intensity of the disaster almost never occur in a year. The disaster occurred just as flood if the water channel clogged in rainy season. Percentage of ground water quality, air quality and the intensity if the disaster can be seen in **Table 6**.

Tabel 6. State of Environment Percentage

Subvariable	Percentage	
	Baik	Tidak Baik
Ground Water Quality	66%	34%
Air Quality	Buruk	Sehat
	29%	71%
Intensity of Disaster	Ya	Tidak
	37%	63%

J. Family Harmoni

Family harmony valued by two aspects, namely the intensity to meet family and the intensity of activities with family. Most of Kampung Arab people meets their family

everyday with percentage 58% and intensity of activities with family belongs to rarely (1 time a week) with a percentage of 69%. Percentage can be seen in **Table 7**.

Tabel 7. Family Harmony Percentage

Subvariable	Presentase		
	Once a month	Once a week	Every
Family Meeting Intensity	29%	13%	58%
Family Gathering Intensity	Rare	Often	Always
	69%	18%	13%

Kampung Arab Happendes Level

A. Determination of Loading Factor

The calculation of the happiness index according to BPS determined the weighting of values of each variable based on the value of loading factor resulting from factor analysis method. The loading factor value of factor analysis of the Kampung Terapi can be seen in **Table 8**.

Tabel 8. Loading Factor Value

No	Variable	Component				Load Factor
		1	2	3	4	
1	Health Conditions	0.07	0.60	0.29	0.51	1.480
2	Education and Skills	0.38	0.24	0.33	0.18	1.147
3	Job	0.92	0.18	0.05	0.00	1.174
4	Household Income	0.89	0.27	0.05	0.03	1.261
5	Security Conditions	0.21	0.08	0.87	0.02	1.189
6	Social Relations	0.34	0.28	0.06	0.75	1.445
7	Availability of spare time	0.48	0.31	0.17	0.40	1.380
8	Home and Assests Conditions	0.23	0.57	0.32	0.07	1.211
9	Environmental Circumstances	0.42	0.53	0.04	0.11	1.124

No	Variable	Component				Load Factor
		1	2	3	4	
10	Family Harmon y	0.28	0.53	0.63	0.09	1.553

If viewed from a various percentage produced then the total value from the various is 56.52% which means that the four components that formed can already represent the entire variable index of happiness as more than 50% so that the loading factor of each variable are also calculated from four factors are formed.

B. Calculation of The Happiness Index

Happiness index is an index that measured in weighted and include individual satisfaction indicators against the ten essential variables. Happiness index calculation refers to a framework of Badan Pusat Statistik, namely:

$$IK_{kampung} = \sum_j \sum_i \frac{b_i \cdot X_{ij}}{n}$$

The result of calculation of Kampung Arab happiness index fitting the framework for the calculation of the BPS can be seen in **Table 9**.

Tabel 9. Kampung Arab Happiness Index

	Variabel	Nilai Indeks Kebahagiaan
1	Health Conditions	98.71%
2	Education and Skills	72.55%
3	Job	75.57%
4	Household Income	65.50%
5	Security Conditions	69.35%
6	Social Relations	91.36%
7	Availability of spare rime	91.65%
8	Home and Assests Conditions	80.44%
9	Environmental Circumstances	65.86%
10	Family Harmony	99.54%

The result of calculation of happiness index according to the CPM suggests that every aspect of happiness will have a magnitude of different contribution towards the level of happiness of each individual. Three aspects that have biggest contribution to happiness index of Kampung Arab i.e. the harmony of family 99.54%, 98% health conditions and the availability of spare time 91.65%. The relationship between the residents of the dominant arab citizens is very powerful, because it considers the relationship of brotherhood of fellow Muslims is very strong that the harmony of family intertwined with strong religious activities in the Arab media to strengthen relationships with family and other residents.

Fuzzy Logic Analysis

A. Fuzzikasi Aspect of Happiness

Aspects of happiness will be assessed using three membership i.e. μ [unhappy], μ [less happy], [happy] μ , μ [so happy]. The set membership μ [unhappy] will use the equations of linear curves down, set membership μ [so happy] will use the equations of linear curve going up, whereas the set membership μ [less happily] and μ [happy] will use the equation of the curve of the triangle. Determination of membership tailored to the set of name normalization results assessment of each aspect can be seen in **Table 10**.

Tabel 10. The Function of each Membership Sustainable Factor

Happiness Aspect	Membership Aspect
Unhappy	0-25,00
Less Happy	25,01-50,00
Happy	50,01-75,00
Very Happy	75,01-100

B. Deffuzion of Happiness Level of Kampung Arab

Fuzzy analysis results that are still in the form of composition of fuzzy rules will then be changed back in the form of crisp numbers so it has the desired value. Defuzzifikasi process will use the rules of the centroid. The rules of the centroid were used because it illustrates the distribution of the overall value of the composition of fuzzy faktor-faktornya evenly through the determination of the value of the center point

Kampung Arab deffuzion process in the application of MATLAB can be seen in **Figure 2**. The result of the assessment of the happiness level of Kampung Arab is happy with the value deffuzion 0.51.

The Development Direction of Kampung Kota

In increasing the level of welfare of the community kampung kota required the hometown development strategies from various aspects, namely economic, social aspects and the environment. This is necessary in order to support the development of sustainability which also pay attention to these three aspects of life. One of the measurements of the levels of well-being can be seen from the level of happiness of the Kampong terjabarkan on ten variables level of happiness, namely health, education, employment, income, security, social

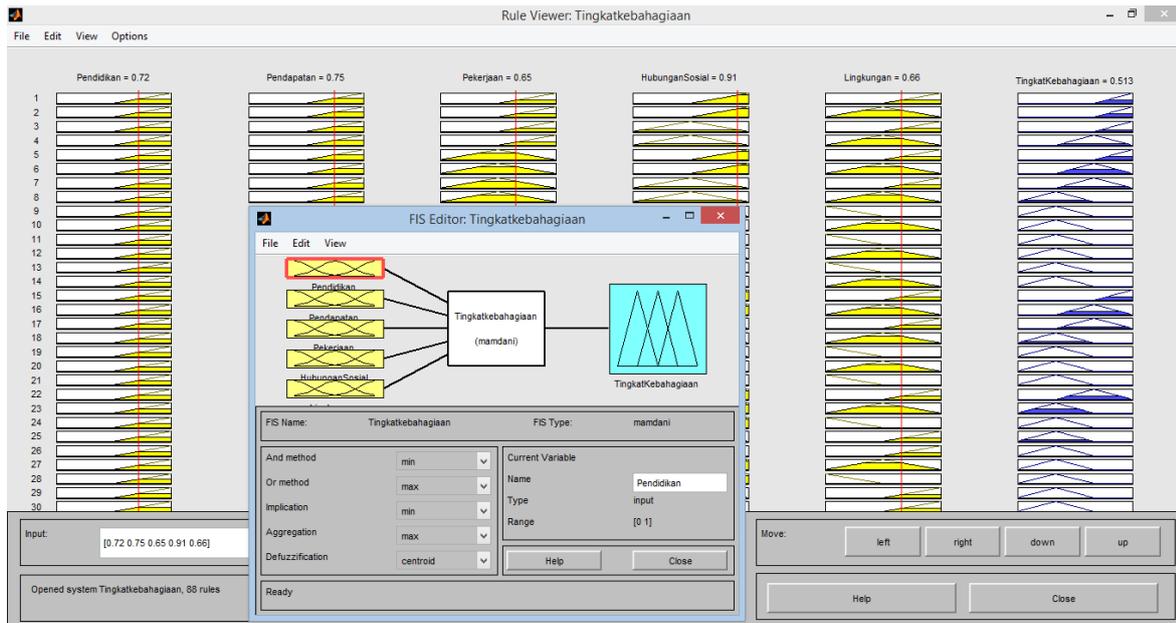


Figure 2. Defuzzification Kampung Arab

relationships, the availability of spare time, the condition of the home and assets, the State of the environment, and family harmony.

Malang has implemented sustainable development in the development of the town so it has a lot of Kampung Kota that implement a sustainable development strategy. Sukun village is one of the best environmental management practice in the city of Malang.

On November 4, 2012, the village was the location of the visit of the Minister of the environment Balthasar Kambuaya. In September 2011, Sukun visits one BKM from Ticino who received intervention program PLPBK in 2010. One of the pilot's hometown of Malang is kampung terapi located in RW 3 Sukun Village, Sukun Subdistrict. The region of RW 3 consists of 8 RT with a total of 350 FAMILIES, this area has a number of nicknames, among others, Kampung Baru, Kampung Contong and Kampung Terapi.

With various achievements have been accomplished in kampung Sukun into a best practice on the environmental, economic and social, RW 3 Kelurahan Sukun referable to other Kampung Kota want to improve the quality of kampung kota.

The succes of Kampung Sukun management is due to there are clear and detailed development programs in the social, economic and

enviromental aspects. Kampung Sukun programs can be seen in Table 11.

Tabel 11. Program of Kampung Sukun

Variable	Program
Education	1. Library
	2. Socialization of handicraft innovation
Economic	1. Manufacture of recycled clothes
	2. Composter
Social	1. Dasar Wisma RT
	2. PKK
	3. Tahlil
	4. Fashion show of recycled clothes
Enviromental	1. Reduce, reuse and recycled
	2. Biopore
	3. Toga plant
	4. Herbal salon
	5. Healthy home

Kampung Arab Development Strategy

The value of the variable income and include environment variables category medium, this indicates need for programs did by people to increase happiness especially in the aspect of income and the environment and overall aspects in General. Aspects of social relationships dominate arab Kampung, in public life, this is because Kampung Arab upholds survival neighborly, judging from the number of social activities of religious and social form. The revenue aspect can be improved through the

social aspect if the community Kampung Arab have referrals to form the innovations that can benefit materially e.g. innovation in sales of dishes from women who are members of an organization/associations.

If at Kampung Sukun innovation in the form of handicraft as well as recycled clothes, at Kampung Arab can utilize the potential of the already formed as innovation Arabian food in terms of the manufacture or marketing. The first step to improve the quality of revenue the Kampung Arab people can be started with the arab specialties innovation race between a woman community/ woman organization per RT every few months. The race would spur Kampung Arab's creativity resulting in long periods of time can increase the innovation that ultimately can benefit materially.

Environmental aspects of Kampung Arab relatively good just because most of the adult male in Kampung Arab work outside their environment either as a courier between food to civil servant (PNS) so that cooperation in managing the environment can be said to be minimal. As for arab Kampong women tend to be in the house, this is because the Islamic rules forbidding the women were outside the house if has no interest so that environmental conditions depending on the liveliness of the men.

Improvement of environmental aspects can be done by routine performed on Saturday or Sunday as garbage sorting routines, making biopori, as well as other environmental actions matter.

CONCLUSION

1. The value resulting from the respective aspects of Kampung Arab happiness according to BPS 98.71% health conditions i.e., aspects of the education and skills of 72.55%, aspects of the work of 75.57%, the household income of 65.50%, the security conditions of 69.35%, 91.36% of social relationships, the availability of spare time of 91.65%, 80.44% home conditions, State of the environment of 65.86%, harmony and family of 99.54 percent.
2. The results of the calculation of the level of happiness using fuzzy logic acquired the level

of happiness of Kampung Arab 0.51 included in happy category.

3. Kampung Arab developments strategies include:
 - a. Kampung Arab has had the power of aspects of social relations so that in the development of social relations aspects of hometown can be utilized as a means to improve other aspects through Assembly or the organization which has been formed.
 - b. Kampung Arab economic potential has been supported through sales of dishes typical of arabian in Kampung Arab environment and outside.
 - c. The necessary Program is to increase the creativity of communities through the race between RT as has been applied to the Kampung Sukun.
 - d. Although it began from the competition between RT, in long term innovation Arabian specialties sales expected to be seen by outsiders giving rise to interest from outside home villages to do the selling in Kampung Arab that will boost the economy of the community Kampung Arab.

SUGGESTION

Expected to further research can assess some kampung which has different characteristics with Arab Kampong, taking into account all the aspects specified joy Central Bureau of statistics to find out the level of happiness of the city Kampong more diverse, so hopefully there will be built a good model and comprehensive in order to be used in the assessment of the level of happiness of Kampung Kota Malang.

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