Community Participation in Urban Development in Realizing an Elderly Friendly City in Indonesia

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Abstract

Accelerating the realization of an elderly-friendly city is essentially an effort to deal with the increase in the elderly population in the future. Elderly-friendly cities also aim to help the elderly to easily access public facilities and activities, especially for the elderly who live alone. If the elderly is left with no activity, especially economic activity, then the elderly will become a socio-economic burden for the country. In addition, increasing age also has an impact on declining health and physical abilities, so elderly-friendly cities must also consider reducing transportation costs and public facilities and providing recreational and reflection facilities which can be in the form of open spaces and special shared facilities for the elderly. This study aims to build a model of an elderly-friendly city by taking into account a number of factors such as a city that has a set of regulations governing the elderly, has regional leaders who are committed and have priority to the protection of the elderly, has an elderly-friendly document method. in accordance with WHO provisions, and elderly-friendly facilities. The research design is included in exploratory research, with a sample of 128 respondents and the sampling was done by non-probability convenience sampling. The results showed that there are important factors that can be modeled mathematically through factor analysis which identifies the representation of Safe and comfortable,

Smart public service, Excellent information, and Easy health care factors as the main factors in developing an elderly friendly city model from the respondent's point of view.

Keywords
Elderly-friendly city, urban development, community participation, model, factor analysis.

1. Introduction
Inclusive urban development, especially for the elderly, is becoming increasingly urgent to realize given the increasing elderly population in Indonesia. Not only in the health aspect through elderly-friendly health services, but in all aspects of life (Buffel et al. 2012). Efforts to create a city that is more elderly friendly is a major challenge faced by the government and civil society organizations in recent years. An aging population accompanied by urbanization requires governments and community organizations to be able to develop an environment that is accessible to all residents (Fitzgerald, 2015). A friendly city for all ages, especially the elderly, ideally offers an environment that supports its residents to grow older actively in the family, environment and community and provides space to be able to participate in the community. Another definition says that an all-age friendly environment is a place where parents are actively involved, valued and supported by infrastructure and services that accommodate their needs (VHoof et al. 2019). Meanwhile, (WHO, 2007) states that the physical environment does not only affect a person's activities but also on systems, such as housing, health and social care services in managing the needs of the elderly. According to Law Number 13 of 1998, an elderly person is someone who has reached the age of 60 (sixty) years and over.

In line with the progress of time and technology, in the current 5.0 socialization era, the development of an age-friendly ecosystem model can be realized, Figure 1. With the vision and mission of environmental and social determinants of health, as well as a public health system that focuses on prevention and the health care system itself (Fulmer et al. 2020).

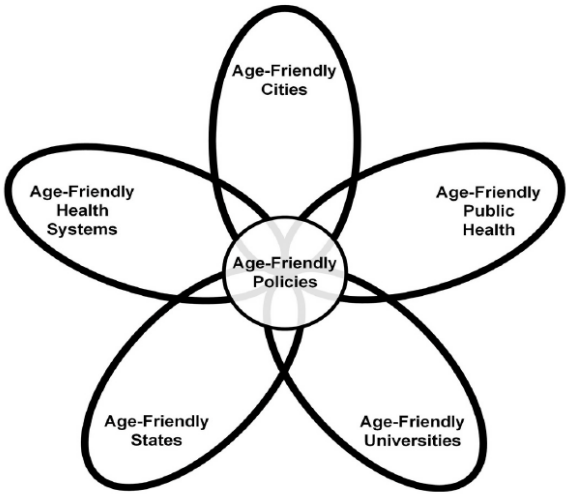

Figure 1. The age-friendly ecosystem programmes (Fulmer et al. 2020).

In this study, an analysis of the factors that are considered important to explore community participation in urban development to realize an elderly friendly city in Indonesia is carried out, so that a model can be obtained that can describe the current condition of an elderly friendly city and can be simulated to predict adaptation conditions in the future.

2. Literature Review
According to the Law of the Republic of Indonesia No. 13 of 1998 concerning Welfare Elderly, what is meant by elderly (hereinafter referred to as elderly) is someone who has reach the age of 60 (sixty) years and over. Furthermore, the elderly are divided into two, namely potential elderly and non-potential elderly. Potential Seniors are seniors who are still able to do work and or activities that can produce goods and/or Services. While the elderly with no potential are elderly people who are helpless earn a living so that his life depends on the help of others.

Meanwhile WHO divide the elderly according to the age level of the elderly, namely: (1) middle age (middle age, between 45-59 years), (2) elderly (elderly, between 60-70 years), (3) elderly (old, between 75 -90 years) and (4) Very old age (very old, above 90 years). The Friendly Cities Model was first presented in the World Health Organization (WHO) Global Age-Friendly Cities guide document. Figure 2.

Figure 2. The 2007 WHO model of Age-Friendly Cities (WHO, 2007)

From the WHO model of Age-Friendly Cities, the research instrument was then developed by conducting further exploration of a number of existing factors, then looking for relevant indicators according to existing references, the results are outlined in Table 1.

Table 1. Research Instrument Development

	Factor	Indicator	Ref.
Age-Friendly Cities	Outdoor spaces *(OS)*	audio visual signal at the crosswalk is clear (OS1)	
		the general street lighting is in good working condition (OS2)	(Post Office, 2010)
		easy and accessible elevator position access (OS3)	
	Transportation (TP)	public transportation facilities available (TP1)	
		stop facilities for public transportation and the location of the station is strategic (TP2)	(Shin, 2019)
		street and route map information available (TP3)	(Skyline, 2021)
		public transportation available (TP4)	
	Housing (HS)	home is comfortable and easy to modify (HS1)	(Tubemap, 2020)
		public land and commercial rentals are clean (HS2)	
	Civic Participation and Employment *(CP)*	participation across ages can be facilitated (CP1)	(Citymapper, 2020)
		publication facilities available for the elderly (CP2)	(Marston, 2019)
		available printed information such as television shows other important information (CP3)	(Obedait, 2019)
The	Respect and social inclusion *(RS)*	integrated data management for environmentally friendly cities (RS1)	(Shin, 2014)
		various services and support as well as travel guides are available (RS2)	(Trifu, 2014)
		available community services, for the involvement of social activities that can be followed (RS3)	(Montjoye, 2017)
	Social Participation	clear information is available for activities that can be followed by the elderly (SP1)	(UAE, 2021)

	(SP)	available access to transportation information for elderly facilities (SP2)	
	Communi-cation and Information *(CI)*	effective communication across ages for urban residents is easy (CI1)	(Marston, 2019)
		periodic information is available related to attractive facilities for elderly parents (CI2)	
		newspaper media are still available for delivering important news (CI3)	(Kreuter, 1999)
		delivery of information in simple and easy to understand language (CI4)	
		friendly community service in guiding the difficulties raised (CI5)	(Fernandez, 2020)
		electronic equipment is still available to communicate with large keys and uppercase letters (CI6)	(Freeman, 2020)
		there is free computer and internet access in public places and community service offices (CI7)	(Rosales, 2018)
	Community support	available health facilities and community services that are safe and comfortable for the community (CH1)	(Marston, 2020)
	and health services (CH)	health and social service locations accessible by public transport (CH2)	(Dikken, 2020)

3. Methodology

The method used in processing the data is by using factor analysis. After going through the data collection stage using a questionnaire instrument, the next step is data analysis, and reducing a number of variables or indicators, which still contain most of the information contained in the variables. The factor analysis algorithm used is as follows:

1. Variable Testing. Assessing the feasibility of variables for inclusion in the subsequent analysis, using Kaiser Meyer Olkin (KMO) and measure of sampling adequacy (MSA). MSA number 0.5 indicates the variable cannot be analyzed further, or excluded, and vice versa (Santoso, 2002).
2. Factoring with Maximum Likelihood Method.
3. Factor Rotation with Varimax Method, to facilitate interpretation of the formed factors.
4. Determine the Reproduced correlation matrix (Rr) and Residual Correlation Matrix.
5. Determine the Root Mean Square Residual (RMSR). To measure the level of goodness of the factors that have been formed, it can be determined by the RMSR.
6. Interpretation of Results. In this step, the naming of the formed factors is carried out and an interpretation of the goodness of the formed factors is carried out based on the RMSR value.

After forming a new variable, the analysis is continued by building a mathematical model through the regression process of the relationship between factor values for all the new variables formed. The result then is the formation of a mathematical model that can represent the elderly-friendly cities model with a number of supporting variables.

4. Result and discussion

4.1. Reliability Test

The results of the reliability test with Cronbach's Alpha for a number of 128 respondents with 21 indicators obtained a value of 0.709.

4.2. Validity Test

Validity test can be done with several approaches, one of which is construct validity. Construct validity is a test conducted to see whether the items in the research instrument are appropriate to measure the existing theoretical constructs. The KMO-MSA value of 0.809 was obtained in this study indicates that the data has been collected deserve to be factored. Table 2.

Table 2. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.809
Bartlett's Test of Sphericity	Approx. Chi-Square	929.848
	df	210
	Sig.	.000

4.3. Result of Factor Analysis

In the process of factor analysis there is a reduction in the data where in the process is a process of filtering components that are suitable to be used as indicators that affect to the elderly-friendly cities. The results obtained in this study after the factor analysis process was carried out with the help of IBM SPSS software. The following new factors and indicators formed from the results of factor analysis from this study, the rotated Component Matrix result, show on Table 3.

Table 3. Rotated Component Matrix

	Component			
	1	2	3	4
OS1	.858			
OS2	.807			
TP1	.682			
CI5	.644			
CP2				
TP2				
CI3				
SP1		.810		
RS2		,709		
SP2		.647		
RS3		.646		
CI1		.556		
TP3				
RS1			-.693	
HS1			.669	
CP3			-.666	
HS2			.570	
CP1				
CH2				.820
CH1				.770
CI7				.640

Table 4. Formed Factor

No	Indicator	New Factor
	audio visual signal at the crosswalk is clear (OS1)	
	the general street lighting is in good working condition (OS2)	Safe and comfortable
1	public transportation facilities available (TP1)	
	friendly community service in guiding the difficulties raised (CI5)	
	clear information is available for activities that can be	

	followed by the elderly (SP1)	
	various services and support as well as travel guides are available (RS2)	
2	available access to transportation information for elderly facilities (SP2)	Smart public service
	available community services, for the involvement of social activities that can be followed (RS3)	
	effective communication across ages for urban residents is easy (CP1)	
	Integrated data management for environmentally friendly cities (RS1)	
3	home is comfortable and easy to modify (HS1)	Excellent information
	available printed information such as television shows other important information (CP3)	
	health and social service locations accessible by public transport (HS 2)	
	health and social service locations accessible by public transport (CH2)	
	available health facilities and community services that are safe and comfortable for the community (CH1)	Easy health care
4	there is free computer and internet access in public places and community service offices (CI7)	

In Table 4. the first factor formed through the factor analysis process and represented by *Safe and comfortable.* In this factor there are 4 indicators namely *audio and visual signal at the crosswalk is clear, the general street lighting is in good working condition, public transportation facilities available, and friendly community service in guiding the difficulties raised.*

In Table 4. the second factor formed through the factor analysis process and represented by *Smart public service*. In this factor there are 5 indicators namely *clear information is available for activities that can be followed by the elderly, various services and support as well as travel guides are available, available access to transportation information for elderly facilities, available community services, for the involvement of social activities that can be followed,* and *effective communication across ages for urban residents is easy.*

In Table 4. the third factor formed through the factor analysis process and represented by *Excellent information*. In this factor there are 4 indicators namely *Integrated data management for environmentally friendly cities, home is comfortable and easy to modify, available printed information such as television shows other important information* and *health and social service locations accessible by public transport*

The fourth factor formed through the factor analysis process and represented by Sustainable Dissemination. In this factor there are 3 indicators namely *health and social service locations accessible by public transport, available health facilities and community services that are safe and comfortable for the community,* and *there is free computer and internet access in public places and community service offices*

The equation that can be used as a formula that describes the elderly-friendly cities.

$$Y = 6.383 + 0.114\ X_1 + 0.022\ X_2 - 0.090\ X_3 - 0.132\ X_4$$

With the constrain,

$$-2.486 \leq X_1 \leq 2.573$$
$$-2.435 \leq X_2 \leq 2.136$$
$$-2\ 736 \leq X_3 \leq 2.660$$
$$-2.661 \leq X_4 \leq 2.404$$

Based on the above model, the relationship model that can be used to evaluate as a formula that describes the elderly-friendly cities (Figure 3).

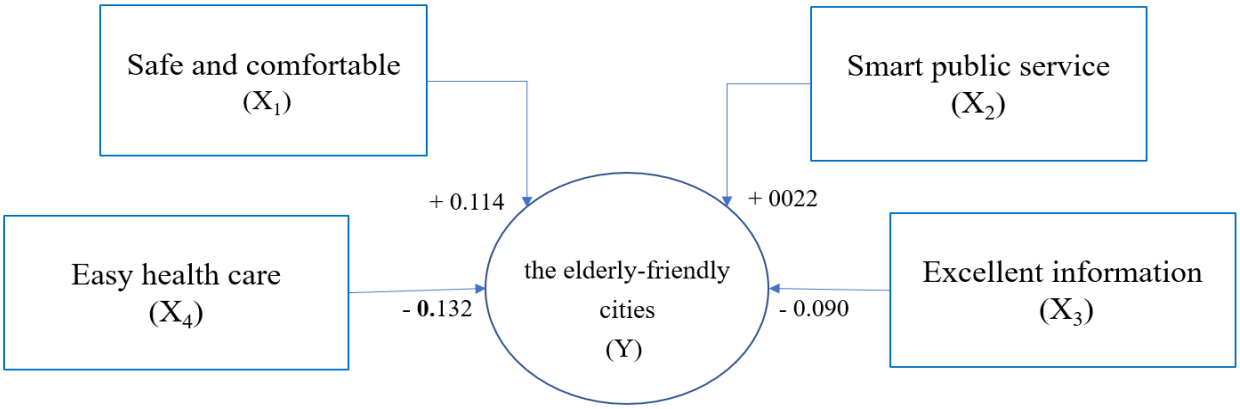

Figure 3. Development model of the elderly-friendly cities

The results of data processing from the distribution of the questionnaires that have been made obtained an average value of 6.383 (from a scale of 0.000 - 10.000), then from the former model a simulation can be made to see the values that can be expected as improvements and values that are not expected and should be avoided by the school.

Table 5. Simulation Processed Result

Variable / **Condition**		Y	β_0	X_1	X_2	X_3	X_4
Normal		6.383	6.383	0	0	0	0
Un-expected		5.489	6.383	-2.486	-2.435	2.660	2.404
Expexted		9.452	6.383	2.573	2.136	-2.736	-2.661

Based on Table 5. the simulation results show several conditions that can be used as decision making for the elderly-friendly cities in the future. Explanations related to these conditions are:

Normal conditions, meaning that the analysis value of elderly-friendly cities in normal conditions is currently 6.383 (from a scale of 0.000 -10.000), where there is no addition or reduction in value because it can be considered that no research has been carried out. From the data, it can be seen that the current level of elderly-friendly cities is visible

Unexpected condition means there is no concern with elderly-friendly cities so that the assessment decreases to the lowest value, in this condition it is considered a condition where ignorance of the system results in a decrease in overall system performance. Simulation by reducing the value of the positive factor to the lowest value and increasing the value of the negative factor to the highest value, the results obtained are 5.489 which is included in the category of "Rarely" utilization.

Expected condition mean the effort that can be increased to reach the maximum value, where all new factors found can be optimized to achieve high performance so that the gap between the realization target and its achievement can be minimized. This value of 9.452 falls into the "Frequent" category so that if elderly-friendly cities system development is carried out in accordance with the decreasing defect, it can be used as the main worksheet in the dissemination process of elderly-friendly cities.

5. Conclusion

Based on the results of the research (analysis) and discussion (synthesis) that have been described in the previous section, the following conclusions can be drawn:

1. The level of understanding of the elderly-friendly cities issues for the study area in the form of 6.383 (from a scale of 0.000 -10.000), for research in 2020.
2. Safe and comfortable, Smart public service, Excellent information, and Easy health care are factors that influence the elderly-friendly cities from the community's point of view.
3. The built model is a function, Y(X) = the elderly-friendly cities.

The equation that can be used as a formula that describes the elderly-friendly cities.

$$Y = 6.383 + 0.114\ X_1 + 0.022\ X_2 - 0.090\ X_3 - 0.132\ X_4$$

With the constrain,

$$-2.486 \leq X_1 \leq 2.573$$
$$-2.435 \leq X_2 \leq 2.136$$
$$-2\ 736 \leq X_3 \leq 2.660$$
$$-2.661 \leq X_4 \leq 2.404$$

4. The success of the elderly-friendly cities in environmental conservation dissemination activities can be carried out by maintain the Safe and comfortable factor and the Smart public service factor, then increase the Excellent information factor, and the Easy health care factor

Based on the results of the discussion and previous descriptions about the limitations of the study, there are several suggestions that need to be submitted as follows:

1. For the Ministry of Environment, cooperate with academics to immediately determine forms of the elderly-friendly cities.
2. For academics, carry out further research related to the pattern of utilization of systems and information technology for environmentally friendly solutions in accordance with the concept of sustainable development.
3. For the local government, immediately make a policy on environmental management and preservation and continue with socialization activities for the elderly-friendly cities.

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