



Motivation of Urban People Towards the Sustainability of Urban Farming in Yogyakarta City

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Abstract. The sustainability of urban farming is strongly influenced by natural resources and human resources. In addition to the ability to manage land, another important factor is the motivation of urban communities. This study aims to: (1) determine the level of motivation of urban communities in carrying out urban farming activities, (2) measure the level of sustainability of urban farming, and (3) analyze the influence of motivation on the sustainability of urban farming. This research was conducted in the city of Yogyakarta among urban organic vegetable farmers. Proportional random sample was used in selecting urban farmers, with a total of 97 respondents. Data were analyzed using descriptive analytical method. To measure the level of motivation and sustainability of urban farming, a Likert scale is used. The influence of motivation on the sustainability of urban farming was analyzed using multiple linear regression analysis. The results obtained are: The order of the percentage of farmers' motivation from the highest to the lowest, safety motivation, self-actualization motivation, sociological motivation, physiological motivation and ego motivation. Motivation has a high influence on the sustainability of urban farming in the city of Yogyakarta. Motivation has a significant effect on the sustainability of urban farming.

Keywords: Urban farming sustainability · farmer motivation · Likert scale · multiple linear regression

1 Introduction

The body The rapid rate of population growth in urban areas will cause environmental problems, ranging from land conversion to environmental quality degradation due to pollution and waste [14]. If the population growth conditions are greater than the rate of food production, a food crisis will occur. This is especially the case for urban areas of developing countries, where these areas are increasingly becoming centers of population and settlements and groups of people with ethnic diversity [10].

As is the case in the urban area of Yogyakarta, various types of industry, trade, services (including education and tourism) have emerged, as well as residential areas [4]. This area has developed into an urban ecosystem dominated by man-made buildings [5]. According Kumudu urban food producers play an important role in food systems around the world. Understanding the factors that may influence producers' intention to produce food is important to predict their behavior.

The existence of these dynamics encourages the emergence of ideas to develop an agricultural system that can last to the next generation and does not damage nature [9]. In the last two decades, the concept of Willingness to continue (WTC) agriculture has developed which is an implementation of the concept of sustainable development [16]. The sustainability of urban agriculture is strongly influenced by natural resources and human resources [12]. Natural resources include the availability of land, planting media, and water, while the human resources that influence the development of urban agriculture are the agricultural actors themselves, that is farmers [11].

The development of agricultural Willingness to continue (WTC) aims to increase the income and welfare of the farming communities broadly through increasing agricultural production that is done in a balanced manner with regard the carrying capacity of the ecosystem so that the sustainability of production can continue to be maintained in the long term by minimizing the occurrence of environmental damage [7].

The process of agricultural sustainability in urban areas requires support in the form of training, assistance, and assistance in order to stay enthusiastic in farming. Therefore, it is important to analyze the motivation of farmers in order to know the extent of the encouragement and desire of farmers in developing urban agriculture. Motivation is a change in energy within a person (personal) which is marked by the emergence of feelings and reactions to achieve goals [6]. While, according to Asnawi [2] that someone wants good things so that the driving force that motivates one's spirit is contained in the hope that will be obtained in the future.

Human motivation by Maslow [13] is classified into five levels that absolutely must be met according to the level of the level, namely physiological motivation (physiological needs), (2) safety motivation (safety needs), (3) social motivation (social needs), (4) Ego motivation (esteem needs), (5) Self-actualization motivation (self-actualization needs). This type of need is the highest need, which is to show maximum performance without demanding rewards from the organization.

Such as research Noriah about Motivations for sustaining urban farming participation. The result that Social, physical, and mental health, economic and environmental motivations underlie the participation of urban farming practitioners in Selangor. The motivations concur with the motivations stated in Maslow's theory and Alderfer's ERG theory. Knowing these motivational factors can be used as recommendation material in order to encourage the spirit of the capital's farmers to remain sustainable in urban agriculture.

In this study, we will discuss further about the influence of motivation on agricultural sustainability in Yogyakarta City. The objectives in this study are: (1) to determine the level of motivation of urban communities in carrying out urban farming activities, (2) to measure the level of sustainability of urban farming, and (3) to analyze the influence of motivation on urban farming sustainability.

2 Method

This research was conducted at the Kemantren Kraton, Kemantren Mergasan, Kemantren Ngempilan, Kemantren Gedongtengen and Kemantren Jetis in Yogyakarta City which have urban farming groups. The sampling technique in this study is the Probability Sampling technique with a total sample of 97 people. Data were analyzed using descriptive analysis. To measure the level of motivation using a Likert scale. For detailed steps as follows:

2.1 Score Normalization

This The raw score scale has no meaning without supporting data that translates into meaningful information. The study converted raw scores into score derivatives or scale scores with liner transformations. Scaling Linear Equation [15]:

$$z_{Tw} = z_{Xw} = \frac{T - M_{Tw}}{S_{Tw}} = \frac{X - M_{Xw}}{S_{Xw}}$$

Information:

- ZTw : deviation normal curve for the target scale score
- ZXw : deviation normal curve for the original raw score
- T : target scale being created
- MTw : mean for target scale score
- STw : standard deviation for the target scale score
- X : raw score scale
- MXw : mean for raw score scale
- SXw : standard deviation for original raw score

2.2 Calculating Scale Scores for the Motivation Dimension

The formula used is [15]:

$$R_i = (n - r_i + 1)$$

Ri : Rating value

N : Number of ranked items

The centile (P) value was obtained for each rank using the formula (Table 1):

$$P = \left(\frac{R_i - 0.5}{n} \right) \times 100\%$$

The next step is to determine the C value for each rank from the Guilford M Table based on the following formula [15]:

$$R_C = \frac{\sum (f_{ji} C)}{\sum f_{ji}}$$

Table 1. Score Achievement

Score Achievement Rate	Category
0%–20%	Very Low
21%–40%	Low
41%–60%	Enough
61%–80%	High
81%–100%	Very High

2.3 Calculating the Level of Achievement of Motivation Scores

According to Arikunto [1] to calculate the level of achievement scores with the following formula:

$$\text{achievement level score} = \frac{\text{average score}}{\text{maximum score}} \times 100\%$$

2.4 Class Assumption Test

Classical assumption test consists of normality, multicollinearity, heteroscedasticity, linearity, and error normality tests.

2.5 Multiple Regression Equation

According to Nisak [18] the general equation for multiple regression is as follows:

$$\hat{Y} = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + e$$

Information:

Y = Willingness to continue

a = Constant

b₁, b₂, b₃, b₄, b₅ = Regression coefficient

X₁ = Physiological Motivation

X₂ = Safety Motivation

X₃ = Sociological Motivation

X₄ = Ego Motivation

X₅ = Self-Actualization Motivation

e = error

Table 2. Socioeconomic Characteristics of Urban Farmers in Yogyakarta City

Indicator	%
Age	
15–64 Years	84.54%
>64 Years	15.46%
Gender	
Man	3.09%
Women	96.91%
Education Degree	
SD	6.19%
SMP	3.09%
SMA	28.87%
D3	15.46%
S1	42.27%
S2	4.12%

3 Result and Discussion

According to Uno [3] the term motivation comes from the word motive which can be interpreted as the power contained within the individual, which causes the individual to act and act. According to Wahjosumidjo [19] motivation is a psychological process that reflects the interaction between attitudes, needs, perceptions and decisions that occur within oneself. This process results an impulse (motive) of will, will, and desire to act or act through decision making.

3.1 Socioeconomic Characteristics

Table 2 describes the condition of urban farmers. The age of urban farmers given an overview of the number of farmers of productive age (15.64 years) which is 84.54% and non-productive (>64 years) which is 15.46%. Farmers of productive age are classified as having higher motivation than farmers of non-productive age. Education degree can describe the level of understanding and desire of farmers to receive information, innovation, and technology. The majority of urban farmers have S1 educated (42.27%). The better the understanding of farmers, the higher the level of motivation to carry out sustainable agriculture. Gender shows that the majority (96.91%) of urban farmers are women. This shows that women spend more time in farming than men. Such as the results of research from Hardin [8] Who examined the effect of motivation on female farmers. The results showed that the significant value for the variable of achievement motivation and fear not of success on the performance of peasant women in the Seke Subak and most of the urban farmers do urban farming on their own land (62.89%).

3.2 Descriptive Statistics

The results of the description of respondents in this study are as Table 3. Physiological motivation, which is a condition that encourages farmers to tend to meet economic needs. From Table 3, it is known that the level of physiological motivation in the form of economic needs, hunger, housing, the percentage of achievement is 74.85% and the indicator with the highest percentage result is the drive to live a more prosperous life of 79.18%.

Safety motivation is created on both an organizational and an individual level. The problem lies in how the organization, through the managers, provides safety motivation for employees at all levels in order to attain the organization's safety goals. From Table 4, it is known that the level of motivation to feel safe in the form of the need for safety and protection from danger is obtained a percentage of achievement of 84.54% and the indicator with the highest percentage result is maintaining family health by 79.18%.

Social motivation refers to the human need to connect with each other and their desire to be able to be accepted by each other. Humans are not meant to live on their own, because they are supposed to coexist with others, and the need to interact with each other is what sets the basis of social motivation. From Table 5, it is known that the level of sociological motivation in the form of the need for love, establishing relationships with other people, the percentage of achievement is 78.51% and indicators with the highest percentage results, namely the desire to cooperate with others, the desire to strengthen harmony and can exchange ideas by 82.27%.

Table 3. Description of Physiological Motivation

Indicator	Score Interval	Average Score	Achievement Percentage
Desire to meet the needs of family life	1–5	3.90	77.9%
Desire to earn better income	1–5	3.74	74.8%
Desire to own and increase savings	1–5	3.37	67.4%
Desire to live more prosperously or live a better life	1–5	3.96	79.1%
Total		3.74	74.8%

Table 4. Description of Safety Motivation

Indicator	Score Interval	Average Score	Achievement Percentage
Nutritional improvement	1–5	4.08	81.65%
Food diversity	1–5	4.19	83.71%
Chemical free food	1–5	4.25	84.95%
Maintaining family health	1–5	4.39	87.84%
Total		4.23	84.54%

Table 5. Description of Sociological

Indicator	Score Interval	Average Score	Achievement Percentage
Desire to cooperate with others	1–5	4.11	82.27%
Desire to strengthen harmony among others	1–5	4.11	82.27%
Desire to be able to exchange opinions	1–5	4.11	82.27%
Desire to get help from others	1–5	3.36	67.22%
Total		3.93	78.51%

Table 6. Description of Ego Motivation

Indicator	Score Interval	Average Score	Achievement Percentage
Desire for recognition from other parties	1–5	3.94	78.76%
Desire to be respected by others	1–5	3.08	61.65%
Desire for success	1–5	2.92	58.35%
Total		3.31	66.25%

Table 7. Description of Self.Actualization Motivation

Indicator	Score Interval	Average Score	Achievement Percentage
Desire to gain knowledge and insight about agriculture in urban areas	1–5	4.20	83.92%
Desire to develop agriculture in urban areas to be more advanced	1–5	3.96	79.18%
Desire to gain experience in agriculture	1–5	4.10	82.06%
Total		4.09	81.72%

Ego motivation is closely related to a person's status. The higher a person's status, the higher his need for recognition, respect, prestige, and others. From Table 6, it is known that the level of ego motivation in the form of position, self-respect, reputation obtained a percentage of achievement is 66.25% and the indicator with the highest percentage result is the desire to get recognition from other parties at 78.76%.

Self-actualization motivation is based on leveraging one's abilities to reach their potential, it is a very individual process and will probably vary significantly from person to person. From Table 7, it is known that the level of self-actualization motivation in the form of self-fulfilment, developing potential obtained a percentage of achievement

is 81.72% and the indicator with the highest percentage result is the desire to gain knowledge and insight about agriculture in urban areas of 83.92%. Such as the results of research from Rifki [17] describe the motivation of farmers in organic rice farming in Gempol Village, Karanganyam, Klaten. The result the motivation needs of physiological, social, appreciation, and self-actualization were all in the high category, while the safety needs belonged to the moderate category.

3.3 Classic Assumption Test

The results of the classical assumption test in the form of a normality test can be seen from the PP plot of the point approaching the normal line, so it can be concluded that the data is normally distributed, the multicollinearity test is obtained with tolerance values X_1, X_2, X_3, X_4 and $X_5 > 0.01$ and VIF numbers X_1, X_2, X_3, X_4 and $X_5 < 10$ so that it can be stated that there is no multicollinearity between the motivational variables on agricultural sustainability and the heteroscedasticity test shows that the points spread randomly and do not form a certain clear pattern, and are spread above and below the number 0 on the Y axis. This shows that there is heteroscedasticity in the regression model, so that it can be used to predict motivational variables on agricultural sustainability. So, it can be concluded that the data meet the classical assumption test.

3.4 Hypothesis Testing

3.4.1 Simultaneous Hypothesis Testing (F-Test)

F test is a statistical test that is used in hypothesis testing to check whether the variances of two populations or two samples are equal or not. Based on Table 9 a significance value of 0.000 (less than 0.05) was obtained, which means that motivation has an effect on agricultural sustainability with a 95% confidence level.

3.4.2 Partial Hypothesis Testing (t-Test)

The T-test is a statistical test used to compare the means of two groups. Based on the Table 10 physiological motivation (X_1) has a significant value of 0.455 (more than 0.05), which means that physiological motivation has no partial effect on agricultural sustainability. Safety Motivation (X_2) has a significant value of 0.004 (less than 0.05), which means that security motivation partially affects the sustainability of agriculture with. Sociological motivation (X_3) has a significant value of 0.169 (more than 0.05), which means that sociological motivation has no partial effect on agricultural sustainability. Ego motivation (X_4) has a significant value of 0.000 (less than 0.05), which means that ego motivation has a partial effect on agricultural sustainability. Self-Actualization Motivation (X_5) has a significant value of 0.000 (less than 0.05), which means that self-actualization motivation partially affects on agricultural sustainability.

3.5 Multiple Regression Analysis

Multiple regression analysis is a statistical evaluation tool. It's an extension of linear regression, a process that predicts the value of a variable where that value depends on

Table 9. Anova

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3072.54	5	614.51	54.18	.000b
Residual	1032.10	91	11.34		
Total	4104.64	96			

Table 10. Partial Test t.Test

Model	Coefficients ^a	
	t	Sig.
(Constant)	1.339	0.184
X1	-0.75	0.455
X2	2.917	0.004
X3	1.385	0.169
X4	3.678	0.000
X5	4.188	0.000

another variable to influence it. This makes the predictive variable a dependent variable since it depends on another variable to affect it. From Table 11 the results below are obtained:

- a. The value of a : 3.306 is obtained, meaning that if the motivation is 0, then the WTC is 3.306. This result is not significant at 5% alpha.
- b. The value of $b_1 = -0.166$ means that if the WTC has increased by 1 unit, the physiological motivation has decreased by 0.166.
- c. The value of $b_2 = 0.596$ means that if the WTC has increased by 1 unit, the motivation to feel safe has increased by 0.596.
- d. The value of $b_3 = 0.345$ means that if the WTC has increased by 1 unit, the sociological motivation has increased by 0.345.
- e. The value of $b_4 = 0.529$ means that if the WTC has increased by 1 unit, the ego motivation has increased by 0.529.
- f. The value of $b_5 = 0.820$ means that if the WTC has increased by 1 unit, the self-actualization motivation has increased by 0.820.

3.6 Coefficient of Determination

The coefficient of determination is a number between 0 and 1 that measures how well a statistical model predicts an outcome. Based on Table 12. The results of the coefficient of determination analysis are as follows:

Table 11. The results of the analysis of the influence of motivation on the sustainability of urban farming

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	3,306	2,470		1,339	,184
Physiological Motivation	-,166	,222	-,068	-,750	,455
Safety Motivation	,596	,204	,226	2,917	,004
Social Motivation	,345	,249	,143	1,385	,169
Ego Motivation	,529	,144	,300	3,678	,000
Self-actualization motivation	,820	,196	,391	4,188	,000

Table 12. Adjusted R Square

Model Summary ^b	
R	Adjusted R Square
.865 ^a	.735

- g. The R value is 0.865 and the R Square value is 0.749. The greater the value of R Square approaching the number 1 (one), then the independent variable, namely motivation, has a stronger effect on the dependent variable, namely agricultural sustainability.
- h. Adjusted R Square value of 0.735/73.5% indicates that the percentage of the influence of the independent variable with the dependent is 73.5% and is included in the high category level while 26.5% is influenced by other factors.

4 Conclusion

The order of the percentage of farmer's motivation from the highest to the lowest is the highest sense of security motivation, Self-Actualization Motivation, Sociological Motivation, Physiological Motivation and Motivation Ego. From the results of the SPSS output, the value of R Square (0.749) means that motivation has a high category influence with a value of 74.9% on the sustainability of urban farming in the city of Yogyakarta. There is a significant influence between motivation on agricultural sustainability with the obtained Sig value of $0.000 < 0.005$ and F value = 54.181.

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References

1. Arikunto, Suharsimi. 2006. *Research Procedure: A Practical Approach*, Revised Edition VI, Jakarta: PTRineka Cipta.
2. Asnawi, S. 2007. *Motivation Theory: In Industrial and Organizational Psychology Approach*. 3rd printing. Press Studies. Jakarta
3. B. Uno, Hamzah. 2008. *Theory of Motivation and Its Measurement*, Jakarta: Earth Literacy.
4. Bawono, Antarikso. 2016. *Jogja Gardening: A Community Model for Driving Sustainable Urban Agriculture*. DIY Bappeda article.
5. Defira, SG. 2019. Measuring the level of community motivation towards the use of yards for urban agriculture in the city of Yogyakarta. *Kawistara Journal*. Volume 9 No. 2, 22 August 2019.
6. Djamarah, Syaiful Bahri. 2011. *Learning Psychology*. Jakarta: Rineka Cipta.
7. Fadlina, Inneke Meilia et al. 2013. *Sustainable Agricultural Development Planning (Studies on Organic Agricultural Development in Batu City), Sustainable Development of Agricultural (Studies on Organic Agricultural Development in Batu City)*, J-PAL, Vol. 4, No. 1.
8. Hardin, LM Mustari. 2019. The Effect of Achievement Motivation, Fear of Success on the Performance of Farming Women in Ngkaringkaring Village, Baubau City. *International Journal of Management Progress* Volume 1 Number 1 August 2019
9. Indardi and Restu. 2021. *Farmers' Motivation In Organic Rice Farming In Gempol Village, Karanganom District, Klaten Regency*. *E3S Web of Conferences* 232, 01026 (2021).
10. Jalil, A. 2005. *Cities: From an Urbanization Perspective*. *Journal of Industry and Urban* Volume IX Number 15. pp 833-845.
11. Kumudu and Laura. 2019. Understanding Urban Food Producers' Intention to Continue Farming in Urban Settings. *Urban Agric. Reg. Food Syst.* 4:180004. Doi: <https://doi.org/10.2134/urbanag2018.10.0004>.
12. Lagiman. 2020. *Sustainable Agriculture: For Food Sovereignty and Farmers' Welfare*. Proceedings of the National Seminar of the Faculty of Agriculture, UPN "Veteran" Yogyakarta 2020.
13. Maslow, A.H. 1992. *Motivation and Behavior*. Dahara Prize. Semarang.
14. Mayasari, Kartika. 2015. *Analysis of Farmers' Motivation in Developing Urban Agriculture in DKI Jakarta Province*. *Urban Agriculture Bulletin* Volume 5 Number 1.
15. Noriah and Rabiatul. 2019. Motivations for sustaining urban farming participation. *Int. J. Agricultural Resources, Governance and Ecology*, Vol. 15, No. 1, 2019.
16. Sri, Harry. 2016. *The Phenomenon of Farmer Aging And The Decreasing Of Young Manpower And Its Implications For Agricultural Development Policies*. *Agro-Economic Research Forum*, Vol. 34 No. 1, July 2016: 35-55.
17. Rifqi, Ahmad and Annisa. 2016. *Urban Agriculture: Urgency, Role and Best Practices*. *Journal of Agrotechnology*, Vol. 10 No. 01 (2016).

18. Ruwah, Nisak, et al. 2020. Descriptive Statistics. Pamulang: Unpam Press.
19. Wahjosumidjo, 1997. Motivation as a Psychological Process, Jakarta, Intermedi.

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