

Managerial Competence Level Among Urban Farmers in Yogyakarta City

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ABSTRACT

Urban Farmers as entrepreneurs need to have managerial qualities. Managerial competencies help them to develop their farm. The aims of this study are (1) to describe the socioeconomic characteristics of urban farmers, (2) to determine personal managerial competence level such as planning, organising, leading, controlling, and evaluating, and (3) to analyze the impact of socioeconomic characteristic on urban farmers managerial competence in Yogyakarta City. This study was conducted in Yogyakarta City among urban farmers. A random sampling method was used to select 78 farmers. Normalized Rank Order method was applied to develop the scale, while entrepreneurship behaviour index (EBI) was used to assess the managerial competencies level. The result showed the socioeconomic characteristics of urban farmers in Yogyakarta City are 89.74% female, 88.46% of urban farmers age are between 15 to 64 years, they have studied up to secondary (48.72%) and tertiary school (38.46%), 56.41% developed their farm for 1 to 3 years, and 67.95% use their own land for farming. Urban farmers have medium competencies in management. Planning achieves the highest scale of managerial competencies among urban farmers in Yogyakarta City. The socioeconomic characteristics significantly influence urban farmers managerial competence.

Keywords: Managerial, Competence, Urban Farmers, Entrepreneurship.

1. INTRODUCTION

Entrepreneurship is one of the most important industries and pillars of the country's development. The proportion of new entrepreneurs in the business services industry provides a rough guide to the level of economic development in various regions of the world. In advanced economies, increased business services entrepreneurship is more common. In Central and East Asia, in terms of economy, Indonesia and India may be the least developed, while South Korea is the most developed [1]. The requirement to become a developed country is that entrepreneurs represent at least 2% of the total population. It needs a lot of entrepreneur to build Indonesia to become a more advanced country. Actually, Indonesia is one of the countries in Asia that is potential to increase the portion of entrepreneurship related to agribusiness that is often referred to as agripreneurship. This is because one of agribusiness sectors, which is

agriculture, gives contribution towards national gross domestic product at current price that ranks in the highest position from 2016 to 2020 [2].

The development of agripreneurship can be done from various scopes. One of the scopes that has recently become the focus of development is urban farming. Urban agriculture is the activity of cultivating, processing, marketing, and distributing food, forestry and horticultural products that occur in and around urban areas [3]. Urban farming is integrated into the economic system and urban ecosystem so that it is the difference between urban and rural farming [4]. Urban farmers are categorized into home subsistence farmers, predominant subsistence strategies, commercial urban farmers, and entrepreneurs [5]. Everyone who lives in an urban area can become an urban farmer. They can come from both men and women, in productive or unproductive age, and various levels of education.

Yogyakarta City is one of the big cities that is aggressively developing the competence of urban agricultural actors through training and assistance of extension workers. There are 233 farmer groups fostered by the Yogyakarta City Agricultural Extension Center [6]. One of the focuses of development is the managerial competence possessed by urban farmers. Managerial competence is expected to have a good impact, especially in increasing income and profits. In addition, knowing the level of managerial competence can help extension workers and various other agencies in developing the agribusiness [7]. The aims of this study are (1) to describe the socioeconomic characteristics, (2) to determine personal managerial competence level such as planning, organising, leading, controlling, and evaluating, and (3) to analyze the impact of socioeconomics characteristic on urban farmers managerial competence in Yogyakarta City.

2. METHODS

An analytical descriptive method was used as the basic method to describe or illustrate the object or subject study that was investigated. The research was conducted in Mergangsan, Umbulharjo, Kotagede, Wirobrajan, and Mantrijeron Sub-districts, Yogyakarta City. Simple random sampling had been used in this research with a total of 78 respondents. Several judges interviewed to find the scale value. Primary data were based on the interview results and through an observational method. The methodology in developing the procedure to measure the managerial competence of urban farmer is normalized rank order method that based on the behavioural measurement procedure suggested by Guilford [8]. The detailed steps followed in the methodology are explained under the steps listed below.

2.1. Identification of dimensions and statements

The managerial competence of urban farmer was identified as a variable. Based on a thorough review of literature related to entrepreneurship in farming [7], dimensions and statements to explain each of the dimensions were identified (Table 1).

Table 1. Dimensions (D₁ – D₆) of managerial competence of urban farmer [7]

No.	Dimensions	Behavior
1.	Diagnosis	Identify the root causes of a problem Learn from others Identify solutions
2.	Planning	Forward thinking Methodical
3.	Organising	Determined Methodical
4.	Leading	Trustworthy Encouraging Builds trust
5.	Controlling	Attention to detail Methodical
6.	Evaluating	Objective and methodical

2.2. Normalization of score

The raw score scale has no meaning without supporting data that translate into meaningful information. This research converts raw scores to derived scores or scale scores with liner transformation. Linear scaling equation [9]:

$$z_{Tw} = z_{Xw} = \frac{T - M_{Tw}}{S_{Tw}} = \frac{X - M_{Xw}}{S_{Xw}} \tag{1}$$

Where:

- Z_{Tw} = normal curve deviate for target scale score
- Z_{Xw} = normal curve deviate for original raw score
- T = target scale being created
- M_{Tw} = mean for the target scale score
- S_{Tw} = standard deviation for target scale score
- X = raw score scale
- M_{Xw} = mean for the raw score scale
- S_{Xw} = standard deviation for original raw score

2.3. Calculating scale values for dimensions of managerial competence

All the six dimensions will not contribute equally towards the managerial competence. Each dimension must be represented by assigning different weightage to each dimension. The rank were converted into rank value by using the formula [8]:

$$R_i = (n - r_i + 1) \tag{2}$$

Where:

- R_i = Rank value
- N = Number of items ranked

The centile value (P) were arrived for each rank using the formula:

$$P = \left(\frac{R_i - 0.5}{n}\right) \times 100\% \tag{3}$$

The next step is determining the C values for each rank from Guilford's Table M based on this formula.

$$Rc = \frac{\sum(f_{ji}C)}{\sum f_{ji}} \tag{4}$$

2.4. Calculate managerial competence level

The managerial competence level was calculated for all the urban farmers. The mean score (Raw score/maximum possible score) obtained by each respondent urban farmers for different dimensions was multiplied with the scale values of respective dimension. The summation of values obtained for all the dimensions gives the composite index measuring the managerial competence of the urban farmers. The formula used is adapted from entrepreneurial behavior index[10].

$$EBI = \frac{\sum_{i=1}^n \frac{Actual\ score\ D_i \times Scale\ value\ of\ D_i}{Max.\ score\ of\ D_i} \times 100}{\sum Scale\ value\ of\ D_i} \tag{4}$$

$$Managerial\ Competence\ Index = \frac{\sum_{i=1}^n \frac{T_n}{M_n} \times R_{Cn}}{\sum_{i=1}^n R_{Cn}} \tag{5}$$

Where:

T_n = Individual obtained score of the “n” component (attributes)

M_n = Maximum obtained score of the “n” component

R_{Cn} = Scale value of the component “n”

Overall managerial competence level is the overall score of the dimension of each respondent. It categorized to three group and the biggest frequencies will be the used as the managerial competence index. The level classification is identified with reference to Table 2.

Table 2. Classification instrument

Category	Range
High	$\bar{X} + SD$
Medium	$\bar{X} \pm SD$
Low	$\bar{X} - SD$

2.5. Multiple Linear Regression

To determine the socio-economic effect on managerial competence, multiple linear regression analysis was used. Multiple linear regression equation has more than one regression coefficient. Before the results of the regression analysis are used as the basis for analysis, the results of the regression analysis must meet the requirements of classical assumptions so that the regression results are not biased when interpreted (BLUE = Best Linear Unbiased Estimator). The classical assumption requirements that must be met in linear regression are: normal, homogeneous, no multicollinearity, and no autocorrelation [11]. The regression equation used in this study is:

$$\log \log Y = \alpha_0 + \alpha_1 \log X_1 + \alpha_2 \log X_2 + \alpha_3 \log X_3 + \alpha_4 D_1 + \alpha_5 D_2 + \varepsilon \tag{6}$$

Where:

$\log Y$ = Managerial Competence Scale

$\log X_1$ = Age (years)

$\log X_2$ = Education (years)

$\log X_3$ = Experience in Urban Farming (years)

D_1 = Dummy Gender (1= female, 0=male)

D_2 = Dummy Farm Place (1=Own Garden, 0=Shared Garden)

α_0 = Coefficient

α_1 = Coefficient of Age

α_2 = Coefficient of Education

α_3 = Coefficient of Experience in Urban Farming

α_4 = Coefficient of Dummy Gender

α_5 = Coefficient of Dummy Farm Place

ε = Error term

3. RESULT AND DISCUSSION

3.1. Socioeconomics Characteristic

Table 3. Socioeconomics Characteristic of Urban Farmer in Yogyakarta City

Indicators	Percentage (%)
Age	
1. 15-64 years old	88.46
2. >64 years old	11.54
Gender	
1. Man	10.26
2. Woman	89.74
Education	
1. Level:	
- Elementary School	6.41
- Junior High School	6.41
- High School	48.72
- D1	1.28
- D2	3.85
- D3	3.85
- S1	23.08
- S2	
2. Duration	
- <12 years	12.82
- 12 years	48.72
- >12 years	38.46
Experience in Urban Farming	
1. 1-3 years	56.41
2. 4-6 years	26.92
3. 7-9 years	7.69
4. >11 years	8.97
Farm Place	
1. Shared Garden	32.05
2. Own Garden	67.95

Table 3. describes the condition of urban farmers. The age of urban farmers provides an overview of the number of farmers in productive age (15-64 years) and non-productive (>64 years). The urban farmers in Yogyakarta City 88.46% are in the productive age. Urban farmers with productive age are expected to be able to accept the latest developments in information, innovation, and technology that will continue to occur. Education level can describe the level of understanding and desire of farmers to receive information, innovation, and new technology. The majority of urban farmers have studied up to secondary (48.72%) and tertiary education (38.46%). Gender shows that the majority (89.74%) of urban farmers are women. This shows that women spend more time in farming than men. Several urban farmers have started to do urban farming at the suggestion and government programs related to sustainable food houses. Most of urban farmers (56.41%) have only started agricultural activities within 1-3 years. This can show how the development of urban agriculture is quite large in the past 3 years. The incessant assistance from the Yogyakarta City government is one of the triggers for the increase in the number of urban farmers.

3.2. Managerial Competence

Urban farmers have different levels of managerial competence. From the scale value (Table 2) obtained, the Planning and Evaluating dimensions have a higher scale. In detail the level of managerial competence can be seen in Table 3.

Table 4. Dimensions Scale Value of Managerial Competence

Dimensions	Scale Value
Diagnosis	3.20
Planning	3.60
Organising	2.80
Leading	3.00
Controlling	3.50
Evaluating	3.60

The diagnosis ability of urban farmers shows 15.38% in the high level, 66.67% is in the medium level, and 17.95% is in the low level. For the urban farmers that have high level in this ability mean they can identify limitations and opportunities that affect profitability. This includes analyzing the cause of the problem and determining the solution [7]. The planning ability of urban farmers shows 10.26% in the high level, 76.95% in the medium level, and 12.82% in the low level. Urban farmers who are at a high managerial level can identify the root causes of problems, learn from others, and identify their own solutions. They can be effective planners who form a profitable farm. They organize plans to be implemented. Urban farmers organizing ability shows 16.67% of them in the high level, 75.64% in the medium level, and 71.79% in the low level. Organizing

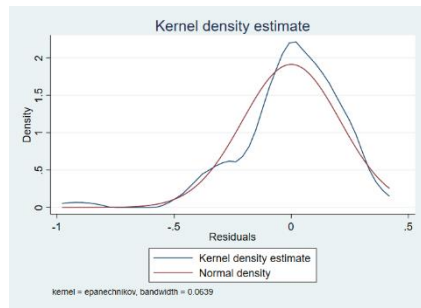
process includes the inputs and materials required for the procurement implementation plan. Successful agripreneurs are excellent implementers [7]. They execute their plans purposefully and methodically. 12.82% of the urban farmer have high level on leading ability, 71.79% in the medium level, and 15.38% in the low level. Urban farmers who have a high level on leading ability can motivate and train themselves to be able to achieve a profitable farm. They can also encourage another urban farmer to develop their ability and competence.

Table 5. Urban Farmer Percentage of Managerial Competence Level

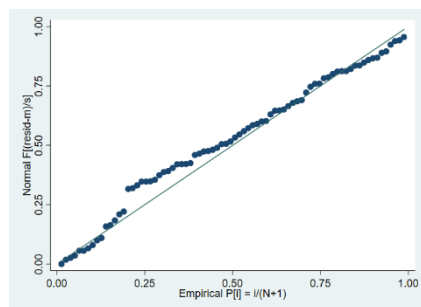
Dimensions	Level	Percentage (%)
Diagnosis	High	15.38
	Medium	66.67
	Low	17.95
Planning	High	10.26
	Medium	76.92
	Low	12.82
Organising	High	16.67
	Medium	75.64
	Low	71.79
Leading	High	12.82
	Medium	71.79
	Low	15.38
Controlling	High	16.67
	Medium	71.79
	Low	11.54
Evaluating	High	15.38
	Medium	74.36
	Low	10.26
Overall Managerial Competence	High	14.10
	Medium	75.64
	Low	10.26

The urban farmer 16.67% are in the high level, 71.79% in the medium level, and 11.54% in the low level of controlling ability. They recognized that it is important to monitor their farm and to detect problems early and check the progress of the farm. Controlling is knowing the real situation and comparing the plans that have been made with the existing plantation products. After controlling, urban farmers must conduct evaluations in their gardens. An evaluation is assessing the results of urban farming and the impact of implementing the chosen solution. As part of the assessment, the results of urban farmer are compared from time to time. The urban farmer 15.38% are in the high level, 74.36% in the medium level, and 10.26% in the low level of evaluating ability. Usually urban farmers evaluate the results of their gardens monthly or at harvest. Regular meetings of farmer groups can also help urban farmers evaluate their garden yields. Overall the managerial ability of urban farmers in Yogyakarta City is at the medium level.

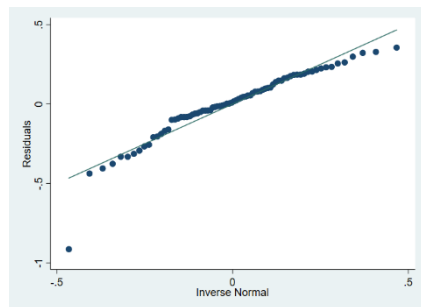
3.3. The impact of socioeconomics on managerial competence level



(a.) Kernel Density



(b.) PPplot



(c.) QQplot

Figure 1. Normality test result.

Table 6. Multicorrelation, heteroscedasticity, and autocorrelation test

Test	Indicators	Value
Multicollinearity (VIF)	logX ₁	1.18
	logX ₂	1.18
	logX ₃	1.10
	D ₁	1.08
	D ₂	1.07
Heteroscedasticity (White-test)	Prob>chi ²	0.0682
Autocorrelation (Breusch-Godfrey)	Prob>chi ²	0.6284

Classical Linear Regression Model has been estimated in Figure 1 and Table 6. The estimated model is normally distributed. Multicollinearity,

heteroscedasticity by White-test, and autocorrelation by Breusch-Godfrey can be expected that the formula has been free from those problem. The model determination test based on the coefficient of determination (R²) of 0.2219 indicates that the independent variable (socioeconomic characteristics) 22.19% can explain the dependent variable (managerial competence), while 77.81% is explained by other variables outside the model. The F_{test} with the value of Prob F_{Stat} = 0.0025 can be interpreted that all socioeconomic characteristics have a significant effect on increasing or decreasing managerial competence. Unlike the case with the partial test (t_{test}), only the age, education, and experience in farming variables have a probability t-value of less than an error rate of 5% so that these three variables individually affect changes in managerial competence.

Table 7. The impact of socioeconomics on managerial competence level

Independent Variable	Expected Sign	Coefficient
Constanta	+	0.5305437
Age (logX ₁)	+	0.2361636**
Education (logX ₂)	+	0.3718741**
Experience in Urban Farming (logX ₃)	+	0.0728368**
Gender (D ₁)	+	0.072924
Farm Place (D ₂)	+	- 0.0535542
R squared		0.2219
Adjusted R squared		0.1678
F statistic		4.11
Prob-F Statistic		0.0025

*** : Significant at 95% of confidence level

The results of the regression analysis with the coefficient of variation (Table 7) show that if the socioeconomic value is constant, the managerial ability does not change. The constant value of 0.5305437 states that under constant socioeconomic conditions, the managerial competence scale is 0.5305437. The regression results can be described as follows.

$$\log Y = 0.5305437 + 0.2361636 \log X_1 + 0.3718741 \log X_2 + 0.0728368 \log X_3 + 0.0728368 D_1 - 0.0535542 D_2$$

Age, education, experience in urban farming, and gender are factors that increase managerial competence. It is expected that the older farmers, the higher managerial competence. Therefore, the willingness to allocate the available time on the activity will decrease with age. Hence, the younger urban farmer heads are more eager to become agripreneurs [12]. The higher level of urban farmer education expected to have higher managerial competence. The individuals with higher educational attainment are usually faster in adoption of improved farming technologies [13]. As a higher level of education may indicate a greater ability of individuals to

identify profitable opportunities, to understand the market and entrepreneurial processes, to efficiently and effectively perform entrepreneurial activity in general, or in some specific areas [12]. The higher level of urban farmer experience expected to have higher managerial competence. Farming experience related positively with innovation and opportunity seeking as entrepreneur in farm [14]. The more urban farmer that using shared garden to plant expected to have lower managerial competence. This is because managers of farmer groups usually have a higher active role than ordinary members.

4. CONCLUSION AND SUGGESTION

4.1. Conclusion

Based on the result it can be conclude:

1. The majority of urban farmers are women who come from productive age, have studied for more than 12 years, do urban farming for 1-3 years in their own garden.
2. Overall, urban farmers in the city of Yogyakarta have managerial competence at the medium level, with good planning and evaluation.
3. The older, higher level of education, higher experience of urban farming, and female urban farmer expected to have managerial competence, however all of the socioeconomics characteristic significantly influence managerial competence level.

4.2. Suggestion

To improve the managerial competence, urban farmers should attend training on management. The training can hold by the agricultural extension centre or other institutions. Urban farmer also can be more active in group activity so that they can learn from others.

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