

# Peri-urban farmland owner in the growing municipality, case study Kediri Municipality

A R T Hidayat<sup>1,2</sup>

<sup>1</sup> Urban and Regional Planning Department

<sup>2</sup> Universitas Brawijaya, Malang, Indonesia.

Email: [a.r.taufiq.h@ub.ac.id](mailto:a.r.taufiq.h@ub.ac.id)

**Abstract.** Farmers in the peri-urban are facing difficulties to sustain farming activities. Kediri municipality is one of growing municipality in the East Java Province and hold important role as growth pole. Its farmland covers approximately 30% of total area [1]. It is projected to decrease in next 20 years due to accommodating dwellers' activity. At the same time, food security issue emerges and farmers are encouraged to maintain it farmland according to agrarian law [2] and protection of sustainable food crop farmland [3] to achieve food security. This paper aims to investigate farmland owner point of view related to growing municipality issue. The variables are farmland owner decision, household condition both social and economic aspect. This research employed in-depth interview which is part of Repertory Grid Technique and descriptive statistical analysis. The respondents are 5 farmland owners who are farmer. We found, farmland owner tends to sell their land if none succeed farming. They are also prioritizing formal education. They confirmed that their children less interested when their children get higher education. Neighbor farmland activities affect farmland owner preferences. For instance, when neighbor farmland owner sells their farmland, other owners tend to sell it too. It showed bond between farmland owners. Furthermore when it converted into built up area, it gives negative impact on farming activities such as water pollution. This finding can be used by government to establish spatial planning especially municipality that has big percentage of food crop farmland.

**Keywords:** *farmland owner, decision, municipality growth*

## 1. Introduction

Municipality development (i.e. well-known as urban development) requires space to accommodate human activities who live inside. In 2016, population of Kediri Municipality is growing and reaching 281,978 inhabitants. The growing rate is reaching 0,70% in compare with previous year [1]. Increasing population leads to housing demand. In order to meet housing demand, one of solutions is converting farmland to settlement. Government of Kediri Municipality projected new settlement is western (Mojoroto District) and eastern (Pesantren District) part of Kediri Municipality. Those districts have wide farmland. It implies, farmland in those districts is permitted to be converted. Increasing settlement leads to settlement facility development, such as school, commercial building, open space, and transportation development. Those facilities need space to build. It is threatening farmland. Regional growth is not only affected by economic activity but also spatial interaction [4][5].



Kediri municipality holds important role in the east java province. It is center of regional development. It implies, every development in this municipality should cover and boost its surrounding municipalities [6]. Due to its role and increasing population, demand of space for development is increasing. This urbanization process gives farmland owner pressure. In the 2031, farmland in the Kediri Municipality is approximately 15% of total area left. Mojoroto District is designed as new settlement zone. More than 200ha is projected to be converted from farmland to built-up area [7].

At same time, farmland owner is pushed to maintain their farmland. Moreover, sustainable farmland act [3] also encourages non sustainable farmland owner to conserve their farmland. In this condition farmland owner is in the middle of uncertainty. Farmland conversion driving forces cover internal and external factors of the landowner, but mainly economic circumstances [8].

Gayam sub district is located in the Mojoroto district. In the next 15 years, its farmland will reduce up to 200 ha. Farmers in this sub district receive pressure new settlement planning and protecting farmland. This research aimed to identify farmland owner opinion regarding this issue. In order to gather information, this research employed in depth interview which is part of repertory grid technique. This technique has ability to draw respondents' opinion regarding phenomenon surrounding them [9][10][11].

## 2. Methods

This research is qualitative research. Variables of this research is shown in the table 1 that classify in to social, economy, spatial, and regional growth dimensions [11][12][13][4][5][14]. Decision in agricultural subject is not only motivated by economic circumstances. It is also driven by physical, geographical (e.g. location and land use) and attitudes towards risk aversion. To understand decision (decision as element) in agriculture related to physical, socio-personal and economic knowledge aspects are necessary.

Firman [15] mentioned urban development as part of regional development was ignited by political and policy movement of the government. The development has created anxiety of land conversion especially fringe area as response of economic boom which are mostly farmland. Those areas are being built for settlement and its facilities (e.g. school, transportation, and public space). Luning [14] mentioned the factors that affecting present land use can be classified broadly into human factor, and physical and biological factors

Sub variable of this research was elicited during interview. Repertory grid technique (RGT) allows investigator to elicit sub variable which are important to understand respondents opinion. Tan and Hunter [16] stated Repertory grid technique is a technique that allows draw respondents opinion regarding phenomenon in their surrounding area. It is based on personal construct theory by Kelly [10]. He stated RGT is a cognitive mapping technique that attempts to describe how people think about phenomena in their world. Respondents' opinion is drawn in the grid that consist 3 parts. in depth interview is the powerful way to employ this technique. This technique also gives respondents more control the interview process. This technique was originally used in psychotherapy, clinical, counseling and educational settings [17].

This paper only focuses on interview result. Therefore, this paper draw simple grid. RGT is constructed by element and constructs. Elements and constructs are linked by "links". Elements refers to things or event which are abstracted by construct. Element are considered as formal aspects of a construct [9][10]. Elements refer to attention objects within the investigation domain [16]. Wright [18] stated the element nature as follow:

1. Homogeneous. Elements are same things for examples are object, event, or situation. Elements cannot combination of object, event, or situation;
2. Representative. Those elements are at same part of area that are being investigated [19];
3. Discrete. element are not be a subset of other elements;
4. Supplied or elicited. These refer to how those elements are established. Those depends on research purpose, elements can be provided by researcher or elicited from the respondent.

A construct is a pair. The best constructs based on respondent's opinion are written in the left side (i.e. emerging pole) of the grid and the worst is oppositely (i.e. implicit pole). Emerging pole implies expected condition. Implicit pole implies the opposite. Then, the respondents were asked to score the cell below the element. For example, if they think construct "B" as a driver for element "D", they should give score 4 or higher. This implies construct "B" is important to drive respondent to choose element D [19][20].

This research was using supplied element because it made respondent understand the research process easily. And all constructs are elicited from respondents. In order to make respondents understand easily, the research set variables. The elicited sub variables are elicited constructs. Elements of this research are buying, selling, and converting. Buying refers to farmer is going to buy more farmland in the near future. Selling is the opposite way. Converting implies farmers are keeping their ownership and going to convert their farmland into building.

**Table 1.** Research variables

Variables	dimensions
- House hold size	social
- Education level	
- Farming experience	
- Successor availability	
- Successor education	economy
- Income	
- Land size	
- Soil quality	
- Family participation	spatial
- Land demand	
	Regional growth

### 3. Result and discussion

Kediri municipality holds important role in the East Java Province. Its role is center of regional growth in the Kediri Region. This region consists of a municipality and 3 regencies. Those are Kediri municipality, Kediri Regency, Tulungagung Regency, Trenggalek Regency, Nganjuk Regency. Due to its role, government of Kediri Municipality focuses on establishing service facility and center for industrial activity, commerce, and education. Those are not only for residents of Kediri Municipality, but also for region residents of Kediri Region [6][7].

In 2016, Kediri Municipality is 63.4 km<sup>2</sup> municipality and home for 281,978 inhabitants [1]. The population is growing. In 2010 to 2016, the annual growth rate is 0.79%. However, annual growth rate in 2015 to 2016 is slightly lower (i.e. 0.7%). 130,564 residents work in the various occupations. 52,524 work as wholesaler, retailer, restaurant, and hotel. And 4,995 engage in agricultural sectors.

It has 3 districts and 46 sub districts. Those districts are Mojoroto, Kota, and Pesantren. Brantas River separates Mojoroto District from the rest districts. This research was conducting in Gayam Sub district, Mojoroto District.

Irrigated farmland holds big portion of land use (i.e. 1,909 ha or 30% of total area). Most of the farmland is technical irrigation farmland and extensive irrigated land. Government of Kediri Municipality set 500ha of paddy field as sustainable farmland. This is a mandatory regulation from government of East Java Province. As response, Government of Kediri Municipality set its farmland (owned by Government of Kediri Municipality) as sustainable farmland. Sustainable farmland is located in the Mojoroto District (150ha), Kota (50ha), and Pesantren (300ha). Eventhought private owned farmland is not included. Farmland owners are encouraged to preserve their farmland from land use change, especially converted to built-up area.

### 3.1 Respondents characteristic

After having long discussion and in depth interview with respondents, we established new constructs that elicited from respondents (table 2). Land owner also express their opinion regarding this new constructs. Table 3 shows conclusion result from 5 respondents.

**Table 2.** Reconstruction grid

<b>Variables</b>		<b>New constructs</b>
- House hold size	x1	- Daily expense
	x2	- Man power
- Education level	x3	- Formal education level
- Farming experience	x4	- Experience in farming
- Successor	x5	- Successor availability
availability	x6	- Successor experience
	x7	- Expecting successor
- Successor education	x8	- Prioritizing Formal education
	x9	- Formal education level
- Income	x10	- Income level
	x11	- Side job availability
	x12	- Side job complexity
	x13	- Income sources
- Land size	x14	- Prestige
	x15	- Owner working capacity
- Soil quality	x16	- Soil quality
	x17	- Soil quality change
- Family participation	x18	- Family participation
- Farmland	x19	- Pollution
conversion	x20	- Land conversion
	x21	- Landownership change

### 3.2 Family size

Farmer family has unique characteristic. Usually they have at least 2 children. Their children are attending formal education in the various levels. Lowest level is elementary school students. They expect their children achieve higher education then them.

If we compare their family size with their income, bigger family size, higher income they need. It seems their income is not enough to send their children to university, especially farmer with 4 children. During interview, we found that oldest sibling helps their parents to financing their family. This habit transform into the norm. Older sibling helps the younger one. This norm is beyond any status. After older sibling got married, they keep supporting their parents and younger sibling. This norm is continuously until younger sibling finishes their formal education.

Other finding is older sibling immediately finds job. After getting job, they try financially independent from their parents. However, they still live in the same roof until they married. Their financially independent is very helpful in farmer perspective. Farmer can manage their income to meet daily needs.

Man power holds important role in the farming business. They are going to buy new farm when man power is available in the market. Currently, man power availability is declining. Farmer must go to mountainous area to hire peasant. As effect, labor cost in increasing due to man power scarcity. Many peasants in Gayam sub district are disengaging farming due to low salary. Selling and converting show similar result. They will sell and convert their farm when man power is unavailable. Farmland owners have not enough time and power to handle farming activities.

Moreover, young people tend to avoid farming. They prefer working at commercial sector such as waitress, sales promotion worker, and entrepreneur. It is reasonable since farming needs much effort to

learn. Farmland owner stated, they faced difficulty when the start their business even though their parents are farmer. Local dwellers emigrate to major cities such as Jakarta and Surabaya. This creates peasant shortage.

### *3.3 Income and occupation*

Those respondents are fulltime farmer. 3 of them have side job. 2 of them are entrepreneur. A respondent is working as sub district officer. Public officer seems as prominent job and gives stable income. However he thought his work as public officer is just a side job even it needs much time. He is from farmer family and inheriting farming from his father.

Three respondents have side job. Their side job is related to agricultural business and miscellaneous works. They sell agricultural products from other farmers in the market. During free time, they receive various works such as wood job and house builder. It is common. People who engage in farming business have various abilities, especially farmer in the rural area. They are taking these side jobs to secure their income. Income from farming only comes once after harvesting. Even crop failure is a rare event, but loss has high probability. Therefore, they work in various side jobs. Two respondents stated they have no permanent side job. However, sometimes they receive side job that they can handle such as building worker.

They choose simple side jobs. Respondents prefer taking side job with easy and simple task, even taking short time. They still have farmland that they must take care. If side job consumes much time, they will avoid it. Farming has tons of work to do. They should spare enough time to take care their farmland.

Periodically, they receive monthly income ranged from Rp. 1,500,000 to Rp. 2,500,000 from farming. Both main occupation and side job will generate ranged from Rp. 2,500,000 to Rp 3,500,000. Except farmer who is farmer and public servant, he receives approximately Rp. 5,000,000 each month. Most of them earn side job income slightly lower than farming. However, it helps them secure their monthly expenditure.

They have narrow farmland (less than 1 ha). But they rent farmland from other landowner. In total, they cultivate a hectare farmland. They have to do this because their own farmland is not enough to generate income. It is a common practice in the agricultural business.

In order to expanding farmland except buying, they have 2 different scenario. First scenario is renting farmland from farmland owner who are giving up. Second is joint farming. Joint farming is able to reduce farming capital. Usually, farmland owner will weaving rent fee. However, they must share yield equally between farmer and farmland owner. Many farmland owner give up farming due various reasons such as age, and farming cost.

### *3.4 Education and farming experience*

Five respondents have graduated from different school level. One of them graduated from elementary school. Three respondents graduated from senior high school. A respondent graduated from university and he works as public servant.

They said, they learn farming from their parents, agricultural extension, and other farmers. Therefore, formal education does less matter. Kalijaran and Shand [21] found that formal education has less significant effect on farming ability to achieve better agricultural productivity. Informal education holds important roles because it provides practical lesson that farmer needed.

This research found that formal education has important aspect to drive farmland owner taking decision on their farmland ownership. Farmland owner tends to buy new farmland when their education level is high. Oppositely, they will sell or convert their farmland when their formal education is low. They think better formal education will broaden their knowledge

Farming experience holds important role since formal education has less impact on farming practices. Farmland owner tends to expand their business by buying new farmland when they get better experience regarding farming practices. They chose selling and converting when they have less knowledge on farming.

### 3.5 Successor availability

Successor availability emerges when sustainability issue emerged. Farmland owner tends to expect successor with farming experience. Currently, children of respondents have no intention of farming. Respondents stated they will sell their farmland if none will succeed it. More over converting to other land use emerges as prominent decision. They will retire and give up farming. If their farmland located close to main road, they will build commercial building or house for their children.

Experience is important as availability. Respondent want their heir is success in farming. They have no intention to push harder their children to be farmer. They realize farming is family business but children have right to pursue their own goal. If their hire with less experience continue farming, they tend to support them. However, their hire has right to give up since farming has no stable income and full with uncertainty

### 3.6 Formal education level of successor

Education level of successor is important for farmland owner. They want their children will get higher education than them. With high education, they have more option job opportunity occupation. There is kind of myth that lower formal education will lead to farming business. Farmer characterize as job with low formal education level. This opinion is wrong since farming can be done by anybody with farming knowledge.

We conducted short interview with their children. Their children tend to work at different field than farming when they get higher education level. They think that they can get job that gives stable salary. This condition has 2 effects. When their children getting higher formal education, they tend to choose other occupation than farming. It implies none will continue farming. It leads to farmland owner sell or converting their farm.

Education facility is available even in the peri-urban. It makes farmland owner children have chance to get higher formal education. Moreover, school fee is free until senior high school. Government has no intention to reduce successor availability. Hence, government should consider taking agricultural aspect into school curricula.

### 3.7 Land size, soil quality, and family participation

Wider farmland, they will get better income. However it takes much capital to run business. Prestige appears in the new constructs. They stated wider farmland will increase their prestige. They will buy farmland from other farmland owners who give up on farming. In some cases, they buy farmland from farmland successor. Due to the successor is not a farmer, they sell it.

Farmers also have capacity. Moreover, man power is difficult to get. They will cultivate as much as they can. When they need money to fulfill daily expense, they still have side job that generate faster income than farming. It is also related to family participation. Family is unpaid labor. Their contribution is for family. Even though their children have no intention on inheritance, they still help their parents in farming business.

Soil quality affects to their decision of farmland ownership. They tend to sell and converting their farmland when soil quality is poor and continuously declining. They think there is no point to farming when it is not profitable. As Kalijaran and shand [21] findings, farmer action and decision are merely driven by economic circumstances. Oppositely, they tend to buy if soil quality is good and no declining quality.

### 3.8 Farmland conversion

Farmland conversion emerged due to regional growth issue. Respondents stated 3 new constructs related this variable those are pollution, land conversion trend, landownership change. Respondents are concern in land pollution especially water pollution. Farming needs good water. When water is polluted, it will damage their crop. They tend to sell and convert their farmland if their farmland is polluted.

Conversion trend also affects farmland owner, especially on their decision. They start thinking giving up farming due to this trend. Even conversion trend gives indirect impact on their farm, the impact still



affect farmland owner. For example is irrigation system. Farm conversion which has technical irrigation system will affect to other farmland within the system. According to interview, farmland owner considered this trend as a threat.

Changing ownership will lead other farmland owner to selling or converting decision. For example, neighbor farmland is sold by its owner to housing developer. Farmland owner in the surrounding area will affect and tend to sell or convert their farmland. Their intention is logic. House will produce pollutant that affect to yield and soil quality. Moreover, conversion will change ecosystem and gives bad impact on farmland.

Gayam Sub District holds important role in Kediri Municipality. In this sub district, government set new settlement to accommodate population growth. According to farmland owner opinion, it is high possibility sprawl accident will be occurred. It is because farmland owner tends to sell and convert into built up area if their surrounding farmland is being converted to settlement.

#### 4. Conclusion

According to discussion above, we can conclude that farmland owner have to main reason to sell their farmland. First, there is no heir. It is no point for farmland owner to keep their farmland if no one will succeed it. With or without any farming experience, successor availability emerges as important factor. Second is conversion effect. The main reason is farm conversion (to settlement) will create water pollution.

Space for municipality growth must consider farmland owner opinion. Once those aspect disturbed, they will do unexpected decision (sell or convert farmland). Therefore, government may consider discussion above when they formulating policy for farmland owner.

#### 5. References

- [1] Statistic Indonesia. 2017. *Statistics of Kediri Municipality 2017*. Kediri City
- [2] *Act No 41/2009*: Protection for Productive Farmland toward Sustainable Farmland for Food Crops
- [3] *Agrarian act no 5/1960*: Basic Regulations on Agrarian Principles
- [4] Richardson, Harry W. (1973). *Regional growth*. London: MacMillan
- [5] Boverter, Edwin V. (1975). Regional Growth Theory. *Urban studies*. 12(1975)1-29
- [6] East Java Province Regional Spatial Planning 2011 – 2031
- [7] Kediri Municipality Regional Spatial planning 2011 – 2031
- [8] Ilbery Brian W. (1978). Agricultural decision-making: a behavioral perspective. *Progress in Human Geography*. doi: 10.1177/030913257800200303.
- [9] Kelly, G. A. (1957/1969). Hostility. In B. Maher (ed). *Clinical psychology and personality: The selected papers of George Kelly*. New York: John Wiley and Son
- [10] Kell, G.A. (1991). *The psychology of personal constructs one: A theory of personality*. London Routledge. Originally published New York, 1955
- [11] Ilbery Brian W, and Hornby R. (1983). Repertory grids and agricultural decision making: a mid-Warwickshire case study. *Geografiska Annaler Series B, Human Geography* Vol. 65 No. 2 (1983)77-84
- [12] Ilberym B. W. (1977). Point score analysis: a methodological framework for analyzing the decision-making process in agriculture. *Journal of Economic and Social Geography*. Volume 68, Issue 2, doi:10.1111/j.1467-9663.1977.tb01396.x
- [13] Ilbery B. W. (1985). *Agricultural geography: a social and economic analysis*. Oxford: Oxford University Press
- [14] Luning, H. A. (1984). Impact of Land tenure on land use in low-income countries. *Land Use Policy* 2(1984)112-124
- [15] Firman, Tommy. (2000). Rural to urban land conversion in Indonesia during boom and bust periods. *Land Use Policy*. 17(2000) 13-20
- [16] Tan. Felix B, and Hunter, M. G. (2002). The Repertory Grid technique: a method for the study of cognition in information systems. *MIS Quarterly*, vol. 26, issue 1

- [17] Beail, N (ed). (1985). *Repertory grid technique and personal constructs - Applications in clinical and educational settings*. London & Sydney: Croom Helm
- [18] Wright, R. P. (2007). Eliciting cognitions of strategizing using advanced repertory grids in a world constructed and reconstructed. *Organizational Research Methods*. doi: 10.1177/1094428107303353.
- [19] Fransella F, R Bell, and Bennister. (2004). *A manual for repertory grid technique second edition*. UK: JohnnWiley & Son, Ltd
- [20] Jankowicz, D. (2004). *The easy guide to repertory grids*. Chichester, West Sussex, England and Hoboken, N J: Wiley
- [21] Kalirajan K P, and Shand, R. T. (1985). Types of education and agricultural productivity: a quantitative analysis of Tamil Nadu rice farming. *The Journal of Development Studies*. Volume 21, Issue 2, Pages 232-243 doi:/10.1080/00220388508421940