

YOUNG FARMERS' KNOWLEDGE AND TECHNICAL PRACTICE ON DEVELOPING FARMING BASED ON PARENTS' OCCUPATION

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ABSTRACT

In family, parents act as facilitator who assist their children towards success. It can be seen in farm family while parents are taking part in decision making or giving suggestion on when to start planting crops. However, it is doubtful whether young farmers from non-farm family will experience the same opportunity. Therefore, this research aimed at understanding the different characters of young farmers whose parents work as farmers and non-farmers including their knowledge and technical practice on on-farm activity. This quantitative study was conducted in Prambanan and Kalasan Subdistrict, Sleman, D.I. Yogyakarta. Selected through census, 42 young farmers were interviewed based on questionnaire. The data were analysed by using non-parametric analysis because of the data normality and Kolmogorov Smirnov's analysis was implemented due to the objectives of this study. The result of analysis indicates that young farmers' knowledge from different family background is also different. Young farmers from farm family have high knowledge on local wisdom in their organic farming. Furthermore, they are also socialized with more social networks. Their applied knowledge is better due to their experience and facility support. On the other hand, both young farmers who come from farm family and non-farm family do not perform different behaviour on their on-farm practice. New media including social media and social learning appear as the main additional support besides parents which can minimize the gap of practical skills among them. Collaboration on farmer group and extension workers' role can be an alternative to develop young farmers' knowledge and skills.

Keywords: farm family, knowledge, on-farm activity, and young farmers

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INTRODUCTION

Personality gives effect on farmers' performance as internal factor and environment shows the same influence as external factor—as being stated on

Kurt Lewin's Field Theory that behaviour is directed by the function of personality and environment (Kaiser & Schulze, 2018) or it can be formulated as $B=f(P, E)$. Knowledge is the basic farmers'

characteristic which can develop their perception, attitude, motivation, and then behaviour. Behaviours, for example on-farm practice including cultivation method, processing, and marketing are measured by understanding whether the positive confirmation process is achieved and certain activities on agribusiness are implemented frequently. In addition, sufficient knowledge helps farmers provide choice of management system on both on-farm and off-farm practice.

Knowledge is gained by the process of experiencing new practice and by learning the concept of good agriculture practice from experts or even their partners in field. Farmers who socialize with the others tend to absorb higher insights than those who only focus on developing their own farming. Transfer knowledge by sharing understanding is held through training in agricultural extension called dissemination and unplanned discussion such as communication among members of organization or members of family while having dinner, known as diffusion. According to Rogers (1983), diffusion process occurs in social system and requires channels when innovation is gradually communicated to the members of the system. Social environment and farmer group represent the social system utilizing social media such as Whatsapp as a medium of communication.

Although in reality, both diffusion and dissemination are difficult to distinguish, Rogers (1983) said diffusion differs from dissemination in concept that diffusion is a spontaneous information transfer while dissemination is a directed and managed diffusion.

Parents involved in agricultural sector represent family role model, agribusiness actor, and motivator for young farmers. Basic motivation given by parents is motivation to become successful farmer. Parents education are a strong influencer for career decision making (Lakshmi et al., 2011 and Rahim & Nataraju, 2011 *cit.* Niranjana et al., 2019) as well as occupation (Kurniati, 2013). Farmers whose parents also work as farmers tended to keep working only in agricultural sector rather than in industrial sector (Kurniati, 2013). Also, in Central Java, most farmers focusing on agricultural sector tend to have parents working in the same sector. Various purposes on why young farmers contribute on farming activity are they intend to work as family operations or labors but some of them are only interested in accompanying their parents (Kelley et al., 2016). Unfortunately, it mainly occurs in family land meaning that peasants' children rarely participate on on-farm activities. Also, land ownership also affects farmers' decision to work in as farmers (Kurniati, 2013).

It directs them to a family business where family maintains managerial system. In addition, farmers gather information from their surroundings through social interaction (Pratiwi & Suzuki, 2017). Information needed by young farmers is not only about how to increase quality and quantity but also the strategy of safety farming to hinder from injury. In this case farmers' role in giving time to have discussion is needed to reduce unsafe farm behaviors by youths (Jinnah & Stoneman, 2016). Parents not only show direct assistance on agricultural career but attractively also give suggestion on selecting major on agricultural college based on their perception to support their children career (Stair et al., 2016).

Study about farming family or parents' support on agribusiness conducted by their young children is rarely found. It is sometimes escaped from people thought as not many researches about parents' support related to their occupation are found in Indonesia. Therefore, this research objective is to understand whether young farmer whose parents are also farmer have different knowledge with their peers whose parents do not work as farmers. In addition, it is interesting to understand their technical practice of seedling until harvesting on farm because when they have different knowledge, it

is predicted that their on-farm practice will also differ and vice versa.

METHODS

This research used a quantitative approach with a survey method. The collecting data techniques were observation, in-depth interview, and questionnaire. The quantitative data were collected by using questionnaire while qualitative data were obtained through in-depth interview with farmer group leaders, agricultural extension workers, and old farmers whose son is also farmer and direct observation on young farmers' routines on farm.

Prambanan and Kalasan Subdistrict were chosen due to the success of innovative farming activities of farmer and the finding of the previous research implemented in 2017. Young farmers plant paddy and horticulture with the result of the organic agriculture-based product and also agro-tourism. Interestingly, some of them have created organic fertilizer containing micro bacteria from bamboo roots and distribute their product to other farmer groups in Yogyakarta. The other young farmers established agricultural community library and promoted their educational agro-tourism such as planting paddy for kids. Therefore, in 2018 all young farmers, 42 people under 36 years old

were selected as respondents as census was applied as sampling method on this research.

The data were analyzed by using non-parametric analysis, Kolmogorov Smirnov, to find out if there is different knowledge and their on-farm practice between young farmers whose parents work as farmer as well and young farmers whose parents are not farmer. To answer the research objectives, hypotheses were stated:

1. The first hypothesis:

H_0 : The knowledge of agribusiness of young farmers whose parents are farmer and young farmers whose parents are not farmer is not different

H_a : The knowledge of agribusiness of young farmers whose parents are

farmer and young farmers whose parents are not farmer is different

2. The second hypothesis:

H_0 : The on-farm practice of young farmers whose parents are farmer and young farmers whose parents are not farmer is not different

H_a : The on-farm practice of young farmers whose parents are farmer and young farmers whose parents are not farmer is different

This research used α of 5% or 0.05. With the error of 5%, H_0 will be rejected if $\text{asyp. sig} < \alpha$ while it will not be rejected if $\text{asyp. sig} > \alpha$. Each hypothesis analysis had two options of conclusion based on the result of analysis. From the first hypothesis, the first possibility when H_0 is rejected is "young farmers whose parents are

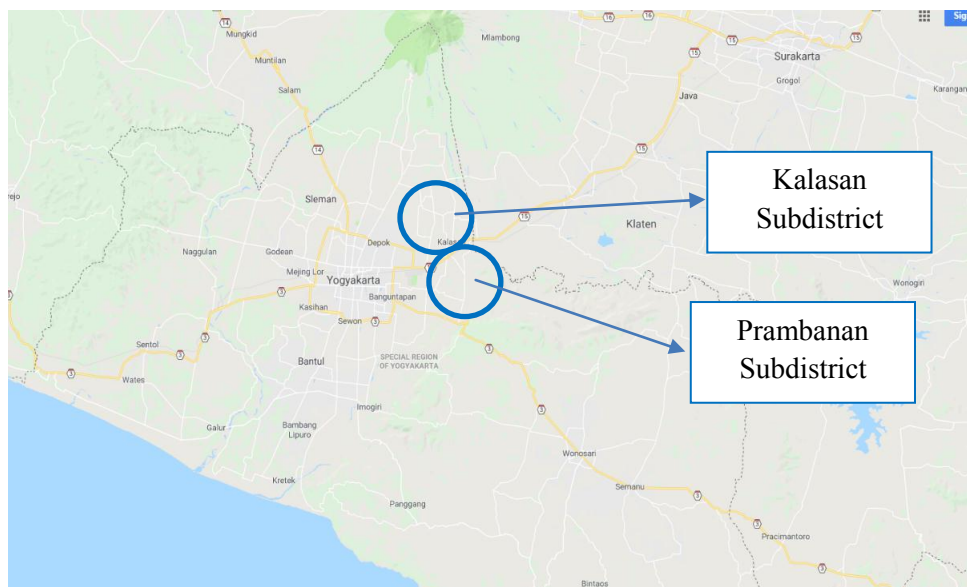


Figure 1. Map of research site

farmer and young farmers whose parents are not farmer have different knowledge of agribusiness". On the other hand, when H_0 is not rejected, the statement of conclusion is "both young farmers whose parents are farmer and young farmers whose parents are not farmer have same knowledge of agribusiness". Based on second hypothesis, the first conclusion performed by the rejected H_0 is "the on-farm practice of young farmers whose parents are farmer differs with that of young farmers whose parents are not farmer". Nevertheless, another conclusion when H_0 is not rejected is "the on-farm practice of both young farmers whose parents are farmer and young farmers whose parents is not different".

RESULTS AND DISCUSSION

Twenty six young farmers in Prambanan and Kalasan Subdistrict (63.41% of the total) applied new technology on their on-farm practice. Most of young farmers belong to early adopter. The group leaders and some innovative senior farmers from Tirtomartani, Selomartani, and Madurejo became key person on their area to adopt a new technology for the first time obtained from internet especially for horticulture cultivation. As everyone had smartphone with internet access, it was possible to search information of finding seedlings, protecting plants

from pests and disease, producing organic fertilizer, and updating price of yields. Young farmers usually found how to deal with pests and disease and how to price their products. Due to the accessibility, internet began to be a medium to support knowledge sharing and seeking best practice of farming thoroughly. Horticultural crop is well-known for its complicated pests and disease, such as chili. Therefore, the farmers should be creative in using their smartphone to find sources of good farming behaviour. Fortunately, all young farmers planting horticulture lived in Selomartani, Tirtomartani, Tamanmartani, Madurejo, Bokoharjo, Sambirejo, and Sumberharjo located in lowland area that internet is accessible and they prefer using smartphone for communication and online learning to computer due to its portability. On the other hand, young farmers living in Wukirharjo, an upland area with difficult access of internet for certain providers, tended to plant ginger, maize, and cassava did not need much pest and disease control and innovation as well so that this research does not focus on young farmers in that village.

Most of them were motivated to explore and create innovation in order to minimize their farmer group's weakness. They evaluated the earlier farmer group's failure informed by their parents and

Table 1. Young farmers' characteristics based on their age

Young farmers' age	Young farmers' education in average	Young farmers with good knowledge of organic farming	Young farmers with good practice of seedling and plant management
26-30 years old:	10 years	3 people	5 people
31-35 years old:	12 years	13 people	21 people
	Total	16 people	26 people

Source: Primary data (2019)

seniors and learned from it to achieve more yields and more creative strategies of off-farm management. In this five years, some farmer groups optimized their collaboration with another farmer group in addition to agricultural extension workers. Their surroundings provided so much information; moreover, their parents. Most young farmers followed their parents' behaviour of cultivation because their parents worked as farmer as well. Therefore, spending time in field is not only a prevailing activity but also their routines since they were in school, especially in senior high school.

Parents basically performed their role on on-farm farming. As farmer, they educated their children how to prepare seedlings and crop spacing. In addition to the common practice of on-farm activities, for example using organic fertilizer and pesticides, they also recommended the cutting the lower branch of particular horticulture plant such as chili and spraying on the leaves after raining. Another on-farm knowledge derived from their farmer

parents was intercropping. On the other hand, parents who were not farmer tend to support their children to communicate with agricultural workers and village leaders although the farmer parents also perform the same role. Unfortunately, parents' role on education decision making about agricultural college was not found in this research.

From Table 1, the number of probability or asymp. sig. was 0.000, lower than 0.05. It can be inferred from the first hypothesis that young farmers whose parents are farmer and young farmers whose parents are not farmer have different knowledge of agribusiness as H_0 is rejected. Nevertheless, the second hypothesis presents the different result on on-farm practice in which asymp. sig. value reached 0.531 so that H_0 is not rejected. It indicates that the on-farm practice of both young farmers whose parents are farmer and young farmers whose parents is not different. Young farmers having farmer parents had more specific knowledge on local wisdom aspects. It does not mean young

Table 2. Distinction between young farmers’ young farmers whose parents are farmer and young farmers whose parents are non-farmer

Young Farmers’ Characteristics	Difference among Young Farmers based on Their Parents’ Occupation	
	Young Farmers’ Parents: Farmer	Young Farmers’ Parents: Non-farmer
Knowledge	Young farmers really understand and aware that they contribute to maintain environment due to their occupation	Young farmers really understand and aware that they contribute to maintain environment due to their occupation as well
	They understand that besides focusing on high income, their contribution to serve the needs of foods and nutrients is also important	They understand that income and nutrients are important but they hesitate that the needs of food can only be supported by farmers since import is available
	They think that certain crops including horticulture do not always require much irrigation. Otherwise, effective irrigation is necessary and they will find out a strategy to use water efficiently	Their understanding has been established beyond any doubt that horticulture definitely needs much water
	They are not absolutely certain that pests and disease controlling is uncomplicated so that they will try several ways to maintain it.	They agree that pests and disease controlling for horticulture is uncomplicated
	They were also given knowledge by their parents about: <ol style="list-style-type: none"> 1. The benefit of working as farmer 2. Horticulture and staple food management 	
On-farm Practice	Young farmers are helped by their parents to manage horticulture in field	Young farmers are helped by their parents to manage horticulture indirectly by giving suggestion or information from parents’ peers to make a decision
	Most young farmers prepare seedlings by themselves	Young farmers previously get seedlings from their parents’ network
	Farming has been internalized among young farmers	Young farmers is motivated by their parents to prepare their own seedling and to conduct organic horticulture farming

Source: Primary data (2019)

Table 3. Result of two-sample Kolmogorov-Smirnov test on knowledge and on-farm practice between young farmers whose parents are farmer and those whose parents are not farmer

Variable	Asymp. Sig.
Knowledge	0.000
On-farm practice	0.531

Source: Primary data (2019)

farmers have intention to avoid modern technology. Young farmers in Prambanan and Kalasan acquired the local on-farm practice from their parents but they also developed their practice skill through the training conducted by farmer group to enhance the quality of their organic yields.

Before old farmers knew the modern technology introduced by the agricultural extension worker, they have tried original formula of organic fertilizer and intercrop management through trial and error for many years. Nevertheless, during the green revolution, many of them changed the inputs into chemical fertilizer and pesticides. However, few of them still applied organic agriculture and they transmitted their knowledge to their children and it is effective because of the frequency of togetherness occurring all day long.

The peculiar finding of this research is presented on young farmers on-farm practice that there was no specific different between a group of farmer assisted by their farmer parents and those who were not. It

shows a contrasting result compared to their different knowledge on previous analysis result. The big question is how they have the same on-farm practice when their local knowledge is different. The presence of new media on their smartphone broke the expectation that ones whose parents are farmer will have different on-farm practice from their peers whose parents are not farmer. Young farmers, nowadays, are familiar with Youtube and Google to look for the best agriculture practice. In addition, Whatsapp becomes a favourite social media to interact each other. The facility to share video to large number of people on group or personally becomes a sophisticating media to develop on-farm skills. All young farmers were also gathered in the same farmer group with old farmers and the practice is usually hold in group through the assistance of agricultural extension worker.

Young farmers learned how to treat the soil and plants by watching their peers' activity through social learning process so that they tended to implement the same basic method of cultivation and

this is how they got the tacit knowledge. Unfortunately, informal discussion to transfer the root or basic knowledge of local wisdom about why they should use *Leucaena leucocephala* as organic material did not occurred. As long as they can implement the similar practice based on their own understanding, they have been satisfied due to the success of good quality product achievement. Many of young farmers whose parents worked in non-agricultural field experience difficulty in modifying the ingredients for fertilizer except the farmers who had experienced in producing both organic fertilizer and organic pesticide and those who were well-educated.

This research evidently shows that limitation apparently become a valuable encouragement to be creative and independent; moreover, when there is support from parents to overcome the situation. Parents who work as farmers show their tendency to direct their children to be independent to survive on their agribusiness. Similar to agricultural extension worker, their role is giving assistance and network on inputs provision and traders. Unlike the other unsuccessful farmers, a group of old farmers who extremely concern on agriculture support their children to continue this occupation and they hope for better success for their children. Advantage on receiving farming tools

from parents impresses young farmer. As they have more experience to help their parents in field than their peers who do not belong to farm family, they have been already well-prepared to set the broken tools due to their practical knowledge. Therefore, to develop the collaborative interaction between young farmers and their parents or related family need to be invited in agricultural events or exhibition rather than individual young farmers as parents are involved in decision making and play role as family advisor (Rose & Morris, 2018).

A compelling case was found on the newest young farmer group. Firstly, a group of young farmers who have strong commitment on horticulture products built a community. They established a young farmer group. Without intensive assistance from agricultural field worker, they produce their own fertilizer from cow manure and compost. Additionally, they could create a simple tool from lamp to indicate the quality level of organic substance. Based on the observation, the leader who had initiative to set up the young farmer group is a son of farmer. He explained that the agriculture knowledge was obtained from his father. His father support directed him towards his new life that is agriculture and he left his previous occupation as teacher. However, his former job and education also affected the way he thought. Graduated

as a university student concentrating on psychology, he did not regret born as a son of farmer because his parent had performed the best. He was supported to learn about psychology of adult as well as practice of agriculture so that the modification of both knowledge attracted him to organize the social life on young farmer group. Through the farmer group, he intended to share his knowledge to other members because basically organic farming needs a unity of practice through farmer group so that the chemical compound from one member will not impede the organic practice of others.

The young farmer group change is illustrated by Lewin's Change Model consisting of unfreezing and movement stage (the change process) supported by knowledge sharing and refreezing stage directed to the organizational stage (Hussain et al., 2018). The main change occurred is a group change presenting all member change on knowledge, skill, and behaviour. Focusing on the unfreezing process shown by group members' involvement in change, the group leader acts as a role model and it is implied that leadership style is capable to support the change process where the unity of the leader and member is necessary in each phase. In organizing farmer group, the leader implements his father leadership style both in group

and in farm that is giving example by practice. In addition, based on the concept of change model explanation from Lippitt *et al.* (1958) cit. Cummings et al., (2016), unfreeze phase describes the need to change while change phase is a condition in which the group members are working to achieve the change. In addition to that young farmer group, most young farmers dealt with their motivation as need to change by looking at how the other young farmers whose parents are farmer can understand the practice of organic technology prior to the extension. This finding emphasizes that the knowledge conveyed by parents is not only limited to cultivation but also strategy in social life and it needs to be profoundly explored.

CONCLUSION AND SUGGESTION

Young farmers' supporting factor on agribusiness is their parents' occupation. If their parents are farmer, they will mostly access information about cultivation on on-farm farming through their parents. However, all young farmers also join farmer group with the old farmers. Sharing ide and experience happens in this group and young farmers whose parents are not farmer obtain new information from the group members. Social learning is an additional factor which impacts young farmers' implementation of on-farming

activities. Additionally, young farmers who are active in social media also gain information of new technical knowledge from group discussion and internet. Therefore, although two groups of young farmers have different initial knowledge, they perform the same result on on-farm practice.

As family particularly parents have prominent influence on their children, there should be a family background analysis before assisting young farmers through an extension or training program. If it is possible, their family including their wife or husband are also included in the program. The program facilitates young farmers to expand basic knowledge of agriculture and practice on finding information and promotion with social media. Digital farming becomes new face on agribusiness practice supposedly because there is adequate number of young farmers who can operate smartphone and computer. It intends to function as tool while local knowledge from farmer parents becomes the main content to be implemented and improved.

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