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The Role Of Farmers' Local Knowledge On Personal Performance

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ABSTRACT

This researchattempts to examine and analyze the influence of individual characteristics, work motivation, utilization of information technology, learning process, local knowledge and farmer performance where local knowledge is the moderating variable. The researcher socializes the role of local knowledge to farmer groups in Sleman Yogyakarta, then the group becomes the population. The sample uses the cluster random sampling method because the farmer groups that has been given socialization with forum group discussion (FGD)method has similar characteristics including farming behavior, education level, farming patterns, plants planted, area of arable fields, and the structure of the organization of each farmer group. The total respondents obtained are 106 respondents with the data collection method using a Likert scale 1-5 questionnaire. Data analysis usesPLS application with SEM technique. The results states that the individual characteristics, work motivation, utilization of information technology, and learning process have a significant positive influencetowards the farmers' performance. Local knowledge moderates the link between the use of information technology and the learning process on the farmer performance. Another finding states that the local knowledge should not stand alone or be an independent variable because it isproven that the local knowledge does not have a direct influence on the farmer performance. The local knowledge must be used as a moderating variable that has been proven to be able to strengthen the positive influence between the use of information technology and learning process on the individual performance.

Keywords: individual characteristics, work motivation, utilization of information technology, learning process, local knowledge, farmer performance

INTRODUCTION

The agricultural sector is a priority that gets the government's attention, because the growth and development of the agricultural sector is the key to the national development and hopes to enhance the food security quality (Saheb et al., 2018). The decline in crop yields is the subject of how the level of performance of farmers is questioned (Armstrong, 2006). According to Sari et al., (2017) changes in farmer behavior occur due to the influence of internal and external factors. Internal factors are such as attitudes, motivation, education, learning, experience, expertise, skills, knowledge and abilities. Meanwhile, the external factors are such as technology/tools, availability of information, extrinsic motivation, social environment resources, co-workers, and organizational attitudes (Sasongko et al., 2018; Setiawan et al., 2006). However, because of its complex nature, changes must be interrelated with various factors so that the behavioral changes can be identified as a whole (Madson, 2003). An important feature of the behavior change process is perceived behavioral control over the opportunities, resources, and skills needed to carry out an action so that a person's motivation is closely linked to the changes that occur to boostthe performance (Ajzen & Fishbein, 1980).

The development of information and communication technology recently makes most people turn to communication technology that has speed and efficiency to obtain information (Amin, 2014; Irmawati, 2011; Irmawati, 2020). Changes in behavior due to technology have resulted in higher quality individual performance, this cannot be separated from the farmers' ongoing learning process, the learning process is a relatively permanent change in a way of behaving that take place as an outcome of experience (Robbins, 2003; Igbaria & Tan, 1997; Karanja, 2015).

Local knowledge is generally interpreted as knowledge exerted by local communities to remain in a particular environment (Warren, 1991). Farmers' knowledge is very beneficialas it can hold up the capability to acquire technology in their farming business. It can be described that the higher the level of education and experience of farmers, the mindset of farmers will also be wider (Soeharjo & Patong, 1973). Extracting information about local community knowledge and innovations acquired by farmers can also be used as inputs in improving farmers' lives, in their economic, ecological and social perspective (Mulyoutami et al., 2004). Several studies have stated that the farmers'local knowledge is able to increase the quantity and quality of crop yields (Ajani et al., 2013; Hijjang & Lampe, 2017). In managing the local knowledge, it is expected to be able to merge this local knowledge into formal transformationplans so that it can be applied to enhance the wellbeing of farmers (Ajani et al., 2013). Local knowledge can be applied in every single agricultural activities, from determining the season and selecting seeds to post-harvest care of produce. In order to escalate the quantity and quality of

production, it is necessary to adjust and adopt the local knowledge with the existing technology (Hijjang & Lampe, 2017). Nasrulloh et al., (2020) find that the local knowledge can be used as a moderating variable which has been proven to be able to strengthen the positive influence between the use of information technology and individual performance. This result is in line with the findings of Fujisaka (1993; Pretty, 1995) which states that the local knowledge is considered competentto hold up or reinforce individual performance because the technology offered is sometimes difficult for the farmers to apply and may not be better than the existing local technology.

Local knowledge is a moderating variable of the influence between motivation, use of information technology and the learning process on the farmers' performance because the application of local knowledge is considered to be able to support the efforts to manage their agricultural land and be able to better manage resources in their environment (Soeharjo & Patong, 1973; Moulyotami et al., 2004). Based on it, the objective of the research isspecifically to examine and analyze the influence of individual characteristics, work motivation, technology utilization, learning, local knowledge and performance variables. In addition, this study also seeks to build a model for developing the **local knowledge** in strengthening the performance of farmers.

LITERATURE REVIEW

Individual characteristics that differentiate one person to another

Individual characteristics on farmers' performance because each has different potentials and needs, differences in individual characteristics are reflected in individual goals. Therefore, the differences that arise between one individual and another are factors causing the influence of individual characteristicson their performance (Gaffar, 2017). Several previous researchers find that there is a positive influence between individual characteristics and performance (Shiekhah et al., 2015; Al-Nima & Zakaria, 2016; Esmaeili et al., 2014; Handayati, 2016: Mindarti 2015; Gaffar, 2017; Kirana & Shalehah, 2018; Nimalathasan, 2008). Based on the previous findings, the researcher formulates hypothesis 1 as follows:

H1 : individual characteristics have a positive influence on the farmers' performance.

Work motivation on farmers' performance

Expectancy theory basically presume that individuals will take the initiatives to achieve targets that they consider valuable and they perceive that these will help them to accomplishtheir target. Hence, with the

expectations that individuals have, they make an effort to reach or accomplish these presumptionswhich will later aim to enhancethe individual performance (Robbins & Judge, 2008; Munandar, 2001; Suripto, 2016). Several studies have shown that motivation holdsa critical roleto sustain and booststhe individual performance so that the motivation has a positive influence towardsindividual performance (Paarlberg & Lavigna, 2010; Bao & Nizam, 2015; Andriana, 2015; Robescu & Iancu, 2016; Abusharbeh & Nazzal, 2018; Wahyudi et al., 2018; Satriadi & Agusven, 2018;). According to the previous findings, the researcher formulates hypothesis 2 as follows:

H2: work motivation has a positive influence on the farmers' performance.

Utilization of information technology on farmers' performance

Information technology will be able to play a role in improving performance at the individual and organizational level if it is used properly, this is in accordance with what is stated by Thompson et al., (1991) that is utilization is the behavior of using technology in doing work. The actual experience of using technology will affect the user, whether the technology has a better or worse impact on the performance (Goodhue & Thompson, 1995). Taking advantage of information technology can escalate the speed, precision, and efficiency of exchanging abundant information. Consequently, the role of the use of information technology is very crucial to boostindividual performance (Igbaria & Tan, 1997). Several studies have shown that the use of information technology can add value to the individual performance. Thus, it can be concluded that the use of information technology has a positive effect on the individual performance, and it is supported by research results from (Igbaria & Tan, 1997; Hasiholan, 2005; Lindawati & Salamah, 2012; Stone et al., 2007). Based on the previous findings, the researcher formulates hypothesis 3 as follows:

H3: the utilization of information technology has a positive influence on the farmers' performance

Learning process on farmers' performance

Learning process is a relatively permanent change in a way of behaving that take place as an outcome of experience (Robbins, 2003). A broader understanding of changing work environments helps them to be more responsible for managing the learning process and engage directly in work practices to meet the changing requirements for better performance (Billett & Choy, 2013). Documentation of the learning process is started from behavioral changes, behaviors that must be maintained and experience are also factors in achieving the success of the learning process in order to increase high-performance behavior changes (Woerkom & Croon, 2009; Subyantoro & Hikmah, 2014). The findings (Furnham et al., 1999;

Billett & Choy, 2013; Woerkom & Croon, 2009) related to the relationship between the learning process and performance leads the researcher to formulate the fourth hypothesis, namely:

H4: the learning process has a positive influence on the farmers'performance.

Local knowledge on farmers' performance

Local knowledge is generally defined as knowledge used by the local communities to remain in a certain environment (Warren, 1991). The local knowledge can be used as an input to build on the farmers' lives, in their economic, ecological and social perspective (Mulyoutami et al., 2004). Several previous studies have suggested that local knowledge can ensure adequate the food production by escalating the production quantity and quality. It is surely necessary to combine this local knowledge into formal transformation plans. (Ajani et al., 2013). In another study, it is found that local knowledge is able to be applied in all agricultural activities, from determining the season and selecting seeds to post-harvest care of production. In order to escalate the quantity and quality of the production, it is necessary to adjust and adopt the local knowledge with the existing technology (Hijjang& Lampe, 2017; Nasrulloh et al., 2020). According to the findings of previous researchers, the researchers formulate the next hypothesis:

H5: Local knowledge strengthens the positive relationship between the work motivation and thefarmers' performance.

H6: Local knowledge strengthens the positive relationship between the use of information technology on the farmers' performance.

H7: Local knowledge strengthens the positive relationship between the learning process and the farmers' performance.

METHOD

The population in this research are farmers who have received socialization about the role of local knowledge in the implementation of improving the performance of farmers' crops. The forum group discussion (FGD) activity has been carried out to 17 farmer groups in Sleman, Special Region of Yogyakarta. The sample uses the cluster random sampling method because 17 farmer groups in Tirtomartani village have similar features including farming behavior, education level, farming patterns, plants planted, area of arable fields,as well asthe structure of organization of each farmer group. Accordingly, the sample will be taken from the daily management of each group (Subyantoro, 2009). The

daily management consists of 6 positions, namely chairman, deputy chairman, secretary 1, secretary 2, treasurer 1 and treasurer 2 so that the total sample is 106 farmers. This number has met the criteria requirement for the sample in the SEM study, with the minimum number of 100 people (Ghozali, 2006; Hair et al., 2017). The data collection is carried out by administering questionnaires to the respondents with 5 Likert scales. The data analysis method uses an inferential statistical analysis which is divided into two analyzes, namely descriptive analysis and Structural Equation Modeling analysis using Partial Least Square program.

The variables involved in this research are:

1. Farmers' performance (Mangkunegara, 2010; Moeheriono, 2009): Quantity and quality of crop yields.
2. Individual characteristics (Gaffar, 2017) : consisting of 6 measurement indicators: Age, Sex, Marital Status, Number of Dependents, Tenure, and Education.
3. Motivation, based on expectancy theory, it focuses on three relationships that can be used as indicators in measuring the work motivation (Robbins, 2003): Business relationship with performance, Business relationship with rewards, and Reward relationship with personal goals.
4. Utilization of information technology (Thompson et al., 1991; Thompson et al., 1994): Intensity, Frequency and Diversity.
5. In learning there are important elements as follows: change, permanent, and experience (Subyantoro & Hikmah, 2014).
6. There are several indicators of local knowledge in the scope of agriculture that are expressed by (Grenier, 1998):
    a. Determination of timeliness of preparation, planting and harvesting
    b. Soil tillage practice
    c. The original way of growing plants
    d. Seed processing and storage
    e. Practice of planting, harvesting and storage
    f. Processing and marketing
    g. Pest management
    h. Plant protection method

RESULT

Hypothesis test

Outer Model Evaluation

Convergent Validity

Table 2. Loading Factor Value After deleting Invalid items

	Individual Characteristics	Farmers' Performance	Motivation	Learning	Local Knowledge	IT Utilization
FP1		0,746				
FP2		0,807				
FP4		0,707				
FP7		0,845				
FP8		0,862				
FP9		0,829				
IC1	0,87					
IC5	0,898					
IC6	0,837					
L1				0,864		
L2				0,874		
L3				0,885		
M1			0,89			
M2			0,92			
M3			0,865			
LK1					0,82	
LK2					0,698	
LK3					0,822	
LK4					0,856	
LK5					0,797	

	Individual Characteristics	Farmers' Performance	Motivation	Learning	Local Knowledge	IT Utilization
LK6					0,826	
LK7					0,789	
LK8					0,829	
TI1						0,899
TI2						0,854
TI3						0,856

Table 2 shows that all indicators have a value of ≥ 0.7, thusthe indicator can be declared as statistically valid and can be used in the research constructs. Figure 1 presents the research model as an outcome of outer loading after all indicators are declared valid.

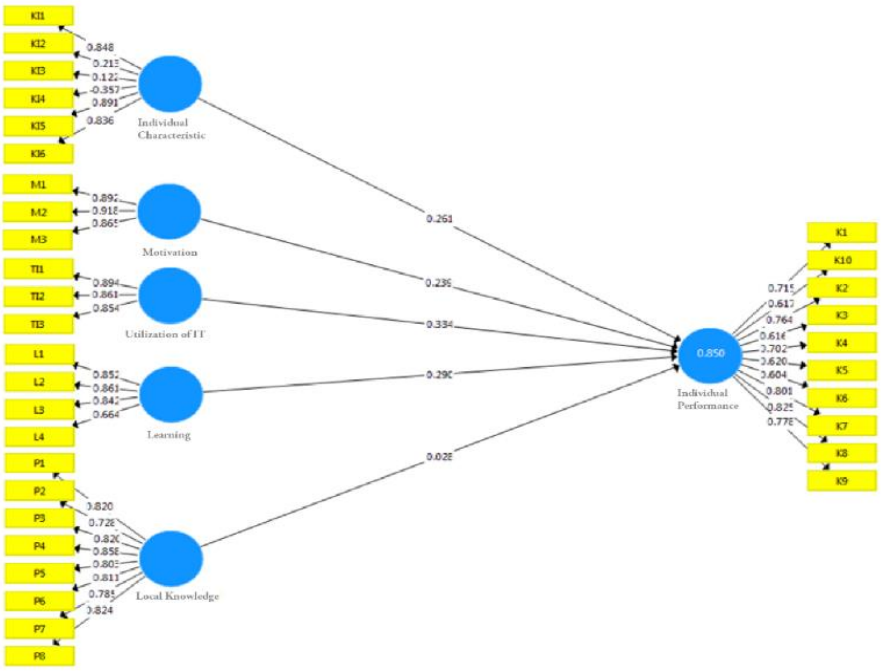

Figure 1. Outer Model

Discriminant Validity

Table 3. Discriminant Validity on Research Variables

	IC	FP	M	L	LK	TI
Individual Characteristics	0,869					
Farmers' Performance	0,847	0,801				
Motivation	0,848	0,818	0,892			
Learning	0,728	0,766	0,702	0,874		
Local Knowledge	-0,119	-0,149	-0,059	-0,206	0,806	
IT Utilization	0,435	0,543	0,385	0,399	-0,147	0,87

Source: Primary Data Processed, 2021

Table 3 exhibits that all research variables are declared to have high discriminant validity because they have a higher value (AVE root) than the correlation between the variables.

Composite Reliability

Table 4. Composite Reliability (CR)

No.	**Variable**	**Composite Reliability**	**Notes**
1	Individual Characteristics	0,902	Reliable
2	Farmers' Performance	0,915	Reliable
3	Motivation	0,921	Reliable
4	Learning	0,907	Reliable
5	Local Knowledge	0,937	Reliable
6	IT Utilization	0,903	Reliable

Source: Primary Data Processed, 2021

Table 4 indicates that all research variables have Composite Reliability (CR) values > 0.7. This means that it has a high, consistent and precise accuracy of the instrument in measuring the construct.

Inner Model Evaluation

Coefficient of Determination of Endogenous Variables

Table 5. R^2 Value of Endogenous Variables in the Inner Model

VariabelEksogen	Endogenous Variables	R^2Value
Individual Characteristics Motivation Learning Local Knowledge IT Utilization	Farmers' Performance	0.812

Source: Primary Data Processed, 2021

Based on Table 5, it can be calculated that the total coefficient of determination (R^2) in this research is 0.812 or is able to predict the model reaching 81.2% while the remaining 18.8% is caused by variables outside the model.

Goodness of fit Model (GoF)

Table 6. Goodness of Fit Model (GoF) Results

Construct	**R Square**	**Communality**
Individual Characteristics		0,754
Farmer Performance	0,812	0,642
Motivation		0,796
Learning		0,765
Local Knowledge		0,649
IT Utilization		0,757
Average	0.812	0.727
GoF	0.768	

Source: Primary Data Processed, 2021

PLS can also identify the global optimization criteria to determine the goodness of fit model (GoF). Based on Table 6, it can be known that the GoF value of the model reaches 0.768 which is greater than 0.36 so that the model is included in the large category (large).

Hypothesis testing

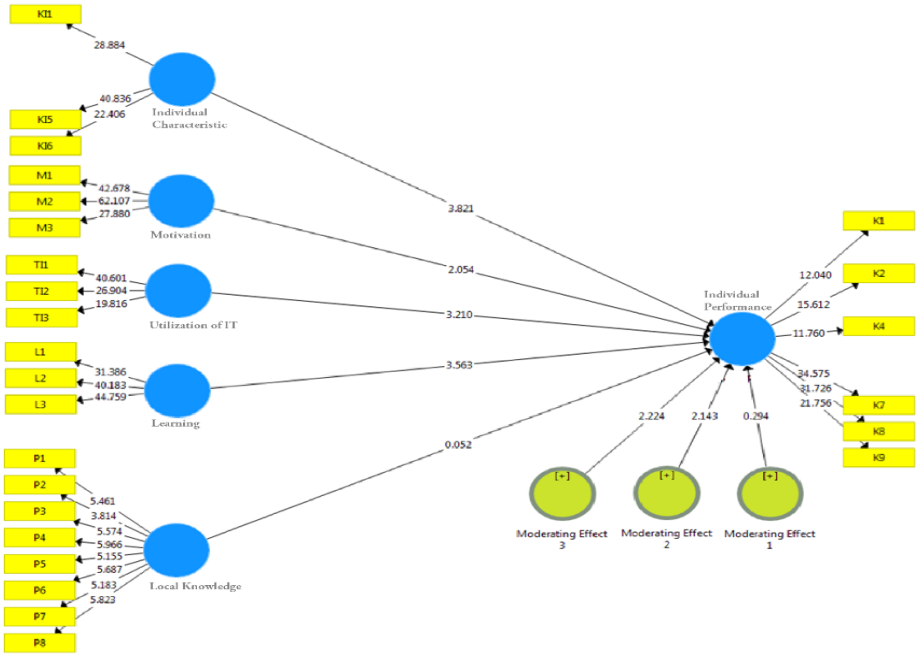

Figure 2. Structural Model (Inner Model) Between Latent Variables

Table 7. Inner Model Test Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Sig
Individual Characteristics -> Farmers' Performance	0,368	0,358	0,096	3,821	0,000	Sig
Motivation -> Farmers' Performance	0,2	0,223	0,097	2,054	0,041	Sig
IT Utilization -> Farmers' Performance	0,228	0,215	0,071	3,21	0,001	Sig
Learning -> Farmers' Performance	0,263	0,243	0,074	3,563	0,000	Sig
Moderating Effect 1 -> Farmers' Performance	0,025	0,019	0,085	0,294	0,769	Not Sig
Moderating Effect 2 ->	0,171	0,144	0,08	2,143	0,033	Sig

Farmers' Performance						
Moderating Effect 3 -> Farmer 's Performance	0,141	0,134	0,063	2,224	0,027	Sig

DISCUSSION

The findings of this researchreveal that the presence or absence of the local knowledge on the farmers does not affect the significant positive effect of the work motivation on the farmers' performance. It shows that the work motivation based on the expectancy theory consistently has a positive effect on the farmers' performance, local knowledge as measured by the farmers' knowledge related to soil management practices, seed processing and storage, harvest processing and marketing, and pest management that is not related to the level of strong beliefthat the work effort will result in the completion of a task to get an opportunity that arises because of the behavior.

The local knowledge can be used as an input in improving the farmers' lifes by merging this local knowledge into formal transformation plans. Inaddition, it is necessary to adjust and adopt the local knowledge with the existing technology so that the moderating role of the local knowledge on the effect of the use of the information technology on the individual performance can be improved. The usage of the information technology will create experiences that have a positive impact because the farmers' local knowledge can be created through a continuous process derived from the experience. Therefore, it is clear here that local knowledge reinforces the influence between the use of information technology and individual performance. This finding also proves that farmers who have the local knowledge and utilize the information technology can receive, filter, absorb and apply the information that develops from outside their environment as well as from within their environment,thusit has a positive impact on farmers' performance which is represented by indicators of quantity and quality of harvests.

Farmers must combine the information obtained from the use of information technology and process it properly with their local knowledge so that the farmers' implementation in carrying out the soil management practices, seed management and storage, processing and marketing of crops, and pest management can increase the quantity and quality of the product. With the finding that the local knowledge reinforces the effect of the use of information technology on the farmers' performance, it proves that there is a match between the technology used and the farmers' needs according to the level of knowledge they have.

The learning process is not only always accepting and making changes, maintaining these changes and managing these changes, but also having the local knowledge owned by farmers, so the role of this local knowledge variable is able to filter out the challenges that arise as a result of the learning process, the impact is tat the influence of the learning process on the farmers' performance can be strengthened by local knowledge. The local knowledge is able to give a signal when to make partial changes, total changes or not to make changes because it is known that the local knowledge has a very broad scope ranging from ecosystem, ecological and social aspects (Mulyoutami et al., 2004).

CONCLUSION

From these findings, it is found that the local knowledge variable should not stand alone or be an independent variable because it is proven that the local knowledge does not have a direct influence on the farmers' performance. The local knowledge must be used as a moderating variable that has been proven to be able to strengthen the positive influence between the use of information technology and the learning process on individual performance. The utilization of information technology combined with the local knowledge elements (pre-planting, planting practices, management, processing to marketing) can provide solutions that have implications for the farmers so that they can have an impact on improving farmer performance. The learning process that is based on the elements to dare facing the challenges can be filtered by the local knowledge, when to change, when to maintain the changes that have been taken, and when to shape these changes into an experience that will be used as the output of the learning process itself.

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