THE TESTING OF ENTREPRENEURSHIP AS THE ATTEMPT TO REMODEL THE FACTOR OF PRODUCTION IN THE RICE FARMING

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ABSTRACT. The objective of this study was to test whether entrepreneurship can be included as a new production factor in farming business management. This study was intended to make improvement of classic economic factors of production. To achieve the purpose, the research was conducted on the rice farming at Pakis and Karangploso districts of Malang Regency, East Java. Methods analysis used were Structural Equation Modeling (SEM) with PLS smart program. Primary data was collected from the farmers by interviews based on a list of prepared questions. The analysis result showed that entrepreneurship had direct effect to increase on the performance of paddy farming. This result makes more reinforced to incorporate entrepreneurship as new factor of production in farm management. The classic theory of factor of production was important to be updated because there are many empirical facts that conceptually had influence to the farming production. One of empirical facts was internal potential that owned by every farmer which is called as entrepreneurship spirit.

INTRODUCTION

Current theory well known as classical theory of production factor states that production is the function of land, labor, capital, and management (Soekartawi, 1990; Hernanto, 1991, Sapoetra, 1991; and Shinta, 2011). Mathematically, the functions of production and the factor of production can be written as Y (production) = f (Land, Labor, Capital, Management). This theory still becomes as the reference by researchers.

Similarly, recent studies on the factors that influence the agricultural production conducted by Lyson et al. (2004); Reed (2004); Toledo et al. (2011) and Nurhayati et al. (2012) state that there is no one of the researchers who studied about farmer entrepreneurial as a factor of production. On the other hand, the study of entrepreneurship in the west is more focus on the factors that

influence entrepreneurship that associated with genetic factor (Nicolaou et al., 2008).

The important of entrepreneurship as a new factor of production is based on the same argument below. An entrepreneur is generally independent, has strong will, dream, dare to try, passion, creative, need for achievement and vision of life (Priyanto 2004, 2008). Besides, he or she has the initiative, responsibility or authority and forward, creative in acting, be taugh facing a failure, confident, is able to manage risk, and be able to see the change as an opportunity.

Another reason why entrepreneurship is very important as the new factor of production is based on the reality that every farmer actually has internal potential or individual characteristic identified as an entrepreneurship. All the agribusiness decision is actually based on the entrepreneurship. Based on the reality in the field, it is found that although in the same location there are many different commodity are planted by farmer. Then, in the same commodity, in the same wide of area there are many different doses and different fertilizer are used by the farmers. All the

difference decision are related to motivation, the need of achievement, and the risk of tolerance.

Entrepreneurship affects the performance on the agricultural production (Rougoor et al., 1998; Lee and Tsang, 2001; Nugroho, 2008; Sadjudi 2009; Darmadji, 2011; and Darmadji et al., 2011). Entrepreneurship also shows the indirect effect to the farming performance, through both the technical and biological process or through management capacity.

Rougoor et al. (1998) has formulated the relationship between a personal aspect, a decision-making process, a technical process of biological and a agricultural performance in the structural form. The personal aspect analyzed as a determinant of performance is the drive and motivation, the ability and capability, and the biographies. However, the structural model of Rougoor et al. 1998 has not been proven empirically yet. The hypothetical models of Rougoor further contribute to Priyanto (2004, 2006) .

The novelty models of Priyanto (2004, 2006) are: (1) measuring the effect of entrepreneurial knowledge, attitude, and skill to the performance of production, prices of output, and profits, (2) putting the personal aspect as a determinant of entrepreneurial together with economic environmental factors, physical, and organizations. The model was tested on tobacco farmers in the province of Central Java. The results show in the stages, (1) the characteristic of the individual, social environment, physical, and institutional influence on entrepreneurial farmers, (2) further entrepreneurial influence of the management capacity, (3) the capacity affecting the performance of farm management. The study results in the new findings that entrepreneurial farmers have an influence on the performance of the farm, but the entrepreneurial influence on the performance is still indirect because it is mediated by management capacity factors.

Sadjudi (2009) conducted a study on the findings of Priyanto (2004, 2006) with the objective is to determine the effect of entrepreneurship on the performance of tobacco farming. The variables analyzed and the model refers to Priyanto's model (2004, 2006). However, Sadjudi (2009) is not able to produce a new model because he used multiple regression model, and entrepreneurial variables tested not as a latent variable but only as an indicator. The significant finding of the study is that entrepreneurship shows positive influence on tobbaco farming through the ability of farmer to take risks.

The classic theory of the production factor is important to be refreshed because there are many empirical facts that conceptually have influence to the farming production. One of empirical facts is the internal potential that is owned by every farmer or named as entrepreneurship spirit owned by the farmers. Based on the reality, all decisions are made by farmer. It is implicitly based on the entrepreneurship spirit.

This research is aimed to make modification to the classic theory. This research is done to promote the farming field that production consitutes the function of production factor. Adopting a new factor of production in the production function is academically challenging.

This research was further study from a previous studies of Darmadji (2011) and Darmadji et al. (2011). Those research on chili and paddy farmers at Sleman Regency of Yogyakarta showed that entrepreneurship has direct and positive effect on the farming performance. The novelty of the research was the direct influence of entrepreneurship to the farming performance. This is different with the study of Priyanto (2004) who showed that entrepreneurship has indirect effect to performance. The new findings are important to follow up primarily as an effort to update a classic theory related with production factors.

Thus, the objective of this research is to know the effect of entrepreneurship on the farming production performance in Malang regency.

RESEARCH METHOD

This study was carried out at Pakis and Karangploso districts of Malang Regency. The selection of the research areas is based on the consideration that the areas are potential in the agricultural. The samples taken in this study were 157 respondents of rice farmer and they were selected randomly. All necessary data in the analysis is the primary data.

The data from farmers were collected through the direct interview process carried out based on the prepared questionnaire. This study used a SEM model with PLS as a parameter estimator method. The structural model is presented at Figure 1. The model is adopted from Priyanto (2004) and Darmadji (2011).

According to Jogiyanto and Abdillah (2009), the steps of SEM analysis with PLS are: (i) the development of the theoretical model, (ii) the construction of the model, (iii) the running data, (iv) the evaluation of the measurement model, (v) the evaluation of the structural model, and (vi) the interpretation.
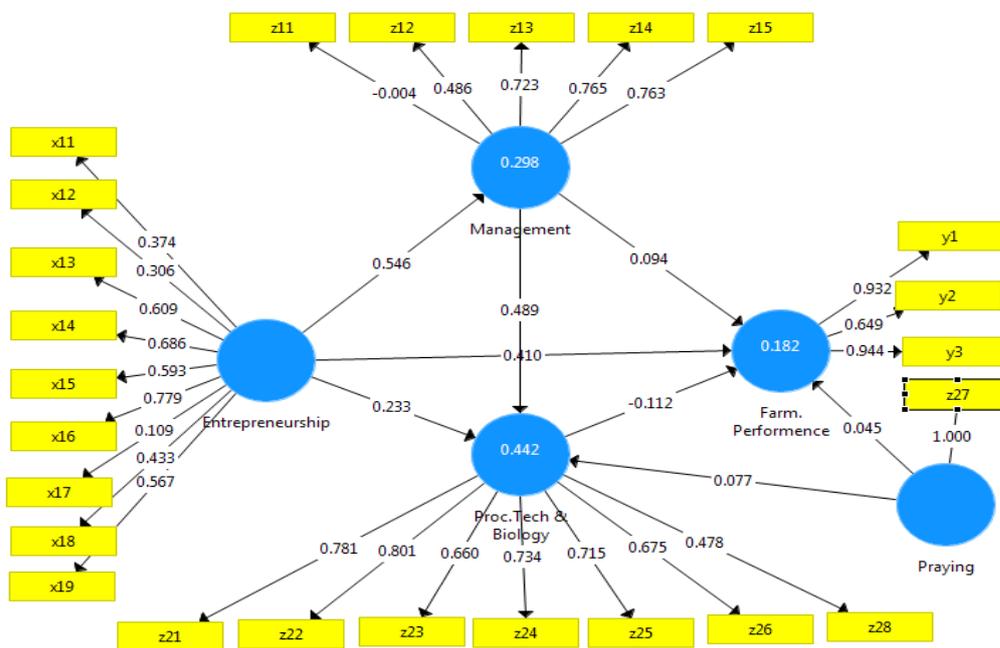

Figure 1. Structural model of entrepreneurship (before corrected)

In the PLS, there are two steps to test hypotheses of the effect of farmer entrepreneurial on farming performance. Those are measurement evaluation model and structural evaluation model. In the measurement evaluation model, there are two steps of analysis, including validity and reliability test. The data is considered feasible statistically if: (i) the loading factor and the average variance extracted (AVE) are more than 0.5, and (ii) the cross loading is more than 0.5 and the roof of AVE exceed inter-correlation among latent variable (Jogiyanto dan Abdillah, 2007 and Santoso 2007). Meanwhile, the data meets the reliability test if Crombac's Alpha and Composite Reliability are more than 0.6 (Hair et al., 2008).

The evaluation of structural model is pointed to know the effect of one independent latent variable to dependent latent variable (Ferdinand, 2002). There are two parameters to test causal correlation between two latent variables. The coefficient of determination (R^2) for the dependent construct, the path coefficient and or t-value of each path are for the significant test between construct in the structural model.

RESULT AND DISCUSSION

Evaluation of Model Measurement

The measurement of model describes about the relationship among indicators with its construct (its latent variables). This measurement is used to test validity of construct and reliability of instrument. The output of the modelmeasurement is presented at Figure 1.

Before evaluating the model measurement at Figure 1, it is very important to evaluate the loading factor at each construct. Based on the rule, the value of loading factor that is below 0.5 should be deleted from the model. The indicators are from

the model deleted, there are needs of achievement (x11), the self-confidence (x12), the personal capability (x17), the independence (x18), the planning (z12).

The output model after modification is presented at Figure 2. The initial value of path coefficient of technique process and biology of farm performance is negative (-0.1220). A negative effect is not consistent as the theoretical concepts explain. Instead, the indicator of tillage (z21) and fertilizer (z31) are deleted from the model. Therefore the final model is presented at Figure 2, and become analysis basis for discussion.
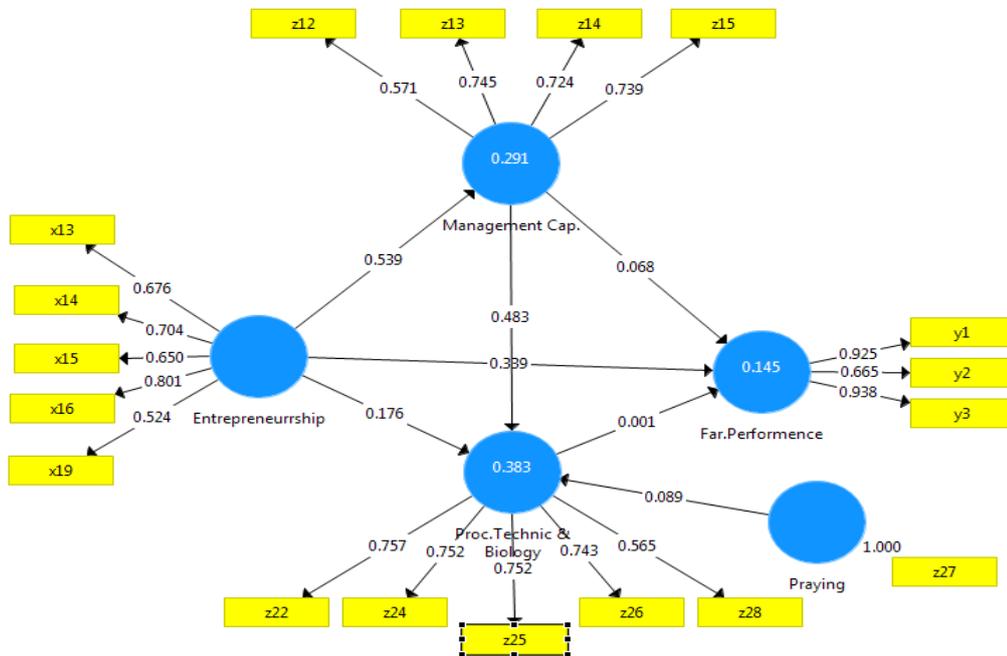

Figure 2. Structural model of entrepreneurship (after corrected)

The entrepreneurship shows five indicators which have loading factor above 0.5. These indicators are: risk taking (X13), creativity (X14), innovativeness (X15), future orientation (X16), and leadership (X19). As a note, a variable of x11, x12, x19 are deleted from the model because number of loading factor less than 0.5. All indicators are reflectors of entrepreneurship construct.

Meanwhile, the management capacity has four indicators as their reflectors. These indicators are planning (Z12), controlling (Z13), evaluating (Z14), and preparing for next planting season (Z15). The process of technique and biology has five indicators which have strong reflectors to the indicators. These indicators are planning (Z22), pest and deses control (Z24), watering (Z25), growing up (Z26),

and harvest (Z28). The reflectors of farm performance are production (y1), price of output (y2), and income (y3).

1. Validity test

Validity test is intended to know the ability of research instrument to measure what should be measured. There are two kinds of the Validity test, Discriminant Validity and Convergent Validity.

There are two parameters used to test convergent validity, namely loading factor and average variance extracted (AVE). Based on the Figure 2, the loading factor is presented by the value on each arrow from the latent variable to indicator connected. Then the value of the loading factor in every indicator is more than 0.5. It means that all values of loading factor meet the convergent validity.

Table 1. Root of AVE of Latent Variable

Latent variable	Original sample	Sample mean	t-value*
Entrepreneurship	0.550	0.461	9.22
Farm performance	0.730	0.720	14.24
Management capacity	0.490	0.487	9.97
Praying	1.000	1.000	nc
Process of tech & biology	0.520	0.515	10.63

Based on output analisis of PLS
*All t value showed p value < 0.01, except denoted nc (not calculated)

Meanwhile, AVE values are presented at Table 1. Table 1 shows all AVE values above 0.5. Table 1 also shows all AVE value in variable of farm performance is 0.726. It means that the amount of 72.6% information within all indicators can be reflected in the latent variable of farm performance. This explanation is also subjected to the other latent variables.

There are two parameters as indicators of model regarding to the discriminant validity test. These parameters are cross loading and comparison between root of AVE and inter-correlation among latent variables. The output of the root of AVE and the inter-correlation among latent variables are presented in Table 2. The value of cross loading is presented in Table 3.

The Table 2 shows the following values: (i) 0.677 is root of AVE for entrepreneurship, (ii) 0.852 is root AVE for farm performance, (iii) 0.698 is roof AVE for management, (iv) 1 is root AVE for praying,

and (v) 0.718 is AVE root for process technique and biology. All numbers are values of inter-correlation among latent variable, except the root of AVE. For example value of inter-correlation among entrepreneurship with: (i) farm performance is 0.76, (ii) management capacity is 0.359, (iii) praying is 0.327, and (iv) process technique and biology is 0.465. Based on the result, the root of AVE for entrepreneurship (0.677) is higher than value of inter-correlation among latent variable.

Table 2. Root AVE and Intercorrelation among Latent Variable

Latent variables	1	2	3	4	5
Entrepreneurship (1)	0.677				
Farm performance (2)	0.376	0.852			
Management capacity (3)	0.539	0.251	0.698		
Praying (4)	0.327	0.158	0.113	1.000	
Process of tech & biol (5)	0.465	0.198	0.588	0.201	0.718

Based on output analisis of PLS

Based on the explanation for inter-correlation among entrepreneurship with the other latent variables, the inter-correlation among other latent variables can be explained. According to Table 2, the value of each root of every AVE is higher than value of inter-correlation among latent variable.

The corresponding explanation also be relevant to other latent variables. The value of each root of every AVE are always higher than value of inter-correlation among latent variable.

Table 3. Cross Loading between Latent Variables and Its Indicators

Indicators	Entrepreneurship	Farm performance	Management capacity	Process of technique & biology
x13	0.678	0.300	0.360	0.241
x14	0.709	0.200	0.316	0.378
x15	0.649	0.200	0.359	0.361
x16	0.797	0.300	0.495	0.449
x19	0.524	0.200	0.238	0.278
y1	0.319	0.900	0.257	0.145
y2	0.304	0.700	0.106	0.165
y3	0.334	0.900	0.258	0.125
z12	0.323	0.200	0.546	0.216
z13	0.419	0.200	0.736	0.461
z14	0.375	0.200	0.737	0.473
z15	0.380	0.100	0.752	0.468
z21	0.511	0.100	0.494	0.805
z22	0.502	0.200	0.497	0.817
z23	0.257	0.000	0.267	0.665
z24	0.295	0.100	0.409	0.726
z25	0.305	0.100	0.367	0.695
z26	0.295	0.200	0.501	0.670

Based on output analisis of PLS

The output analysis of cross loading is presented in Table 3. The loading factor for all

indicators in its construct is higher than the value at others construct.

The output analysis of cross loading was presented in Table 3. The table showed that the output cross loading of relationship between the indicators and the latent variables in model constructed performed higher value than on those indicator with other latent variables. For example, the relationship between X13 and entrepreneurship (Figure 2) shows a higher number (0.678) than the X13 to other latent variables; such as farm performance (0.300), management capacity (0.360) and Process of technique and biology (0.241). Similar examples were also shown for other relationship, with similar behavior and explanations. This means that the built model structure meets the rules

Based on the evaluation of each parameter for each validity test, it can be shown that all parameter can meet convergent validity test and discriminant validity test. It can be said that the model is eligible regarding validity test.

2. Realibility test

There are two parameters in the test of reliability, that is crombach' alpha and composite reliability. The output of analysis is presented at Table 4. Table 4 shows that the values of both parameters are more than 0.5. It can be said that the model is eligible regarding reliability test.

Table 4. Test Result of Reliability of Latent Variables

Latent variables	Original sample	Sample mean	t-value*
Crombach's_Alpha			
Entrepreneurship	0.700	0.689	10.985
Farm performance	0.797	0.080	21.161
Management capacity	0.646	0.638	8.964
Praying	1.000	1.000	nc
Process of tech & biology	0.771	0.766	17.927
Composite Reliability			
Entrepreneurship	0.806	0.798	21.058
Farm performance	0.886	0.870	11.151
Management capacity	0.790	0.785	2.785
Praying	1.000	1.000	nc
Process of tech & biology	0.840	0.837	28.719

*All t value showed p value < 0.01, except denoted nc (not calculated)
Based on output analisis of PLS

Evaluation of Structural Model

The evaluation of structural model constitutes second step after the evaluation of model measurement considered eligible. The objective of the evaluation of structural model is to test the effect of independent latent variable to dependent latent variable. For this test, PLS use t statistic or p value as presented at Table 5.

Table 5 shows the direct relationship between independent latent variable to dependent latent variable. Table 5 (column 2) indicates the path coefficient of each relationship of latent variable and also its t statistic respectively. →

Table 5. Estimate Direct Effect between Laten Variables

Latent variable	Original sample	Sample mean	t-value*
Entrepreneurship → Farm performance	0.339	0.369	2.647
Entrepreneurship → Management capacity	0.539	0.563	6.380
Entrepreneurship → Proc tech&biology	0.176	0.202	1.136
Management capacity → Farm performance	0.068	0.053	0.388[ns]
Management capacity → Proc tech&biology	0.089	0.470	3.860
Proc tech&biology → Farm performance	0.001	0.006	0.005[ns]

*All t value showed p value < 0.01, except denoted ns (non significant)
Based on output analisis of PLS

Table 5 shows the direct effect of entrepreneurship → farm performance is positive (0.339) and the significant (t-value 2.647 or p value (0.000). The result indicates that entrepreneurship has significant effect to the farm performance. The contribution of entrepreneurship to farm performance is 0.339. It means that every increase in the entrepreneurship ability and farm performance will increase amount of 0.339 units with the assumption that other variables hold constant (ceteris paribus).

One of indicators used to measure farm performance is production. Therefore, it can be assumed that an increase of entrepreneurship ability will also affect the increasing of production. Figure 2 and Table 6 show the loading factor of indicator of production (y1) is 0.925 (p

value=0.000). It means that the indicator of production is closely perfect to explain the farm management. On the other word, the production is the strong reflector for farm performance. It means that if there is an increase on the farm performance, it automatically reflects an increase of production. Thus, if there is an increase of entrepreneurship, it will automatically increase the production.

Table 6. Relationship between Latent Variables and Its Indicators

Latent variables and its indicators	Original sample	Sample mean	t-value*
Entrepreneurship → x13	0.676	0.666	5.975
Entrepreneurship → x14	0.704	0.693	10.674
Entrepreneurship → x15	0.650	0.630	6.468
Entrepreneurship → x16	0.801	0.807	20.272
Entrepreneurship → x19	0.524	0.509	3.999
Farm performance → y1	0.925	0.900	6.532
Farm performance → y2	0.665	0.654	4.403
Farm performance → y3	0.938	0.914	6.913
Management capacity → z12	0.571	0.549	3.975
Management capacity → z13	0.745	0.737	11.906
Management capacity → z14	0.724	0.727	10.075
Management capacity → z15	0.739	0.738	11.178
Proc tech&biology → z22	0.757	0.758	16.358
Proc tech&biology → z24	0.752	0.749	11.862

*All t value showed p value < 0.01, except denoted (not significant)
Based on output analisis of PLS

Based on the above result, there was strongly evident that entrepreneurship meet a requirement as new production factor. On the other hand, based on the result of research that conducted at Malang Regency, entrepreneurship can represent as one of factor of production. This description indicated a new improvement of classic economic of factor of production.

Table 7. Estimate Indirect Effect between Latent Variables

Latent variables	Original sample	Sample mean	t-value*
Entrepreneurship → Farm performance	0.037	0.024	0.431ns
Entrepreneurship → Management capacity	nd	nd	nd
Entrepreneurship → Proc tech&biology	0.260	0.271	3.271
Management capacity → Farm performance	0.000	0.003	0.005ns
Management capacity → Proc tech&biology	nd	nd	nd
Proc tech&biology → Farm performance	nd	nd	nd

*All t value showed p value < 0.01, except denoted ns (not significant)
nd means indirect efect not defined
Based on output analisis of PLS

Based on Figure 2 and Table 6, the indicators that have important contribution as reflector of entrepreneurship are risk taking (X13), creativity (X14), innovation (X15), orientation to the future (X16), and leadership (X19). Among those indicators, the future orientation has highest loading factor (path coefficient of 0.801).

Figure 2 also shows that there are two path of entrepreneurship displaying effect to the farm performance including direct and indirect effect. The direct effect is shown by an arrow from entrepreneurship to farm performance directly. On the other side, the indirect effect of those relations is presented through a mediating variable as follow:

i.   entrepreneurship → management capacity → farm performance,

ii. entrepreneurship → process technique & biology → farm performance,

iii. entrepreneurship → management capacity → process technique & biology → farm performance.

The total indirect effect from entrepreneurship to process of technique & biology and to farm performance is presented in Table 7. The total of indirect effect entrepreneurship · farm performance is 0.037. However this indirect effect is not significant. Besides to the farm performance, entrepreneurship also has indirect effect to the process of technique and biology. The total of indirect effect from entrepreneurship · process of technique & biology is 0.260.

The results of Table 7 show that entrepreneurship does not significantly indirectly influence farm management. This is in contrast to the results in Table 5, where the direct influence of entrepreneurship strongly affects farm management as well as the production. This situation is increasingly consistent in proving that entrepreneurship can be one of the productions that directly affect production.

CONCLUSION AND SUGGESTION

Entrepreneurship is viewed from indicator risk taking, creativity, innovativeness, future orientation, and leadership has direct positive effect (0.339) and significant (t-value 2.647) on farm performance that measured from production, price of output, and income.

The loading factor of production is 0.93 and is very significant. It means that if there is an increase of entrepreneurship ability, it will influence on the increase of production. On the other hand, entrepreneurship can be presented as the new factor of production beside land, labour, capital, and management.

The research results significant findings concerning the improvement to the classic economic theory of production factor. The recommended proposition is that production constitutes function of land, labour, capital, management, and entrepreneurship, explicitly stated as Y=f (L, Lb, C, M, E).

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