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Entrepreneurship Effect on Cost and Revenue of Organic Rice Farming in Bantul Regency

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ABSTRACT

Farmers as food producers have an important role to fulfill the requirement of the development of organic rice market that must comply with quality standards both process and product. The role of farmers as a leading actor who has ability, creativity and inventiveness should be maximized its potential. Therefore farmer entrepreneurship is one of the important factors in determining the success of market-oriented businesses. This study aims to determine the effect of farmer's entrepreneurship on costs and revenues of organic rice farming. The study was conducted using surveys, interviews on organic rice farmers, and then analyzed descriptively using analysis of different test average (*t*-test). Results showed that there are differences in cost and farmer's income between farmers with high and low entrepreneurship spirit. Based on the research result, the farmer's entrepreneurship spirit are still needed to be grown regarding their motivation, innovation creativity, risk-taking and decision-making ability so to solve the problems of organic rice development.

JEL Classification: C12, D14, Q10.

Keywords: Entrepreneurship, Organic Rice, Cost, Revenue.

1. INTRODUCTION

Development of agricultural sector start from the potential availability of human resources, technology and capital to be optimally utilized, focused and integrated. Until now, agriculture is still becomes a crucial sector in Indonesian economy, therefore Indonesian government always gives primary attention to the development of agriculture sector although the implementation is done gradually over a period of five years.

Increasing number of population in absolute terms in the next years would result scarcity in agricultural land, increasing the workforce and needs of crops. The amount of resources such as land which is owned by farmers, capital and capacity management should be used to obtain optimal results.

The development of agriculture by reducing the use of chemicals inputs in production process is growing rapidly in line with increasing awareness on damage and effect on environment, and human which may result from the use of these materials in excessive and improper way. Moreover, there are changes on people diets which are tending to consume healthy foods although it is more expensive. Therefore organic farming which is a chemical-free farming or minimizing chemicals materials would be an alternative farming in the 21st century.

Organic farming is an attempt to influence farmers both individually and collectively, to reduce risks on health and environment (Biao, 2003). Indonesia has set the standards of organic food which are stated on *Standard National Indonesia* (SNI) 01-6729-2002, which states that organic food is food produced by organic farming methods that implement management practices with the aim of maintaining ecosystems to achieve sustainable productivity. (BSN, 2002).

Farmers as food producers have an important role to supply the demands of the market of organic rice that must comply with quality standards both in process and product. The role of farmers as the leading actor who has the ability creativity and inventiveness should be maximized potential. Based on the success of the reality farmer achieve high-performance farming is not only determined by the activities of cultivation techniques alone but also more determined by the ability of farmers, right attitude, knowledge and skills which were carried in running his farm from preparation planting to marketing of products produced. Therefore the entrepreneurial farmer is one crucial factor in determining the success of market-oriented businesses. Development of entrepreneurship on organic rice farming is expected to increase the income and welfare of farmers. Thus farmer's entrepreneurship on implementation of organic rice farming would contribute new knowledge while exploring factors that influence on it would provide information for overcome the development of organic rice farming.

Bantul regency has 50.685 hectares land area., Most of the land in Bantul is regosol soil which is a potential area for development of food crops. Besides, the Bantul regency is one of five regencys in Yogyakarta which majority of farmers have been starting with organic farming. Although the organic farming they applied is not pure organic farming (without using chemicals), but the farming system goal is to minimize the use of chemical fertilizers. Another common goal in organic farming is to produce organic rice which is has value added compared to non-organic rice.

The direct contribution of farmers entrepreneurial ability on economic growth and farmer's households welfare, depend on income level and profit of farming. Entrepreneurship is important for the development of agribusiness, furthermore, farmer's entrepreneurial should be developed for to face unstable market pressure (Wibowo and Subiyono, 2005; Priyanto, 2008).

The level of production and farming income are not only become major determinant of household welfare of farmers, but also as one of the important factors that influenced economic growth. If farmers do not use its resources efficiently, there will be a potential lost to increase farming income and profit. Conversely, if the farmer acted very efficient in allocating resources, the additional contribution of agricultural sectors are obtained through the efforts of growth-oriented development. Meanwhile, to achieve the level

of efficiency is not easy, it relates to the role of entrepreneurial character that has not been optimized. Thus, the identification of the efficiency of resources (factors of production) are important in determining the existence of several opportunities in agricultural sector related to its potential contribution to economic growth and improving the welfare of farmer's households (Weersink et. al., 1990).

This study aims to determine the influence of entrepreneurship spirit of farmers towards the costs and revenues of organic rice farming. This study is expected to be taken into consideration in formulating policy for developing agriculture, especially organic rice farming through the entrepreneurial spirit of farmers and the factors that influence it, so as to provide socio-economic impacts for people, especially in minimising the cost and increase the income of farmers of organic rice.

2. LITERATUR REVIEW

Environmental friendly of agriculture has actually been practiced by farmers hundreds of years ago. This agricultural systems was done without using external inputs and dependent only from nature by restoring all crop residue into the soil as organic fertilizer. According to Sutanto (2002), there was a difference between natural farming and organic farming. Natural farming assumed that natural resources were capable on regulating the growth of plants without human intervention, while organic farming were more intensively human intervention to utilize the land and to improve the farming based on the principle of recycling which was carried out according to local conditions.

Organic farming systems can be defined by using much internal input would improve the quality of environment, land, water, and have a positive effect on plants and human. The use of external inputs (chemical inputs) excessively could reduce the quality of soil and caused the degradation of natural resources through the accumulation process.

Although the nutrient content of organic fertilizers is much lower than chemical fertilizers, but its existence is vital as supporting of increasing the productivity of soil, through its role on improving physical, chemical and biological soil. The role of organic fertilizer and chemical fertilizer is synergistic in conserving soil productivity. Organic materials have a role in increasing the productivity of soil, through its role in the physical, chemical and biological soil. The addition of organic material to the soil (such as by organic fertilization) is the key factor to increase the health of land, in addition to the induction of nutrients/fertilizer and other soil conservation (Adiningsih, 2005).

Organic rice is one of commodity that become main target of the development of organic farming, even though the vision of organic farming has been socialized but until now the organic rice producers have not been able to become a provider of food as expected.

Several problems that hamper the development of organic farming are; (1) the problem of narrowness of organic land, (2) not all varieties are adaptable on cultivation of organic farming, (3) pest attack, (4) technology provider of organic production is not available easily at the farm level, (5) there is no much information regarding the processing of organic food. (Ministry of Agriculture in 2007 in Mary. 2013).

Entrepreneurship spirit could be defined as something that associated with special characteristic, character, behavior and attitude of people towards the struggle of life to achieve both intrinsic and extrinsic of happiness. Entrepreneurship spirit in general is shows when someone communicate with others in order to gather information on building relationship with the business partner.

The importance of farmers entrepreneurship as a new approach in farming is based on the characteristics of entrepreneurship. According Wirasmita (1994), an entrepreneur is someone who is creative and willing to take risks. Anoraga (1997) suggested that entrepreneurship spirits consists of characteristics such as hard work, sacrificing, taking advantage from al., resources, dare to take risks to realize his ideas, sensitive and capable to see business opportunities, has the action of combining resources to realize their ideas and build a business. While entrepreneurship is innovator who is capable to transform opportunities into new ideas, independent thinker, consider failure as study material, creative and responsible for the preparation, processing and measurement of risk (Machfoed, 2004). Someone who has the entrepreneur spirit would show independent attitude, vibrant, dare to try, great desire, have a need for achievement, creative, risk taking, have the knowledge and skills related to farming (Priyanto, 2008).

The entrepreneurship spirit is one of the characters that is inherent in the enterprise itself, among others, motivation, innovation and creativity, risk and decision making. Motivation according to Mansor and Mat (2010) is divined as anything that inspires human actions including aspiration or intention in behavior. The motivation for someone to become an entrepreneur is quite diverse. The motivation that drives someone to do business almost same, namely to gain freedom and need for achieving self-achievement is always at the top (Hisrich et. al., 2001).

Innovation is the ability to apply creativity in the framework of solving the problem and finding opportunities (doing the new thing), while creativity is the capacity to think of something new and different. Khasali et. al., (2011) define creativity as an effective shock because of the shock, the market can be very attentive, think or even deny (because not familiar). However, many people felt creative, blamed the job is not by his talent and a state that does not support or bosses who did not leave wiggle room.

Risk taking is a crucial element of entrepreneurship. Since Cantillon (1734) as quoted by Antonic and Hisrich (2003), who are first developed the term enterprise and defined it as someone who bears the risk of profit or loss, risk taking is considered as a fundamental element of self-employment and entrepreneurship (Antonic and Hisrich, 2003).

The decision-making process is critical in the development stage of business. Entrepreneurs need to recognise the crucial transition to decision model for business growth and learn to understand it to take action in the face of rapid changes in the business (Ndemo and Maina, 2010).

The results of research by Rougor et. al., (1998) showed that personal aspect of a manager which measured by the background of motivation and skill capability influenced the decision-making process, technical process and ultimately affect the agricultural output, as measured by the indicators of technical efficiency, price and economic efficiency.

Research Lee and Tsang (2001) about individual aspect of entrepreneurship are the need for achievement and personal character. This research is interesting since included entrepreneurship variable, which was not used in previous research. The results of this study recommended future research to examine the relationship between skills, experience and behavioral study on business performance.

Research on farmers entrepreneurship and performance of chili and rice farming in Sleman, Yogyakarta Special Province conducted by Darmadji (2012) using SEM analysis showed that social and economic environmental factors affected on entrepreneurship spirit of chili farmers, while economic and technical factors affected on rice farmers. Entrepreneurship spirit of chili farmers are higher than organic rice

farmers. Moreover, entrepreneurship influenced on management capacity, biological technical processes and farming performance .

Farming according to Soekartawi (2002) is how people allocate available resources effectively and efficiently for the purpose of obtaining high profits at a particular time. The farming would be effective if the farmer or manufacturer could allocate the funds well, and told me to be efficient if the resources generating output (output) exceeds the input (input). Shinta (2011) reinforces that farming is a science of how to use resources efficiently and more on a farming business to obtain maximum results.

The research on Analysis of Rice Farming using System of Rice Intensification (SRI) in District Patuk and Semin Gunung Kidul, showed that the SRI program could save the use of chemical fertilizers and otherwise improve organic fertilizers and pesticides which are made by farmers itself. Rice farming conducted using SRI system was feasible and could enhance production of rice by 165% (Suratiah and Nawangsari, 2012).

Delbridge et. al., (2013) on his research entitled profitability analysis system of organic farming and conventional farming is done in the Midwest United States. The results showed that the scenario of the largest auxiliary engine rotation of conventional corn and soybean can be managed at a larger area than organic rotation with the same amount of labor. Results scenarios of auxiliary engine was smallest in the same area. Estimated cost of machinery cost per hectare was lower and net income of all agricultural land was higher for larger land on both cropping system. However, for each scenario auxiliary engine, the average net profit of all farming system was higher for organic systems than conventional systems, even though the land area of conventional systems was higher.

Research on efficiency had also been done by de Ponti et. al., (2012) on organic rice farming systems compare to conventional rice farming. The results showed that the performance of organic farming systems tend to be better than conventional systems, this was indicated on the value of productivity, R/C ratio, technical efficiency, allocative efficiency, economic efficiency and environmental efficiency were 5.91 tonnes/ha; 2.74; 0.88; 0.81; 0.72; 0.71 respectively, which are higher than the value of conventional system of rice farming

3. RESEARCH METHODS

Methods used in this research are descriptive approach and conducted using survey technique by giving questionnaires as data collection tool. This study was conducted in Bantul Regency which is the centre for the development of organic rice farming in Yogyakarta Province where there are some farmers who have got the trust of government agencies to manage organic rice and get an organic certificate. (<http://www.bantulkab.go.id/>).

This research used purposive sampling method on a group of farmers who grow organic rice farming in Bantul. There are 19 groups of farmers who undertake organic rice farming. Taking five producer groups who overlay over 5 ha and certified the samples of farmers is done deliberately (purposively) as many as 123 farmers, which are comprised of 45 farmers low entrepreneurial spirit (entrepreneurial score <198) and 78 farmers' of high entrepreneurial spirit (entrepreneurial score \geq 198).

This research used descriptive analysis to describe the characteristics of the entrepreneurship spirit of farmers, costs, revenue and income of organic rice farmers. Farming costs is explicit costs in one planting

season per hectare. Farmer revenues is the multiplication of number of production per hectare with the selling price per kilograms of unit production, the formula is as follow:

$$TR = P \times Q$$

where, TR = Revenue Organic Rice (Rp)

P = price of organic rice (Rp/kg)

Q = Production Organic Rice (kg)

Farm income is the difference between revenue and costs of farming are formulated:

$$\Pi = TR - TC$$

where, Π = Income (Rp)

TR = Revenue (Rp)

TC = Total Cost (Rp)

To assess the influence of entrepreneurship spirit on costs and revenues of organic rice farmers the average different test (*t*-test) was applied, to see are there differences in average costs and revenues between high entrepreneurship farmers compare to low entrepreneurship farmers. Assuming the population variance is not known, the sample size is different and the same variance, then the formula of *t*-test is as follows:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{s_{X_1X_2} \cdot \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}$$

where,

$$s_{X_1X_2} = \sqrt{\frac{(n_1 - 1)s_{\bar{X}_1}^2 + (n_2 - 1)s_{\bar{X}_2}^2}{n_1 + n_2 - 2}}$$

and degree of freedom (df) = $n_1 + n_2 - 2$

4. RESULTS AND DISCUSSION

The research about the effect of entrepreneurship spirit on costs and revenue of organic rice farming was conducted to know the characteristics of entrepreneurial spirit, value and income, of organic rice farmers and also to know the result of the spirit of enterprise to the costs and revenues of organic rice farming.

1.1. Characteristics of the Spirit of Entrepreneurship

Characteristics of entrepreneurship consist of motivation, innovation and creativity, the courage to take risks, courage to make decisions and business environment. Table 1 indicates that decision has the highest scores 4.20 (maximum score 5). Criteria in Courage consist of farmer's decision-making basis for decision making and resources in making decisions. A high score indicates that farmers been steady in taking the decision to organic rice farming because farmers believe that organic rice farming is profitable and could improve soil structure and could be accepted by society. Additionally, in making decisions, farmers

have the support of family and farmer groups that will support the success of farmers in organic rice farming.

The lowest of entrepreneurship spirit is business environment by 2.56 (the lowest score band is 1). The business climate is external factors that influence the spirit of entrepreneurship which is about participation of farmers in training, market orientation, business networks and government support. The involvement of farmers in organic farming as well as training on organic rice is still lack, training events usually followed by farmer's group administrator. Market orientation in the farm level is still weak; there is no courage from organic rice farmer's to penetrate the market of organic rice that can give higher in price. This condition is also strengthened by the indicator for innovation and creativity on the criteria of post methods that shows low scores (2.59), most farmers sell organic rice in the form of dry grain (58%). Thus external factors or the business environment need attention and support from the government about the provision of transport facilities, infrastructure and irrigation which are still limited.

Table 1
Characteristics of the Spirit of Entrepreneurship Score of Organic Rice Farmers in 2016

<i>Indicators</i>	<i>Criteria</i>	<i>Total Score</i>	<i>Average Score</i>	<i>Entrepreneurship Spirit</i>
Motivation	Push Factors	14.15	3.54	3.53
	Pull factors	22.86	3.81	
Innovation and Creativity	Introduction of New Products	15.31	3.83	
	Input Source Supplier	21.39	3.57	
	Cultivation Method	30.82	3.85	
	Post-Harvest Method	10.37	2.59	
Risk Taking Decision	Production and price risk	11.43	3.81	
Decision-making	Basis and source of decision-making	16.81	4.20	
The business environment	Markets, Networks and Government Support	61.54	2.56	
	Total	204.68		

In conclusion, characteristics of the high entrepreneurship farmers are enough rate as shown in Table 1 that total score of 204.68 and an average rating of 3.53 means to develop organic rice farming views of motivation, innovation and creativity, risk-taking, decision-making and the business environment is quite high.

Income and Cost Analysis of Organic Rice Farming

Cost analysis used in this study is explicit costs which are the costs that are incurred by the farmer. This analysis would distinguish between high and low farmer's entrepreneurship. Organic rice farming in Bantul are categorized as still a semi-organic, which means that even though they already certified as organic rice but farmers are still used non-organic fertilizers although in small quantities, varied according to the type and dose, so are the use of pesticides. Therefore the use of production factors of non-organic fertilizers and pesticides are counted by its value. The type of non-organic fertilizer is Urea, KCl, SP36, Ponska, ZA and Granules while the type of pesticides is Diazinon and Antracol.

The highest cost both for farmers with high and low entrepreneurship is an organic fertilizer which was almost 50% of total explicit costs. The organic compost is the main production factors, actually all

organic rice farmers used organic fertilizers as a major factor in the production of organic rice farming, but organic farmers are not sure if they are relying on only organic fertilizer, farmers are always worried if the production is not as expected.

Table 2
Use and Costs of Organic Rice Farming in Bantul per hectare

<i>Components</i>	<i>Entrepreneurial Spirit</i>					
	<i>High</i>			<i>Low</i>		
	<i>Total</i>	<i>Cost (Rp)</i>	<i>%</i>	<i>Total</i>	<i>Cost</i>	<i>%</i>
Seed (kg)	37.22	44,223	3.57	9.88	63,021	3.50
Organic Fertilizer (kg)	9,902.88	4,805,082	49.80	10,245.49	5,087,618	49.02
Non-Organic Fertilizer (Rp)		1,319,218	13.67		1,585,624	15.32
Non-Family Labor	101.22	3,005,738	31.15	106.18	3,202,785	30.86
Depreciation Cost		175,080	1.81		35,285	1.30
Total		9,649,341	100		10,378,333	100

Overall, farmers with high entrepreneurship could minimize the cost of organic rice farming, although there is one of the production factors in this case are pesticides that have a higher value than the farmers with low entrepreneurship spirit. With motivation, creativity and courage, the organic paddy farmer took this decision are in the high-spirit efforts to optimize the use of production factors and minimize the costs.

Table 3
Cost and Income Analysis of Organic Rice Farming in Bantul per hectare

<i>Components</i>	<i>Entrepreneurial Spirit</i>	
	<i>High</i>	<i>Low</i>
Production (kg)	3,689	3633.50
Price (Rp)	3,965	3831.11
Revenue (Rp)	14,627,041	13,920,345
Explicit costs (Rp)	9,649,341	10,378,333
Income (Rp)	4,977,700	3,542,012

Based on Table 3, the organic rice production per hectare is 3,663 kg for farmers with low entrepreneurship and 3,689 kg on high entrepreneurship farmers. Organic rice production level is still below the organic rice production using SRI method which is about 5 tons/hectare. Most of organic rice farmers are selling rice production in the form of grain, and some sell rice in rice either sold in bulk or packs of 5 kg to farmers entrepreneurial high, it will affect the price of grain organic rice high entrepreneurial farmers to be better than the entrepreneurial poor, this condition will greatly affect the revenues.

The value of farmers' income with higher entrepreneurship spirit is more promising than the organic rice farmers that entrepreneurship spirit is low. Average income per hectare of organic rice farmers in Bantul are Rp 4,259,865. The value of this income is already quite high for organic rice farming but when compared with the conventional rice farming income, the revenue of organic rice farming is still relatively low. This is in line with the results of research conducted by Roidah, Ida Syamsu (2015) that the income of conventional rice during the dry season in the Village Sepatan, District Gondang, Tulungagung was Rp 6,819,001 per hectare.

Differences in costs and revenues in Table 3, strengthened by the results of a statistical analysis of different test average (*t*-test) using SPSS, are as follows.

Table 4
Analysis of Mean different test Cost and Revenue

<i>Indicators</i>	<i>Entrepreneurial Spirit</i>	<i>N</i>	<i>Mean</i>	<i>Prob</i>	<i>Decision</i>
Cost	High	78	9,649,341	0.034	Significant
	Low	45	10,378,333		
Income	High	78	4,977,700	0.045	Significant
	Low	45	3,542,012		

$\alpha = 5\%$

Table 4 shows the value of the probability of different test average of both costs and revenues which all are less than 0.05 ($p \leq 0.05$) means that there are differences between organic rice farmers with high entrepreneurship and lower entrepreneurship with error rate of 5%.

Factors that made high entrepreneurship farmers more successful (as seen from the analysis of costs and revenues) compared with lower entrepreneurship farmers are strong motivation on organic rice farming, either from pull factor or push factor in motivation. However, behind its strong motivation there are factors that could strengthen this research. According to research conducted by Rahmawati et. al., (2015), pull and puss factors of organic rice farmer motivation are influenced by individual factors and business environment factors i.e. loan access , training, market orientation and government support. One of the push factors that motivated organic rice farmers and significantly negative effect is loan access. Bear a meaning that if there was difficult access to loan, farmers motivation on organic rice farming will be stronger. However, farmers did not understand the importance of loan for the development of farming. Load was used for non-agricultural needs, in the reason to utilize loans for the business which was faster on return on investment than agricultural since it will return the loan faster. Compare to using loan on rice farming, which farmers could repay the installments after harvest season around 3-4 months later.

In terms of pull factors in motivation, training is significant and negatively affect on pull factors of motivation of organic rice farmers. It could be noted why training tends to decrease the interest of farmers on organic rice farming. Farmers thought that training on organic rice farming is complicated and requires perseverance of farmers in managing their farming. Moreover, the production facilities that meet the organic qualification are not available in the market and they have to make by their self. Whilst farmers have been farming using conventional cultivation techniques of rice production facilities which are easily to obtain.

With innovation and creativity, farmers could introduce that organic rice is superior and healthy product. Farmers also able to create a new method in supply of inputs such as making their organic fertilizer or make their organic pesticide although in small scale. Moreover, if it seen from post-harvest activities, as previously discussed, farmers with high entrepreneurship spirit are dared to sell organic paddy rice using bulk packaging or even some farmers who are already doing their hatchery, although still on among themselves. The new method of cultivation that many farmers do not like is flipping a straw after harvest do nursery baskets perform single cropping systems which is done in the organic rice cultivation SRI method (Mutakin, J. 2012).

The courage to take a risk in both farmers whose high or low entrepreneurship is quite high. It is means that the producer is ready to accept the risk when production is low, and the price is not in line with expectations. Decision-making for organic rice farming has also been quite high; it is due to the strong support of families and farmers.

Network cooperation is part of business environment in farmer's entrepreneurship which are relatively low. It can be seen from entrepreneurial score in overall, neither high entrepreneurial farmers nor low entrepreneurial farmer have low score. This condition in line with the results of research conducted by Rahmarwati et. al., (2016) that the network of cooperation in marketing of rice has not given adequate profits for farmers. Farmers refused to build partnership with organic rice trader since they applied same price whether organic or non-organic rice. Furthermore, the farmers tend to consume their rice by themselves or sell to consumers who are willing to pay higher price than non-organic rice. Thus, organic rice farmers tend to avoid joint marketing with rice traders.

The success of organic rice farming which begins with the formation of entrepreneurship spirit needs help from external factors such as training, repairing facilities, infrastructure, transportation facilities and adequate communications.

5. CONCLUSIONS AND RECOMMENDATIONS

The formation of the entrepreneurship spirit of farmers still needs to be grown regarding motivation, innovation and creativity, risk-taking and decision-making. There is a difference between costs and revenues of farmers with high and low entrepreneurship spirit.

To strengthen the entrepreneurial spirit of organic rice farmers, the development of the business environment are indispensable following by the government support in the form of training and the provision of transport facilities and infrastructure, communications, irrigation and markets as well as sustainable and intensive mentoring.

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