Performance Improvement for Micro, Small and Medium Enterprises (SMEs) with Social Financing Model

Author(s): Fakhrihatun, Yasmin Umar Assegaff and Hasim
Affiliation: Business and Economic Faculty, Universitas Sebelas Maret, Indonesia
Keywords: Performance, SMEs, Social Financing Model, Shania Analysis, Interpretative Phenomenological Analysis.
Received: September 15, 2016 | Accepted: December 12, 2016
Type of Paper: Empirical | Vol. 1(1) Page: 11 – 16 | Citation: 0
Abstract | PDF | Share | SSRN | Academia | LinkedIn | Mendeley | ORCID | ResearchGate


Author(s): Dewi Israwiyati, Mugi Rahadjo, Nurul Istiqomah and Leni Kurniawati
Affiliation: Faculty of Economics and Business, Sebelas Maret University, Indonesia
Keywords: Economic Performance, Development gaps; HDI, Dependency Ratio; Employment; Fiscal Decentralization.
Received: October 14, 2016 | Accepted: December 23, 2016
Type of Paper: Empirical | Vol. 1(1) Page: 17 – 24 | Citation: 0
Abstract | PDF | Share | SSRN | Academia | LinkedIn | Mendeley | ORCID | ResearchGate

Analysis of Awareness on Biogas Adoption as the Alternative Energy through the Blue Economy Concept Application

Author(s): Nurul Istiqomah, Izza Mafrihah, Dewi Israwiyati and Nunung Sri Mulyani
Affiliation: Fakultas Ekonomi dan Bisnis, Universitas Sebelas Maret, Indonesia
Keywords: Blue Economy; Public Awareness; Logit Regression; ABCG actors.
Received: October 2, 2016 | Accepted: December 19, 2016
Type of Paper: Empirical | Vol. 1(1) Page: 26 – 31 | Citation: 0
Abstract | PDF | Share | SSRN | Academia | LinkedIn | Mendeley | ORCID | ResearchGate
Journal of Finance and Banking Review (JFBR) Editorial Board 2016-2018

**Founding Editor:**
Kashan Pirzada, Ph.D.
(University of Malaya, Malaysia)

**Editor:**
Musa Mangena, Ph.D.
(University of Essex, United Kingdom)

**Associate Editors:**
Kamran Ahmed, Ph.D.
(La Trobe Business School, Australia)
Danture Wickramasinghe, Ph.D.
(University of Glasgow, UK)

**Managing Editor:**
Abd Rahim Mohamad, Ph.D.
(Global Academy of Training & Research
(GATR) Enterprise, Malaysia)

**Editorial Board Members:**
Fadzlan Sufian, Ph.D.
(Taylor’s University, Malaysia)
Sebastian Kif, Ph.D.
(Czestochowa University of Technology, Poland)
Shahid Anjum, Ph.D.
(Institute Teknologi Brunei, Brunei)
Mohamed Azami Mohamed Adil, Ph.D.
(Universiti Teknologi MARA, Malaysia)
Editorial Board Members:
Fadzlan Sufian, Ph.D.
(Taylor's University, Malaysia)

Shahid Anjum, Ph.D.
(Institute Teknologi Brunel, Brunel)

NE Maziibuko, Ph.D.
(Nelson Mandela Metropolitan University, South Africa)

Yasushi Suzuki, Ph.D.
(Ritsumeikan Asia Pacific University, Japan)

Toto Rusmanto, Ph.D.
(Binus Business School, Indonesia)

Mohd Zulchafi Bin Mustapha, Ph.D.
(University of Malaya, Malaysia)

Sitti Raha Agoes Salim, Ph.D.
(Universitas Sumatera Utara, Indonesia)

Sebastian Kol, Ph.D.
(Czestochowa University of Technology, Poland)

Mohamed Azam Mohamed Adil, Ph.D.
(Universiti Teknologi MARA, Malaysia)

Kausar Saïd, Ph.D.
(Emirates College for Management and IT, UAE)

Candra Fajri Ananda, Ph.D.
(Brawijaya University, Indonesia)

Steven Tami, Ph.D.
(Fort Hays State University, USA)

Shobha Sundaresan, Ph.D.
(Maharani Lakshmibai Amman College for Women, India)

Zhanar Lamasheva, Ph.D.
(Kazakh National Technical University, Kazakhstan)
Analysis of Awareness on Biogas Adoption as the Alternative Energy through the Blue Economy Concept Application

Nurul Istiqomah¹*, Izza Mafruhah², Dewi Ismoiyowati³ and Nunung Sri Mulyani⁴

¹²³¹/²³¹/Fakultas Ekonomi dan Bisnis, Universitas Sebelas Maret, Indonesia

ABSTRACT

Objective – The purpose of this study is (1) to analyse community perception in the use of biogas as an alternative energy, (2) to analyse whether variables such as income, age, education, cost savings, and livestock maintenance costs actually affect the willingness of community to use biogas, and (3) to develop a relationship among potential regional resources in the blue economy development.

Methodology/Technique – The method used in this study is a collaboration between quantitative and qualitative models. For the first research objective, the qualitative theory approach focused on in-depth interviews and focus group discussions to develop a variety of potential economic relations in the implementation of the blue economy. For the second objective, descriptive statistics was used to identify differences in community perceptions on the use of biogas by the people in the Ngawi and Boyolali regencies. For third objective, model is used to analyze whether income, age, education, cost savings, and livestock maintenance costs affect community willingness to use biogas.

Findings – The results show that (1) there are different community perceptions on biogas adoption in the Ngawi and Boyolali regencies, (2) variables such as income, age, education, cost savings, and livestock maintenance costs affect the willingness of community in using biogas, and (3) the blue economy concept can be developed by utilizing economic potentials in Ngawi towards an energy-independent village.

Novelty – The use of biogas as an alternative energy needs to be developed so as to stimulate influential variables that can raise public awareness because the method is simple and exploits local potentials without waste.

Type of Paper: Empirical

Keywords: Blue Economy; Public Awareness; Logit Regression; ABCG actors.

1. Introduction

Energy is one of the input used in industries, services, transport, and household activities. Energy can be derived from non-renewable and renewable sources. Indonesia was once known as an energy producer of oil and natural gas. However, over the years, the depletion of oil reserves and an increased fuel consumption had led Indonesia to become a net oil importer since 2004. Efforts in saving energy for the supply of fuel derived from petroleum, gas or coal is diminishing while demand continues to rise. This phenomenon calls for the development of alternative renewable and environmental friendly energy. This initiative is required because

* Paper Info: Revised: June, 2016
  Accepted: October, 2016

* Corresponding author:
  E-mail: nurulistiqomah1980@yahoo.com
of global warming and the declining quality of the environment. The development of alternative renewable and environmental friendly energy that is locally available can be an instrument of many benefits such as reducing dependence on fossil energy, realizing environmental sustainability and providing energy that is easily accessible to the local community in terms of quantity, quality, and purchasing power (Setyawan, 2010).

According to the National Energy Policy Blue Print, in 2006, the energy source was still dominated by oil - 53%, followed by coal and natural gas - 22% and 21% respectively while other energy is only about 4%. It is expected that by 2025, oil use will have been reduced to 20% and other energy derived from geothermal, coal liquefaction, biofuel, nuclear, CBM, biomass, and hydrogen will have increased to 17%. (ESDM, 2005).

The average energy consumption in Indonesia increases about 7-8% per year while the economy grows about 5-6% percent per year resulting in energy elasticity of about 1.6 and this implies an inefficient use of energy. The figure is far above the elasticity level in developed countries such as Japan and the United States where elasticity is 0.1 and 0.2 respectively. Compared to ASEAN countries like Singapore and Thailand that have slightly higher levels with 1.1 and 1.4 respectively, the disparity clearly stands out. This indicates that the use of energy in Indonesia requires revamping, standing at 1.6.

One way to save fuel is to reduce the use of unrenewable energy and to find new renewable energy sources. Some renewable energy sources that are environmental friendly are available at the local level. One of them is biogas, the energy that comes from gases produced by anaerobic or the fermentation process of organic materials derived from manure, household waste, and animal waste. Galvez et al., (2015) stated that biogas is a source of potential energy that can be used for the continuity of sustainable development.

The concept of green economy has begun to shift to the blue economy, a concept that implements social inclusiveness, natural resources efficiency, and zero waste production systems. Blue economy is an economic concept that was developed to meet the challenges of the world economic system that tends to be exploitative and damaging to the environment. The main damage is caused by waste and over-exploitation. The main motto of the Blue Economy concept is zero waste (Bogdan, 2014).

Biogas, which is derived from cow dungs, especially beef cattle and dairy cows, is one of the alternative energies that can be used for the blue economy application. In 2015, the number of beef cattle in Indonesia was 15,494,288 with East Java Province having the highest number of 4,326,261 followed by Central Java Province with 1,628,093. Meanwhile, the dairy cow population was 525,171 with East Java having the largest population with 253,830 followed by West Java, with 135,345.

The blue economy concept could be applied in the MSME industrial centers which include tempeh chips industrial centers in Karang Tengah, Ngawi district, East Java province. If soybeans, the main ingredient of tempeh chips and its waste are used as cattle feed, the feeding expenses, which is constantly increasing, can be reduced. In addition, cow dungs can be collected and used as biogas for cooking. Based on observations, the tempeh chip frying process is largely fueled by wood taken from forests around Ngawi. This causes the production site to become dirty, polluting the air at the same time and indirectly, driving small-scale illegal logging. The biogas produced can be used as fuel for cooking or frying the chips and this can reduce production costs and increase profits. It is expected that the process of tempeh chip production will generate zero waste since soybean dregs are being used as cattle feed, cow dungs as biogas, and biogas as fuel for cooking.

Waste as biogas raw materials is found in rural areas, particularly those producing organic waste and livestocks. The government has sought to develop biogas at the community level but community awareness remains underdeveloped. In light of these problems, the objective of this paper is to develop the economic potential relationship between the advantages of biogas utilization and the awareness for the blue energy implementation and to analyse community perception, particularly micro-scale entrepreneurs and households, in the use of biogas as an alternative energy.

2. Literature Review

There are two types of energy: renewable energy and non-renewable energy. Renewable energy is energy that can be recovered and it comes naturally from the sun, wind, water, and biofuels that can be produced
repeatedly. Renewable energy sources are always there and it does not damage the environment because it is categorized as clean energy. Sources of energy coming from the sun, wind, biomass, and water are the most suitable energy for use in remote or rural areas. The potential renewable energy source that has not been used optimally is biogas.

The concept of the Blue Economy, in essence, is to create zero waste and answer the threat of food insecurity and energy crisis. Its main goal is to transform poverty to prosperity and scarcity to abundance. This concept is designed for sustainable development with the efficient use of natural resources so as to not damage the natural system. The waste generated in the production process is used as raw material for other products, so that the waste can produce a variety of other products and revenue. The blue economy concept is a policy that is pro-poor, pro-jobs, pro-growth and pro-environment.

According to the International Energy Agency (IEA), biogas is the energy derived from natural processes that can be refilled continuously. Biogas can be derived from animal waste, agricultural waste, and organic waste that has methane gas content of $\pm 60\%$, carbon dioxide of $\pm 38\%$, and other of $\pm 2\%$. Biogas is one type of biomass energy with the energy being obtained from plants, animals, and other microorganisms. (Havukainen et al., 2014). Utilization of farm wastes, particularly cow manure, supports the blue energy program or zero waste concept in order to realize sustainable farming systems and environmental friendly economy. Some of the advantages of manure as biogas producers are:

1. It reduces environmental pollution to water, soil, and air,
2. It creates alternative energy for households,
3. It improves the welfare of farmers due to reduced household energy costs; and

According to a research conducted by Setyawati (2010), the development of biogas is one form of alternative solution to fossil energy crisis at the local and national levels. Biogas development in Indonesia is in line with the meat self-sufficiency program where increased production of beef will yield abundant cow manure waste as gas fuel. Gebregeziabhier et al. (2014) stated that the waste can be utilized and it can be produced economically, thereby adding value. Good waste management is required for improving the quality of the environment and health in developing countries, particularly in rural areas.

Galvez et al., (2015) stated that biogas is a potential source of energy that can be used for the continuity of sustainable development. The first stage in the process of biogas utilization is the decision to build a network/channel to distribute the biogas. This decision is taken by using the AHP as the decision-making process can be complex since it includes economic, social, and environmental factors. At the end of the process, waste producers become aware of the importance of sorting and grouping garbage so that the use of waste as an alternative energy source can be done effectively.

Demarest et al., (1993) had described the influence of socio-economic characteristics on biogas technology. Naming some of these characteristics as income, education level, occupation of the head of household, the amount of waste/manure, and access to water, they claim that all of these can impact on biogas technology adoption. In Uganda, the factors that influenced the adoption consists of age of the household head, household size, traditional fuel used, and education level. It appears that an increase in age and education level is inversely proportional to the willingness to adopt biogas. However, the availability of traditional fuels and household size can positively affect the willingness to adopt biogas. A socio-economic survey conducted in Uganda and Kenya showed that low level education and income are the main causes limiting women to the access of making decisions in using biogas as an alternative fuel. In Kenya, farm size, land ownership security, the amount of milk produced, agricultural systems, and livestock maintenance cost showed a positive correlation with the use of biogas.
3. Research Methodology

The method used in this study is a collaboration between quantitative and qualitative models. For the first research objective, qualitative theory was used with in-depth interviews and focus group discussions to develop a variety of potential economic relations in the implementation of the blue economy. For the second objective, descriptive statistics was used to identify differences in community perceptions on the use of biogas by the people in the Ngawi and Boyolali regencies. For the third objective, the following model is used to analyze whether income, age, education, cost savings, and livestock maintenance costs affect community willingness to use biogas:

\[ Q_d = \beta_0 + \beta_1 \text{Income} + \beta_2 \text{Age} + \beta_3 \text{Edu} + \beta_4 \text{Cost\_cow} + \beta_5 \text{Family} + e_i \]

- \( Q_d \) = Awareness to use biogas
- \( \text{Income} \) = Respondents’ income
- \( \text{Age} \) = Respondent’s age
- \( \text{Edu} \) = Respondents’ education level
- \( \text{Cost\_cow} \) = Cow maintenance costs
- \( \text{Family} \) = Number of dependents

4. Results

The development of renewable energy is divided into two: (1) alternative energy that are high investment, large-scale production, and high technology with high cost consequence, which will be built by the government, and (2) alternative energy based on local wisdom, and this alternative energy model is already being applied using local resources as an approach. This model gives a positive value especially in community self-sufficiency by exploiting the potentials of the surrounding environment. The blue economy concept, with the main motto of creating an economy with zero waste will inform the community that virtually, all input, output, and waste noted in the production process will be optimally utilized, if appropriately managed.

The Sadang village in Ngawi, where the research was conducted, is a rural area that served as a pilot model for the Energy Independent Village. It was noted that the government and various stakeholders of the community had not used the biogas digester optimally. Field data showed that 66.67% of respondent households were using digesters while 33.33% were not because they thought the application was complicated. Seen from the education aspect, respondents who did not use the biogas digester were primary school graduates. Average savings gained through the use of biogas was IDR 108 750, with an average use of three hours per day. Meanwhile, the use of the biogas digester by business players have not been optimal, especially for tempeh chips producers because the heat power generated is limited to the production process only.

Some of the advantages of biogas adoption noted in the research area include savings where respondents were not required to spend money to buy gas and ultimately, such money could be allocated for other needs. In addition, alternative energy will be able to significantly contribute to the saving of the environment and so improve community welfare as household expenses are indirectly reduced.

The community’s willingness to use biogas can be analyzed by using logit regression. Table 1 shows the results of the logit regression analysis.
Table 1. Results of Logit Regression Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>z-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>7.064944</td>
<td>13.93895</td>
<td>0.506849</td>
<td>0.6123</td>
</tr>
<tr>
<td>LOG_INCOME</td>
<td>-1.358844</td>
<td>2.229497</td>
<td>-0.609485</td>
<td>0.5422</td>
</tr>
<tr>
<td>AGE</td>
<td>0.041711</td>
<td>0.051753</td>
<td>0.805969</td>
<td>0.4203</td>
</tr>
<tr>
<td>EDU</td>
<td>0.282421</td>
<td>0.115788</td>
<td>2.439114</td>
<td>0.0147</td>
</tr>
<tr>
<td>LOG_COST_COW</td>
<td>-0.083812</td>
<td>0.163392</td>
<td>-0.512953</td>
<td>0.608</td>
</tr>
<tr>
<td>FAMILY</td>
<td>-0.229577</td>
<td>0.380538</td>
<td>-0.603294</td>
<td>0.5463</td>
</tr>
</tbody>
</table>

| McFadden R-squared | 0.171297 | Mean dependent var | 0.74 |
| S.D. dependent var | 0.443087 | S.E. of regression | 0.42793 |
| Akaike info criterion | 1.189788 | Sum squared resid | 8.052295 |
| Schwarz criterion  | 1.41923  | Log likelihood    | -25.74469 |
| Hannan-Quinn criter. | 1.277161 | Restr. log likelihood | -28.65285 |
| LR statistic       | 9.816312  | Avg. log likelihood | -0.474894 |
| Prob(LR statistic) | 0.08061   |                      |      |

Obs with Dep=0 13  Total obs 50
Obs with Dep=1 37

Source: Data Analysis Output

As can be seen, the processed data show that the odds ratio is sought beforehand. Odds ratio is a measure of the magnitude of the effect of the independent variable change on the dependent variable. Table 2 shows the results of the calculation of odds ratios of each coefficient:

Table 2. Odds Ratio Value Using Variables That Affect Biogas Adoption Willingness

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Odd Ratio</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>7.064944</td>
<td>84.46692627</td>
<td>0.6123</td>
</tr>
<tr>
<td>LOG_INCOME</td>
<td>-1.358844</td>
<td>71.97862331</td>
<td>0.5422</td>
</tr>
<tr>
<td>AGE</td>
<td>0.041711</td>
<td>52.24182126</td>
<td>0.4203</td>
</tr>
<tr>
<td>EDU</td>
<td>0.282421</td>
<td>1.480857637</td>
<td>0.0147</td>
</tr>
<tr>
<td>LOG_COST_COW</td>
<td>-0.083812</td>
<td>83.67542144</td>
<td>0.608</td>
</tr>
<tr>
<td>FAMILY</td>
<td>-0.229577</td>
<td>72.68518312</td>
<td>0.5463</td>
</tr>
</tbody>
</table>

Source: Data Analysis Output (2016)

Based on the analysis, it can be said that the only variable that affects a person's willingness to use biogas is education. Education variable has a coefficient of 0.282421 with a probability value of 0.0147. Therefore, it can be concluded that the education variable, at the significant level of 10%, influences the community’s awareness on the use of biogas. The odd ratio values of the education variable are 1.4809, hence, it can be concluded that if a person’s level of education increases by one year, the awareness for the use of biogas as an
alternative energy will increase by 1.48%. Thus, education has an important role to play as the higher the educational level, the more extensive the knowledge and insight of a person. Awareness of the use of biogas is the result of the knowledge about the energy crisis that is occurring in the world and Indonesia which affects sustainable living.

From the data, it also appears that income, age, cow maintenance costs, and the number of family dependents provided no significant effect on the awareness to use biogas as an alternative energy. The higher the income level, the higher the purchasing power of a person to purchase energy (LPG) to meet his/her needs. When this occurs, the individual seems to ignore the idea of taking advantage of biogas as an alternative energy.

Based on research conducted, Roessali et al., (2013) noted that as many as 53.33% of farmer respondents in Yogyakarta had recognized the urine as a fertilizer and biogas technology but only 3.33% of them were applying these methods in the business environment. They were aware of the need to convert biogas into alternative energy but they admitted that it was difficult to implement because of the high cost of biogas installation fees and the huge amount and quantity of cow dung needed to properly activate the biogas process. Thus, it is concluded that a person’s awareness in using biogas as one of the alternative energy needs to be built through intensive dissemination by focusing on the added value that will be gained by the community.

5. Conclusions and Recommendations

It appears that the use of fossil energy remains to be dominant at present. It was deduced that respondents noted that there were problems in getting enough supply to activate biogas technology. Besides that, there were also problems with the distribution channels, infrastructure, and access equality. Therefore, if alternative energy is needed to reduce dependence on fossil energy and to provide electricity for local and regional levels, the government needs to do more. Clearly, the respondents of Indonesia were deterred by the education variable that affected the Indonesian people’s awareness in using biogas as an alternative source of energy.

Biogas as an alternative energy requires community dissemination so that people’s awareness to use cattle dung for sustainable living is a necessity rather than a compulsion. Technological assistance and mentoring are also required in order to successfully implement the blue energy and the Clean Development Mechanism programs towards energy availability saving and community welfare improvement.

References


JFBR Awareness of Biogas

by Izza Mafruhah
Analysis of Awareness on Biogas Adoption as the Alternative Energy through the Blue Economy Concept Application

Nurul Istiqomah¹*, Izza Mafruhah², Dewi Ismoyowati³ and Nunung Sri Mulyani⁴
¹²³Faculty of Economics and Business, Universitas Sebelas Maret, Indonesia

ABSTRACT

Objective – The purpose of this study is (1) to analyse community perception in the use of biogas as an alternative energy, (2) to analyse whether variables such as income, age, education, cost savings, and livestock maintenance costs actually affect the willingness of community to use biogas, and (3) to develop a relationship among potential regional resources in the blue economy development.
Methodology Technique – The method used in this study is a collaboration between quantitative and qualitative models. For the first research objective, the qualitative theory approach focused on in-depth interviews and focus group discussions to develop a variety of potential economic relations in the implementation of the blue economy. For the second objective, descriptive statistics was used to identify differences in community perceptions on the use of biogas by the people in the Ngawi and Boyolali regencies. For third objective, model is used to analyze whether income, age, education, cost savings, and livestock maintenance costs affect community willingness to use biogas.
Findings – The results show that (1) there are different community perceptions on biogas adoption in the Ngawi and Boyolali regencies, (2) variables such as income, age, education, cost savings, and livestock maintenance costs affect the willingness of community in using biogas, and (3) the blue economy concept can be developed by utilizing economic potentials in Ngawi towards an energy-independent village.
Novelty – The use of biogas as an alternative energy needs to be developed so as to stimulate influential variables that can raise public awareness because the method is simple and exploits local potentials without waste.
Type of Paper: Empirical

Keywords: Blue Economy; Public Awareness; Logit Regression; ABCG actors

1. Introduction

Energy is one of the input used in industries, services, transport, and household activities. Energy can be derived from non-renewable and renewable sources. Indonesia was once known as an energy producer of oil and natural gas. However, over the years, the depletion of oil reserves and an increased fuel consumption had led Indonesia to become a net oil importer since 2004. Efforts in saving energy for the supply of fuel derived from petroleum, gas or coal is diminishing while demand continues to rise. This phenomenon calls for the development of alternative renewable and environmental friendly energy. This initiative is required because...
of global warming and the declining quality of the environment. The development of alternative renewable and environmental friendly energy that is locally available can be an instrument of many benefits such as reducing dependence on fossil energy, realizing environmental sustainability and providing energy that is easily accessible to the local community in terms of quantity, quality, and purchasing power (Setyawan, 2010).

According to the National Energy Policy Blue Print, in 2006, the energy source was still dominated by oil - 53%, followed by coal and natural gas - 22% and 21% respectively while other energy is only about 4%. It is expected that by 2025, oil use will have been reduced to 20% and other energy derived from geothermal, coal liquefaction, biofuel, nuclear, CBM, biomass, and hydrogen will have increased to 17% (ESDM, 2005).

The average energy consumption in Indonesia increases about 7-8% per year while the economy grows about 5-6% percent per year resulting in energy elasticity of about 1.6 and this implies an inefficient use of energy. The figure is far above the elasticity level in developed countries such as Japan and the United States where elasticity is 0.1 and 0.2 respectively. Compared to ASEAN countries like Singapore and Thailand that have slightly higher levels with 1.1 and 1.4 respectively, the disparity clearly stands out. This indicates that the use of energy in Indonesia requires revamping, standing at 1.6.

One way to save fuel is to reduce the use of uncerenewable energy and to find new renewable energy sources. Some renewable energy sources that are environmental friendly are available at the local level. One of them is biogas, the energy that comes from gases produced by anaerobic or the fermentation process of organic materials derived from manure, household waste, and animal waste. Galvez et al., (2015) stated that biogas is a source of potential energy that can be used for the continuance of sustainable development.

The concept of green economy has begun to shift to the blue economy, a concept that implements social inclusiveness, natural resources efficiency, and zero waste production systems. Blue economy is an economic concept that was developed to meet the challenges of the world economic system that tends to be exploitative and damaging to the environment. The main damage is caused by waste and over-exploitation. The main motto of the Blue Economy concept is zero waste (Bogdan, 2014).

Biogas, which is derived from cow dung, especially beef cattle and dairy cows, is one of the alternative energies that can be used for the blue economy application. In 2015, the number of beef cattle in Indonesia was 15,494,288 with East Java Province having the highest number of 4,326,261 followed by Central Java Province with 1,628,093. Meanwhile, the dairy cow population was 525,171 with East Java having the largest population with 253,830 followed by West Java with 135,345.

The blue economy concept could be applied in the MSME industrial centers which include tempeh chips industrial centers in Karang Tengah, Ngawi district, East Java province. If soybeans, the main ingredient of tempeh chips and its waste are used as cattle feed, the feeding expenses, which is constantly increasing, can be reduced. In addition, cow dung can be collected and used as biogas for cooking. Based on observations, the tempeh chip frying process is largely fueled by wood taken from forests around Ngawi. This causes the production site to become dirty, polluting the air at the same time and indirectly, driving small-scale illegal logging. The biogas produced can be used as fuel for cooking or frying the chips and this can reduce production costs and increase profits. It is expected that the process of tempeh chip production will generate zero waste since soybean dregs are being used as cattle feed, cow dungs as biogas, and biogas as fuel for cooking.

Waste as biogas raw materials is found in rural areas, particularly those producing organic waste and livestocks. The government has sought to develop biogas at the community level but community awareness remains undeveloped. In light of these problems, the objective of this paper is to develop the economic potential relationship between the advantages of biogas utilization and the awareness for the blue energy implementation and to analyze community perception, particularly micro-scale entrepreneurs and households, in the use of biogas as an alternative energy.

2. Literature Review

There are two types of energy: renewable energy and non-renewable energy. Renewable energy is energy that can be recovered and it comes naturally from the sun, wind, water, and biofuels that can be produced.
repeatedly. Renewable energy sources are always there and it does not damage the environment because it is categorized as clean energy. Sources of energy coming from the sun, wind, biomass, and water are the most suitable energy for use in remote or rural areas. The potential renewable energy source that has not been used optimally is biogas.

The concept of the Blue Economy, in essence, is to create zero waste and answer the threat of food insecurity and energy crisis. Its main goal is to transform poverty to prosperity and scarcity to abundance. This concept is designed for sustainable development with the efficient use of natural resources so as to not damage the natural system. The waste generated in the production process is used as raw material for other products, so that the waste can produce a variety of other products and revenue. The blue economy concept is a policy that is pro-poor, pro-jobs, pro-growth and pro-environment.

According to the International Energy Agency (IEA), biogas is the energy derived from natural processes that can be refilled continuously. Biogas can be derived from animal waste, agricultural waste, and organic waste that has methane gas content of at least 60%, carbon dioxide of at least 38%, and other of at least 2%. Biogas is one type of biomass energy with the energy being obtained from plants, animals, and other microorganisms. (Havukainen et al., 2014). Utilization of farm wastes, particularly cow manure, supports the blue energy program or zero waste concept in order to realize sustainable farming systems and environmental friendly economy. Some of the advantages of manure as biogas producers are:

1) It reduces environmental pollution to water, soil, and air,
2) It creates alternative energy for households,
3) It improves the welfare of farmers due to reduced household energy costs; and
4) It creates a Clean Development Mechanism (CDM) (Waskito, 2011).

According to a research conducted by Setyawan (2010), the development of biogas is one form of alternative solution to fossil energy crisis at the local and national levels. Biogas development in Indonesia is in line with the meat self-sufficiency program where increased production of beef will yield abundant cow manure waste as gas fuel. Gebreegziabher et al. (2014) stated that the waste can be utilized and it can be produced economically, thereby adding value. Good waste management is required for improving the quality of the environment and health in developing countries, particularly in rural areas.

Galvez et al., (2015) stated that biogas is a potential source of energy that can be used for the continuity of sustainable development. The first stage in the process of biogas utilization is the decision to build a network/channel to distribute the biogas. This decision is taken by using the AHP as the decision-making process can be complex since it includes economic, social, and environmental factors. At the end of the process, waste producers become aware of the importance of sorting and grouping garbage so that the use of waste as an alternative energy source can be done effectively.

Demarest et al., (1995) had described the influence of socio-economic characteristics on biogas technology. Naming some of these characteristics as income, education level, occupation of the head of household, the amount of waste/manure, and access to water, they claim that all of these can impact on biogas technology adoption. In Uganda, the factors that influenced the adoption consists of age of the household head, household size, traditional fuel used, and education level. It appears that an increase in age and education level is inversely proportional to the willingness to adopt biogas. However, the availability of traditional fuels and household size can positively affect the willingness to adopt biogas. A socio-economic survey conducted in Uganda and Kenya showed that low level education and income are the main causes limiting women to the access of making decisions in using biogas as an alternative fuel. In Kenya, farm size, land ownership security, the amount of milk produced, agricultural systems, and livestock maintenance cost showed a positive correlation with the use of biogas.
3. Research Methodology

The method used in this study is a collaboration between quantitative and qualitative models. For the first research objective, qualitative theory was used with in-depth interviews and focus group discussions to develop a variety of potential economic relations in the implementation of the blue economy. For the second objective, descriptive statistics was used to identify differences in community perceptions on the use of biogas by the people in the Ngawi and Boyolali regencies. For the third objective, the following model is used to analyze whether income, age, education, cost savings, and livestock maintenance costs affect community willingness to use biogas:

\[ Qd = \beta_0 + \beta_1Income + \beta_2Age + \beta_3Edu + \beta_4Cost\_cow + \beta_5Family + e_i \]

- Qd = Awareness to use biogas
- Income = Respondents’ income
- Age = Respondent’s age
- Edu = Respondents’ education level
- Cost\_cow = Cow maintenance costs
- Family = Number of dependents

4. Results

The development of renewable energy is divided into two: (1) alternative energy that are high investment, large-scale production, and high technology with high cost consequence, which will be built by the government, and (2) alternative energy based on local wisdom, and this alternative energy model is already being applied using local resources as an approach. This model gives a positive value especially in community self-sufficiency by exploiting the potentials of the surrounding environment. The blue economy concept, with the main motto of creating an economy with zero waste will inform the community that virtually, all input, output, and waste noted in the production process will be optimally utilized, if appropriately managed.

The Sadang village in Ngawi, where the research was conducted, is a rural area that served as a pilot model for the Energy Independent Village. It was noted that the government and various stakeholders of the community had not used the biogas digester optimally. Field data showed that 66.67% of respondent households were using digesters while 33.33% were not because they thought the application was complicated. Seen from the education aspect, respondents who did not use the biogas digester were primary school graduates. Average savings gained through the use of biogas was IDR 108,750, with an average use of three hours per day. Meanwhile, the use of the biogas digester by business players have not been optimal, especially for tempeh chips producers because the heat power generated is limited to the production process only.

Some of the advantages of biogas adoption noted in the research area include savings where respondents were not required to spend money to buy gas and ultimately, such money could be allocated for other needs. In addition, alternative energy will be able to significantly contribute to the saving of the environment and so improve community welfare as household expenses are indirectly reduced. The community’s willingness to use biogas can be analyzed by using logit regression. Table 1 shows the results of the logit regression analysis.
Nurul Istiqomah, Izza Mafruhah, Dewi Ismayovati and Nunung Sri Mulyani

Table 1. Results of Logit Regression Analysis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>z-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>7.064944</td>
<td>13.93895</td>
<td>0.506849</td>
<td>0.6123</td>
</tr>
<tr>
<td>LOG INCOME</td>
<td>-1.358844</td>
<td>2.229497</td>
<td>-0.609485</td>
<td>0.5422</td>
</tr>
<tr>
<td>AGE</td>
<td>0.041711</td>
<td>0.051753</td>
<td>0.805969</td>
<td>0.4203</td>
</tr>
<tr>
<td>EDU</td>
<td>0.282421</td>
<td>0.115788</td>
<td>2.439114</td>
<td>0.0147</td>
</tr>
<tr>
<td>LOG COST_COW</td>
<td>-0.083812</td>
<td>0.163392</td>
<td>-0.512953</td>
<td>0.608</td>
</tr>
<tr>
<td>FAMILY</td>
<td>-0.229577</td>
<td>0.380538</td>
<td>-0.603294</td>
<td>0.5463</td>
</tr>
</tbody>
</table>

McFadden R-squared 0.171297  Mean dependent var 0.74
S.D. dependent var 0.443087  S.E. of regression 0.427793
Akaikes info criterion 1.189788  Sum squared resid 8.052295
Schwarz criterion 1.41923  Log likelihood -23.74469
Hannan-Quinn criterion 1.277161  Residual log likelihood -28.65285
LR statistic 9.816312  Avg. log likelihood -0.474094
Prob(LR statistic) 0.08061

Obs with Dep=0 13  Total obs 50
Obs with Dep=1 37
Source: Data Analysis Output

As can be seen, the processed data show that the odds ratio is sought beforehand. Odds ratio is a measure of the magnitude of the effect of the independent variable on the dependent variable. Table 2 shows the results of the calculation of odds ratios of each coefficient:

Table 2. Odds Ratio Value Using Variables That Affect Biogas Adoption Willingness

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Odd Ratio</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>7.064944</td>
<td>84.46692627</td>
<td>0.6123</td>
</tr>
<tr>
<td>LOG INCOME</td>
<td>-1.358844</td>
<td>71.97862331</td>
<td>0.5422</td>
</tr>
<tr>
<td>AGE</td>
<td>0.041711</td>
<td>52.24182126</td>
<td>0.4203</td>
</tr>
<tr>
<td>EDU</td>
<td>0.282421</td>
<td>1.480857637</td>
<td>0.0147</td>
</tr>
<tr>
<td>LOG COST_COW</td>
<td>-0.083812</td>
<td>83.67542144</td>
<td>0.608</td>
</tr>
<tr>
<td>FAMILY</td>
<td>-0.229577</td>
<td>72.68518312</td>
<td>0.5463</td>
</tr>
</tbody>
</table>

Source: Data Analysis Output (2016)

Based on the analysis, it can be said that the only variable that affects a person’s willingness to use biogas is education. Education variable has a coefficient of 0.282421 with a probability value of 0.0147. Therefore, it can be concluded that the education variable, at the significant level of 10%, influences the community’s awareness of the use of biogas. The odd ratio value of the education variable are 1.4809, hence, it can be concluded that if a person’s level of education increases by one year, the awareness for the use of biogas as an
alternative energy will increase by 1.48%. Thus, education has an important role to play as the higher the educational level, the more extensive the knowledge and insight of a person. Awareness of the use of biogas is the result of the knowledge about the energy crisis that is occurring in the world and Indonesia which affects sustainable living.

From the data, it also appears that income, age, cow maintenance costs, and the number of family dependents provided no significant effect on the awareness to use biogas as an alternative energy. The higher the income level, the higher the purchasing power of a person to purchase energy (LPG) to meet his/her needs. When this occurs, the individual seems to ignore the idea of taking advantage of biogas as an alternative energy.

Based on research conducted, Roessali et al., (2013) noted that as many as 55.33% of farmer respondents in Yogyakarta had recognized the urine as a fertilizer and biogas technology but only 3.33% of them were applying these methods in the business environment. They were aware of the need to convert biogas into alternative energy but they admitted that it was difficult to implement because of the high cost of biogas installation fees and the huge amount and quantity of cow dung needed to properly activate the biogas process. Thus, it is concluded that a person’s awareness in using biogas as one of the alternative energy needs to be built through intensive dissemination by focusing on the added value that will be gained by the community.

5. Conclusions and Recommendations

It appears that the use of fossil energy remains to be dominant at present. It was deduced that respondents noted that there were problems in getting enough supply to activate biogas technology. Besides that, there were also problems with the distribution channels, infrastructure, and access equality. Therefore, if alternative energy is needed to reduce dependence on fossil energy and to provide electricity for local and regional levels, the government needs to do more. Clearly, the respondents of Indonesia were deterred by the education variable that affected the Indonesian people’s awareness in using biogas as an alternative source of energy.

Biogas as an alternative energy requires community dissemination so that people’s awareness to use cattle dung for sustainable living is a necessity rather than a compulsion. Technological assistance and mentoring are also required in order to successfully implement the blue energy and the Clean Development Mechanism programs towards energy availability saving and community welfare improvement.

References


<table>
<thead>
<tr>
<th>Rank</th>
<th>Source</th>
<th>Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>gatreenterprise.com</td>
<td>Internet Source</td>
<td>15%</td>
</tr>
<tr>
<td>2</td>
<td>documents.mx</td>
<td>Internet Source</td>
<td>1%</td>
</tr>
<tr>
<td>3</td>
<td>repository.unimal.ac.id</td>
<td>Internet Source</td>
<td>1%</td>
</tr>
<tr>
<td>4</td>
<td><a href="http://www.researchgate.net">www.researchgate.net</a></td>
<td>Internet Source</td>
<td>1%</td>
</tr>
<tr>
<td>5</td>
<td>Submitted to University of Wales Swansea</td>
<td>Student Paper</td>
<td>1%</td>
</tr>
<tr>
<td>6</td>
<td>nuxu.blogspot.com</td>
<td>Internet Source</td>
<td>1%</td>
</tr>
<tr>
<td>7</td>
<td>repository.uinjkt.ac.id</td>
<td>Internet Source</td>
<td>&lt;1%</td>
</tr>
<tr>
<td>9</td>
<td><a href="http://www.unorcid.org">www.unorcid.org</a></td>
<td>Internet Source</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>----------------</td>
<td>----------------</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>journal.ut.ac.ir</td>
<td>Internet Source</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>upcommons.upc.edu</td>
<td>Internet Source</td>
<td></td>
</tr>
</tbody>
</table>

Exclude quotes: Off  Exclude bibliography: On  Exclude matches: Off
LEMBAR
HASIL PENILAIAN SEWAAT SEBIDANG ATAU PEER REVIEW
KARYA ILMIAH : JURNAL ILMIAH*

Judul Karya Ilmiah ( artikel) : Analysis of Awareness on Biogas Adoption as the Alternative Energy through the Blue Economy

Jumlah Penulis : 4 Orang (Nurul Istiqomah, Iiza Mafruiah, Dewi Ismyovvati, Nunung Sri Mulyani)

Status Pengusul: Penulis pertama / penulis ke 2 / penulis korespondensi

Identitas Jurnal Ilmiah:

   a. Nama Jurnal : Journal of Finance and Banking Review
   b. Nomor ISSN : 0128-3103
   d. Penerbit : GATR Enterprise
   e. DOL artikel (jika ada) : https://repository.feb.uns.ac.id/iiatpdf.php?lokasi=publikasi&kode=892
   f. Alamat web Jurnal :

Kategori Publikasi Jurnal Ilmiah:

   □ Jurnal Ilmiah Internasional / Internasional bereputasi;
   □ Jurnal Ilmiah Nasional Terakreditasi
   □ Jurnal Ilmiah Nasional/Nasional terindeks di DOAJ, CABI, COPERNICUS

Keterangan:

   (bergantung pada kategori yang tepat)

Hasil Penilaian Peer Review:

<table>
<thead>
<tr>
<th>Komponen Yang Dinilai</th>
<th>Nilai Maksimal Jurnal Ilmiah 20</th>
<th>Nilai Akhir Yang Diaperoleh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Internasional/Internasional bereputasi**</td>
<td>Nasional Terakreditasi</td>
</tr>
<tr>
<td>a. Kelengkapan unsur isi artikel (10%)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>b. Ruang lingkup dan kedalaman pembahasan (30%)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>c. Kecukupan dan kemutahiran data/informasi dan metodologi (30%)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Total = (100%)</td>
<td>20</td>
<td>19</td>
</tr>
</tbody>
</table>

Nilai Pengusul = (40% x 19) / 3 = 2,533 (Penulis Kedua)

Catatan Penilaian artikel oleh Reviewer:

a. Kelengkapan dan kesesuaian unsur isi artikel:
   Jurnal ini sudah sesuai dengan acuan yang dibuat oleh redaksi jurnal Financial and Business Review. Pola penulisan artikel ini adalah introduction, literature review, research method, result dan conclusion. Materi dalam artikel ini membahas tentang pengelolaan energy terbarukan yang berbasis masyarakat sebagai upaya untuk mengurangi konsumsi gas dalam lingkup rumah tangga dan UMKM. Artikel ini layak untuk mendapatkan nilai 2

b. Ruang lingkup dan kedalaman pembahasan:
   Artikel ini membahas tentang adopsi biogas dalam energy alternative dalam konsep blue economy. Blue economy merupakan hal yang lebih tinggi dibandingkan dengan green economy, di mana semua unsur dalam proses produksi tanpa sisa. Konsep ini sebenarnya sangat mudah dalam imlementasi tapi jarang ada yang melakukannya, sehingga menjadi novelty yang belum banyak diteliti. Artikel ini menisati 11 artikel lain yang berhubungan sehingga mampu menghasilkan artikel yang bagus dan relevan. Penilaian terhadap artikel tersebut membuatnya layak mendapatkan nilai 6

c. Kecukupan dan pemutakhiran data/informasi dan metodologi:
   Alat analisis yang digunakan dalam penelitian ini adalah analisis kuantitatif dengan tool regresi logit, di mana variable dependenya merupakan dummy kualitatif yang belum banyak digunakan oleh para peneliti di Indonesia. Novelty paper ini adalah pada penggunaan alat analisis ini karena banyak digunakan sebagai acuan oleh peneliti setelahnya. Sehingga layak untuk mendapatkan nilai 6

d. Kelengkapan unsur dan kualitas terbitan:
   Journal of Finance and Banking Review merupakan jurnal internasional namun belum bereputasi karena belum memiliki indeks dari lembaga indeksing. Oleh sebab itu maka memperoleh nilai 5

e. Indikasi Plagiat:
   Artikel ini tidak terindikasi plagiat karena hasil nilai turn it in adalah sebesar 21% atau berada di bawah ketentuan maksimum yaitu 25%

f. Kesesuaian bidang ilmu:
   Artikel tentang biogas ini merupakan salah satu alternative baru alam pengentasa kemiskinan karena energy terbarukan berbasis masyarakat, sehingga masyarakat akan mampu meningkatkan tingkat kejayaan mereka. Hal ini sesuai dengan kompetensi penulis yaitu pengentasa kemiskinan.
Surakarta, 19 Maret 2020

Prof. Dr. Julianus Johny Sarungu, M.S
NIP 195107011980101001
Jabatan : Guru Besar
Pangkat, Gol Ruang : Pembina Utama Madya / IV/d
Unit Kerja : Fakultas Ekonomi dan Bisnis UNS
Bidang Ilmu : Ekonomi Pembangunan

*Dinilai oleh dua Reviewer secara terpisah
**Coret yang tidak perlu
***Nasional/Internasional di DOAJ, CAB, Copernicus
Judul Karya Ilmiah (artikel) : Analysis of Awareness on Biogas Adoption as the Alternative Energy through the Blue Economy Concept Application

Jumlah Penulis : 4 Orang (Nurul Istiqomah, Izza Mafruhah, Dewi Ismyowati, Nuning Sri Mulyani)

Status Pengusul : Penulis pertama / penulis ke 2 / penulis korespondensi**

Identitas Jurnal Ilmiah
   a. Nama Jurnal : Journal of Finance and Banking Review
   b. Nomor ISSN : 0128-3103
   d. Penerbit : GATR Enterprise
   e. DOL artikel (jika ada) :
   f. Alamat web Jurnal : https://repository.feb.uns.ac.id/ihatpdf.php?lokasi=publikasi&kode=892
   g. Terindeks di Scimagojr/Thomson Reuters ISL knowledge atau di ..................**

Kategori Publikasi Jurnal Ilmiah
   - Jurnal Ilmiah Internasional / Internasional bereputasi.**
   - Jurnal Ilmiah Nasional Terakreditasi
   - Jurnal Ilmiah Nasional/Nasional terindeks di DOAJ, CABI, COPERNICUS**

Hasil Penilaian Peer Review :

<table>
<thead>
<tr>
<th>Komponen Yang Dinilai</th>
<th>Nilai Maksimal Jurnal Ilmiah 20</th>
<th>Nilai Akhir Yang Diperoleh</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Kelengkapan unsur isi artikel (10%)</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>b. Ruang lingkup dan kedalaman pembahasan (30%)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Total = (100%)</td>
<td>20</td>
<td>19</td>
</tr>
</tbody>
</table>

Nilai Pengusul = (40% x 19) / 3 = 2,533 (Penulis Kedua)

Catatan Penilaian artikel oleh Reviewer :

   a. Kelengkapan dan kesesuaian unsur isi artikel :
      Penyusunan unsur dalam artikel ini sudah sesuai dengan acuan artikel ilmiah dengan point penting introduction, literature review, research method, result dan conclusion. Artikel ini menggunakan 7 referensi yang terdiri atas buku, data-data dan artikel yang sebelumnya. Banyaknya referensi memberikan tambahan wacana dalam penulisan artikel ini. Sehingga artikel ini mendapatkan nilai maksimal 2

   b. Ruang lingkup dan kedalaman pembahasan :
      Lingkup artikel ini tentang blue economy yang merupakan kelanjutan dari green economy, adopsi biogas pada level masyarakat dan UMKM. Lingkup materi ini merupakan keterbinaan yang sedang banyak dilakukan dan menjadi novelty. Sehingga artikel ini bisa mendapatkan nilai maksimal 6

   c. Kecukupan dan pemutakhiran data/informasi dan metodologi :
      Metode penelitian yang digunakan adalah analisis kuantitatif dengan regresi logit, di mana variable dependencerentanya merupakan dummy kualitatif yang belum banyak digunakan oleh para peneliti di Indonesia. Novelty paper ini adalah pada penggunaan alat analisis ini karena banyak digunakan sebagai acuan oleh peneliti setelahnya. Sehingga layak untuk mendapatkan nilai 6

   d. Kelengkapan unsur dan kualitas terbitan :
      Journal of Finance and Banking Review merupakan jurnal internasional namun belum bereputasi karena belum memiliki indeks dari lembaga indeksing. Sehingga memperoleh nilai maksimal 5

   e. Indikasi Plagiat :
      Artikel ini tidak terindikasi plagiat karena hasil nilai turn it in adalah sebesar 21% atau berada di bawah ketentuan maksimum yaitu 25%

   f. Kesesuaian bidang ilmu :
      Artikel tentang biogas ini merupakan salah satu alternative baru alam pengentasan kemiskinan karena energy terbarukan berbasis masyarakat, sehingga masyarakat akan mampu meningkatkan tingkat kesejahteraan. Hal ini sesuai dengan kompetensi penulis yaitu pengentasan kemiskinan.
Surakarta, 18 Maret 2020

Prof Dr. Yngastuti Purwaningsih, M.P
NIP. 19590613 198403 2 001
Jabatan : Guru Besar
Pangkat, Gol Ruang : Pembina Utama Madya / IV/d
Unit Kerja : Fakultas Ekonomi dan Bisnis UNS
Bidang Ilmu : Ekonomi Pembangunan

*Dinilai oleh dua Reviewer secara terpisah
**Coret yang tidak perlu
***Nasional/indeks di DOAJ,CABI, Copernicus