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[Agrisociconomics] Article Review Request

1 pesan

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Balas Ke: Kadhung Prayoga <kadhungprayoga@gmail.com>
Kepada: Dahlia Nauly <dahlia.nauly@umj.ac.id>

16 Maret 2023 pukul 12.06

Dahlia Nauly:

I believe that you would serve as an excellent reviewer of the manuscript, "Sustainability Assessment with Multidimensional Scaling in the P2L Program (Case Study: Semarang City)," which has been submitted to Agrisociconomics: Jurnal Sosial Ekonomi Pertanian. The submission's abstract is inserted below, and I hope that you will consider undertaking this important task for us.

Please log into the journal web site by 23-03-2023 to indicate whether you will undertake the review or not, as well as to access the submission and to record your review and recommendation.

The review itself is due 30-03-2023.

Submission URL: <https://ejournal2.undip.ac.id/index.php/agrisociconomics/reviewer/submission/10994?key=9NRbmnMW>

Thank you for considering this request.

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"Sustainability Assessment with Multidimensional Scaling in the P2L Program (Case Study: Semarang City)"

Abstract

High population growth in Semarang City has an impact on the emergence of a food security issue and the high rate of unemployment. The government issued an innovation named the Sustainable Food Yard (P2L) program that is expected to solve these problems through urban farming activities. However, the P2L program is still experiencing many problems in the field that could threaten its sustainability. This study aims to analyze the sustainability status of the P2L program in Semarang City. The study is descriptive research with a survey method. The study was conducted on 130 sampling farmers in Semarang City that obtained the benefit of the P2L program between 2020-2021. Sample determination used a proportional random sampling method. The data was analyzed using multidimensional scaling (MDS) called Rapid Appraisal for Urban Farming P2L (RAP-UFP). Study results showed that the status of the social dimension and ecological dimension is classified as less sustainable, while the economic dimension's status is classified as fairly sustainable. Improvement of sensitive attributes in each dimension needs to be done to increase the sustainability status of all dimensions in the P2L program Semarang City.

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**SUSTAINABILITY ASSESSMENT WITH MULTIDIMENSIONAL SCALING
IN THE P2L PROGRAM (CASE STUDY: SEMARANG CITY)****ABSTRACT**

High population growth in Semarang City has an impact on the emergence of a food security issue and the high rate of unemployment. The government issued **an innovation** named the Sustainable Food Yard (P2L) program that is expected to solve these problems through urban farming activities. However, the P2L program is still experiencing many problems in the field that could threaten its sustainability. This study aims to analyze the sustainability status of the P2L program in Semarang City. The study is descriptive research with a survey method. The study was conducted on 130 sampling farmers in Semarang City that obtained the benefit of the P2L program between 2020-2021. Sample determination used a proportional random sampling method. The data was analyzed using multidimensional scaling (MDS) called Rapid Appraisal for Urban Farming P2L (RAP-UFP). Study results showed that the status of the social dimension and ecological dimension is classified as less sustainable, while the economic dimension's status is classified as fairly sustainable. Improvement of sensitive attributes in each dimension needs to be done to increase the sustainability status of all dimensions in the P2L program Semarang City.

Keywords: *multidimensional scaling, P2L program, sustainability, urban farming*

BACKGROUND

Modern-day global problems such as hunger and poverty are brought on by the rapid urban population expansion. Semarang City, one of the biggest urban areas in Indonesia, is among the cities with the highest population growth rate in Central Java Province (**Badan Pusat Statistik Provinsi Jawa Tengah, 2022a**). Population increase in Semarang City led to several issues like diminishing food security and a high unemployment rate.

The first issue is related to the provision of food, which is a human right that must be fulfilled because it is crucial for the development of nations (Suryana, 2014). Food fulfillment takes into account both quantity and quality for individuals to live healthy and productive lives. Food circumstance can be measured using the Food Security Index (IKP) with indicators that reflect three aspects of food security named availability, affordability, and utilization of food. Semarang City's IKP score in 2018 was 85.93 but dropped to 84.66 in 2020 (**Kementerian Pertanian, 2021**). Although the score is considered good, overall it's declining and needs special attention to maintain the stability of food security, especially after Food and Agriculture Organization (2020) warned of the food crisis danger and efforts to mitigate risks in the present and the future by supporting small farmers to support food production.

The second issue faced by Semarang City regarding the rapid population growth is the unemployment rate. According to Badan Pusat Statistik Provinsi Jawa Tengah (2022b), Semarang City's unemployment rate in 2022 is 7.60% of the total workforce, the number is still higher than Indonesia's unemployment rate of 5.86%. This issue related to unemployment must be immediately

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SUSTAINABILITY ASSESSMENT WITH MULTIDIMENSIONAL SCALING IN THE P2L PROGRAM (CASE STUDY: SEMARANG CITY)

solved by finding a long-term solution so that Semarang City residents can have proper income to cover their basic needs, including food.

Badan Ketahanan Pangan Kementerian Pertanian proposed a solution to solve those issues by implementing an urban farming program named the Sustainable Food Yard (P2L). This program intends to increase the availability, accessibility, and utilization of food for households by making it more diverse, nutritious, safe, and market-oriented to raise household income. The approaches used by this program are sustainable agricultural development, utilization of local resources, community empowerment, and marketing-oriented (Badan Ketahanan Pangan Kementerian Pertanian, 2021).

The P2L program launches concurrently over all of Indonesia, including Semarang City, in 2020. It is funded by either The Indonesian Budget (APBN) or Regional Government Budget (APBD). The P2L program is a development of the Sustainable Food House Area (KRPL) program with a little modification in the beneficiaries' range and the utilization of agricultural land. Studies revealed that the sustainability of the KRPL program as the precursor to the P2L program was in fairly good condition (Khuswati et al., 2022; Putri et al., 2015), while other urban farming programs with a similar concept were also sustainable (Cahya, 2016; Irham et al., 2021). Yet, due to the P2L program's relative youth in comparison to other programs, studies on its sustainability are still very scarce. Furthermore, the P2L program in Semarang City received lesser attention from the government following its initiation and evaluation period, in the hope that farmer participants will be more independent. As a result, various obstacles from social, economic, and ecological aspects emerged and might potentially endanger the sustainability of the P2L program.

This study aims to investigate the social, economic, and ecological sustainability of the current P2L program (case study in Semarang City). Each dimension in the P2L program is assessed with the technique of Multidimensional Scaling (MDS) called Rapid Appraisal for Urban Farming P2L (RAP-UFP). Information regarding the status of sustainability in each dimension can be useful for reviewing the implementation of the P2L program in Semarang City and as a basis for formulating enhancement strategies.

RESEARCH METHODS

This study was conducted in Semarang City in June-August 2022. A survey method was applied for this study. The population was all farmers in Semarang City who obtained the benefit of the P2L Program (funded by APBN) between 2020-2021 as many as 193 farmers from 6 different women farmer groups. A probability sampling technique with **proportional random sampling** was used to determine the samples. The number of samples drawn with the Slovin formula at an error tolerance of 5% (0,05). As a result, the number of samples was 130 respondents.

Analysis of the sustainability status is done with the method of **Multidimensional Scaling (MDS)** called Rapid Assessment for Urban Farming P2L (RAP-UFP), which is a modified version of Rapid Assessment Techniques for Fisheries (RAPFISH) developed by Fisheries Centre Research Reports. RAPFISH involves assessing status simultaneously in some evaluation domains that indicate

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SUSTAINABILITY ASSESSMENT WITH MULTIDIMENSIONAL SCALING IN THE P2L PROGRAM (CASE STUDY: SEMARANG CITY)

a variety of ecological and human dimensions like social and economic (Pitcher et al., 2013). The method in this study follows Reza et al. (2021) which consists of three steps: formulation of attributes and indicators, data collection with a questionnaire, and data analysis by using Microsoft Office Excel Add-Ins Rapfish. There were sixteen attributes used in this study: five from the social dimension, six from the economic dimension, and five from the ecological dimension. Using a four-point Likert scale, each attribute has been scored as follows: very good (3), good (2), bad (1), and very bad (0).

The output of MDS analysis is the sustainability index of each dimension. The range of sustainability index and sustainability status is grouped into four categories: 0.00-25.00% (unsustainable), 25.01-50.00% (less sustainable), 50.01-75.00% (fairly sustainable), and 75.01-100.00% (highly sustainable). The stress value of less than 0.25 and the squared correlation (RSQ) with a value close to 1 demonstrate the correctness of the measurement model (good fit) for each dimension and attribute in MDS. Additionally, the leverage analysis is used to identify the attribute sensitivity to sustainability through changes in Root Mean Square (RMS) in the ordination on the X axis. Abdullah et al. (2017) stated that the greater change in the RMS value of an attribute, the more sensitive these attributes are to the enhancement of the sustainability status. The error rate of sustainability analysis was predicted using the Monte Carlo index with a 95% confidence interval.

RESULT AND DISCUSSION

The Implementation of the P2L Program in Semarang City

The P2L program took over its predecessor, the KRPL program, and has been running in Semarang City since 2020. The P2L program comes in two types: the Growth Stage (first phase) and the Development Stage (second phase). In 2020, two women farmer groups in Semarang City, namely Mekar Makmur and Hijau Asri, benefited from the Development Stage. These two women farmer groups previously obtained the KRPL program in 2019, thus they met the requirements to receive the benefit of the Development Stage with capital worth IDR15,000,000. This funding aimed to enhance the function of the P2L program.

Four women farmer groups obtained the benefit of the Growth Stage in 2021 with capital worth IDR50,000,000. These are Nandur Sedekah, Sekar Makmur, Mina Lestari, and Mekar Sari. The purpose of this funding was to carry out nursery facilities (greenhouse), development of demonstration plots, planting, and post-harvest handling which are important to run the P2L program.

The activity of the P2L program in greater detail is cultivating vegetables such as spinach, water spinach, bok choy, lettuce, long beans, etc. in the yard, either collective yard (demonstration plot with an area ranging between 100m² and 350m²) or private yard. It can also include farming livestock (chicken) and fish (catfish) that is integrated with the cultivation. However, most farmers in this study only do those activities in demonstration plots due to the lack of adequate private yards and a busy schedule outside the agriculture field. The majority of farmers also view farming as merely a hobby instead of an occupation.

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SUSTAINABILITY ASSESSMENT WITH MULTIDIMENSIONAL SCALING IN THE P2L PROGRAM (CASE STUDY: SEMARANG CITY)

A portion of the crops produced by the P2L farming activity in Semarang City is consumed by the farmers themselves to reduce food expenses, and the remaining products are either directly sold to locals or promoted on social media to a wider market. The sales revenue went to the women farmer groups' treasury for further farming activities and emergency funds, therefore the farmers do not receive any income from the P2L in the form of money.

The Goodness of Fit Model

If the stress value is less than 0.25 or 25% and the coefficient of determination (RSQ) is near 1.00 or 100%, the results of the MDS model are regarded as accurate and can be explained. The RAP-UFP results demonstrated that all the assessed attributes are fairly accurate and can be taken into account. As can be seen in Table 1, all of the MDS models used in this study are categorized as having a good fit and do not require any extra attributes because the stress values for all dimensions do not exceed 0.25 and the RSQ values are close to 1.

Table 1. The Stress Value and RSQ

Dimension	Stress Value	RSQ	Model Status
Social	0.165	0.941	Good fit
Economic	0.150	0.944	Good fit
Ecological	0.154	0.943	Good fit

Source: Primary Data, 2022

The Sustainability of the Social Dimension

Five attributes are examined for the sustainability of the social dimension analysis: the farmer's network, farmer's participation, farmer's working hours, farmer's independence, and farmer's skill. According to the result analysis of MDS RAP-UFP in Figure 1, the social dimension's sustainability index value is 35.44%, and values between 25.01 to 50.00% indicate that it is less sustainable. It is brought on by the unfavorable attribute state.

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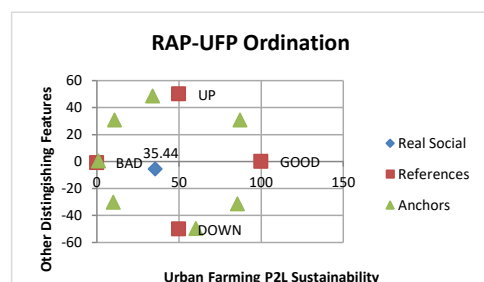


Figure 1. Sustainability Index of Social Dimension (Source: Primary Data, 2022)

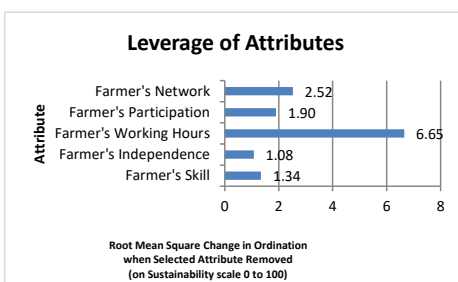


Figure 2. Leverage of Social Dimension Attributes (Source: Primary Data, 2022)

**SUSTAINABILITY ASSESSMENT WITH MULTIDIMENSIONAL SCALING
IN THE P2L PROGRAM (CASE STUDY: SEMARANG CITY)**

The leverage analysis of the social dimension attribute in Figure 2. showed the attributes with the highest to lowest sensitivity are the farmer’s working hours, farmer’s network, farmer’s participation, farmer’s skill, and farmer’s independence.

The condition of the farmer’s working hours attribute is the worst compared to other attributes. **The average farmer rarely spends time on urban farming activities,** whether on demonstration plots or in their private yard. The P2L program is hampered due to the lack of manpower with sufficient working hours. This is because most farmers are busy working outside the agricultural sector and/or taking care of the household. According to Daniel et al. (2014), rubber farmers’ working hours have a significant effect on family income. Hence, farmers in Semarang City also need to increase their working hours in agriculture to improve their income which is one of the P2L program’s main goals.

The second most sensitive attribute is the farmer’s network. The current circumstance showed that the network with fellow farmers is not well formed. **The distance between farmers’ houses is quite far apart,** thus communication is often carried out via telephone/messaging applications like WhatsApp which often causes misunderstandings compared to face-to-face communication. In some cases, there is no relationship between farmers at all. Enhancement of the farmers’ network is needed because according to Khairunnisa et al. (2018), close relationships and communication between the heads of the farmer groups and their members could maintain the cohesiveness and sustainability of the farmer’s group. Moreover, Sari et al. (2022) concluded in their research that farmer’s networks affected the food security of the KRPL program participants, this is in line with the main goal of the P2L program which is to achieve food security.

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The Sustainability of the Economic Dimension

Six attributes are used in the analysis of the economic dimension's sustainability, those are job creation, expense savings, market demand, product affordability, product pricing, and product diversification. Analysis of MDS RAP-UFP in Figure 3. showed that the sustainability index value of the economic dimension is 57.24% and the index value is in the range of 50.01-75.00% showing it is fairly sustainable.

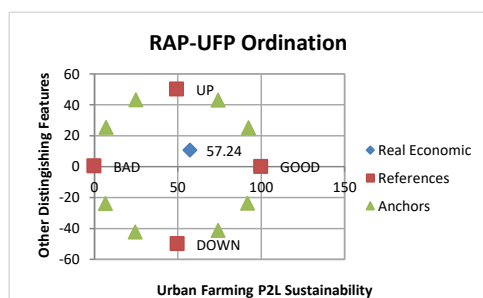


Figure 3. Sustainability Index of Economic Dimension (Source: Primary Data, 2022)

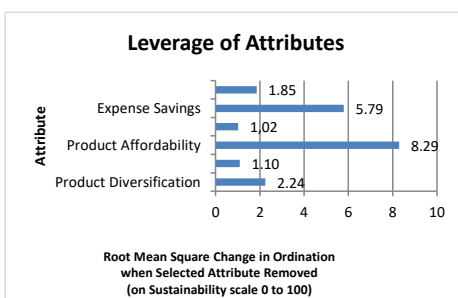


Figure 4. Leverage of Economic Dimension Attributes (Source: Primary Data, 2022)

**SUSTAINABILITY ASSESSMENT WITH MULTIDIMENSIONAL SCALING
IN THE P2L PROGRAM (CASE STUDY: SEMARANG CITY)**

The leverage analysis of the economic dimension showed attributes with the highest to lowest sensitivity are product affordability, expense savings, product diversification, job creation, and market demand (Figure 4).

Product affordability appears as the most sensitive attribute on the economic dimension with very good existing conditions. Organic horticulture and livestock products are very affordable or slightly below market prices. Buyers also have no difficulty buying those products produced by the women farmer groups that received the benefit of the P2L program. This is in line with the research by Putri et al. (2015) which showed that KRPL (the predecessor of the P2L) created healthier agricultural products at more affordable prices. If commodity prices are too high, the local community in Semarang City prefers to buy conventional agricultural products that are less expensive compared to organically cultivated vegetables by the P2L program.

Expense savings is the second most sensitive attribute in the economic dimension. The P2L program is designed so that farmers can save money because they don't have to buy vegetables or any food crops from other sources. However, the current circumstance of the expense savings attribute is not good. The production of horticultural crops and livestock from the P2L program is relatively small, so farmers still have to buy products from outside to meet their daily food needs. As a result, the majority of farmers who are members of the women farmer groups do not experience significant expense savings. Enhancements need to be made so that the P2L program in Semarang City can be more beneficial in saving farmers' expenses such as the P2L program in Gondangrejo District, Karanganyar Regency. Research by Saputri et al. (2021) indicates that farmers' households in Gondangrejo District experienced expense saving for vegetables, this is because they buy the cultivation results from the P2L demonstration plot at a lower price or even for free.

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The Sustainability of the Ecological Dimension

The sustainability of the ecological dimension analysis is carried out on five attributes, namely: integrated farming system, Low External Input Sustainable Agriculture (LEISA) implementation, weather and climate, water availability, and soil fertility. Analysis of MDS RAP-UFP in Figure 5. showed that the sustainability index value of the ecological dimension is 46.95% and the index value in the range of 25.01-50.00% showed it is less sustainable.

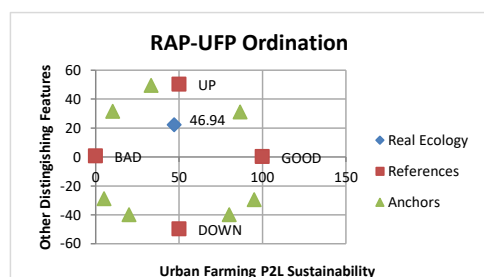


Figure 5. Sustainability Index of Ecological Dimension (Source: Primary Data, 2022)

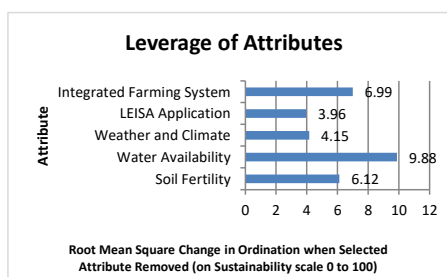


Figure 6. Leverage of Ecological Dimension Attributes (Source: Primary Data, 2022)

**SUSTAINABILITY ASSESSMENT WITH MULTIDIMENSIONAL SCALING
IN THE P2L PROGRAM (CASE STUDY: SEMARANG CITY)**

Figure 6 showed the leverage analysis of ecological dimension attributes from highest to lowest sensitivity. Those attributes are water availability, integrated farming system, soil fertility, weather and climate, and LEISA implementation.

The first attribute that is most sensitive is availability of water. Most women farmer groups that participate in the P2L program use groundwater for cultivation. Changes in the amount of water can greatly affect urban farming P2L activities in the demonstration plots. However, according to data from Badan Meteorologi Klimatologi dan Geofisika (2022), groundwater availability in Semarang City that can be used for plant cultivation is more than 60% or in the sufficient category. Even so, groundwater conservation needs to be controlled to support sustainable agriculture in Semarang City. Pryambodo & Supriyadi (2015) stated that uncontrolled extraction of groundwater causes the groundwater crisis which is marked by a decrease in the groundwater level and the occurrence of land subsidence. This problem occurs in big cities located in coastal areas, including Semarang City.

The second most sensitive attribute is the integrated farming system (plant-livestock-fish integration). The condition of the integrated farming system when the study was carried out produced the worst results among other attributes on the ecological dimension, so it is necessary to prioritize improvement for this attribute. The cause of the poor attribute circumstance is that there are only a few women farmer groups that apply an integrated farming system on the P2L demonstration plots, even though integration between crops, livestock, and fish minimizes wasted agricultural materials by converting a product in the system into a new product that is an input for other systems. Crop-livestock integration can also sustainably increase the fertility of farmland at a low cost and increase farmers' income (Indrawanto & Atman, 2017).

The Sustainability of the P2L Program in Semarang City

The social, economic, and ecological dimensions that have been analyzed with MDS are then visualized with a radar chart to see the form of integration between each dimension of the P2L program sustainability. The radar chart is shown in Figure 7.

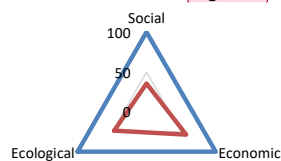


Figure 7. Sustainability Radar Chart of the P2L Program in Semarang City (Source: Primary Data, 2022)

Based on Figure 7, the formed radar chart is quite balanced because the three dimensions do not show a big difference from each other. The average of all dimension sustainability index showed that the P2L program in Semarang City is classified as less sustainable at a value of 46.54. The factor

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**SUSTAINABILITY ASSESSMENT WITH MULTIDIMENSIONAL SCALING
IN THE P2L PROGRAM (CASE STUDY: SEMARANG CITY)**

that affects the index sustainability of the P2L program in Semarang City is the social and ecological dimensions which are relatively low. Although the economic dimension is fairly sustainable, the score is close to a less sustainable status. Therefore, all dimensions must be carefully taken care of to improve the P2L program's sustainability.

The Monte Carlo Index

After simulating the **Monte Carlo analysis**, it can be seen that the number differences between the MDS index and the Monte Carlo index from each dimension are less than 1 (Table 2). It indicates a small error in the scoring procedure for each attribute and variation in the scores presented for each attribute at a 95% confidence interval. Moreover, the results of the Monte Carlo analysis showed that the P2L program in Semarang City converges at one point. This means that with 25 iterations of some uncertainty factors, the RAP-UFPP results obtained are still within the multidimensional distance so that they can be used in determining the sustainability status of each dimension under the MDS rules.

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Table 2. The Difference between MDS and Monte Carlo

Dimension	MDS	Monte Carlo	Difference
Social	35.44	35.72	0.28
Economic	57.24	56.57	0.67
Ecological	46.94	46.31	0.63

Source: Primary Data, 2022

CONCLUSION AND SUGGESTION

The status of the P2L program's social dimension is classified as less sustainable with a value of 35.44; the most sensitive attribute on the social dimension are the farmer's working hours, farmer networks, and farmer's participation. The status of the economic dimension is fairly sustainable with a value of 57.24; the most sensitive attribute on the economic dimension are product affordability, expense savings, and product diversification. The status of the ecological dimension is classified as less sustainable with a value of 46.94; the most sensitive attributes of the ecological dimension are water availability, integrated farming system, and soil fertility. Overall, the P2L program in Semarang City is less sustainable. Improvement of the sustainability status must be done by increasing the performance of each sensitive attribute, especially for the social dimension and ecological dimensions. Farmers and the government must work together in improving the performance of the P2L program to maintain its sustainability, specifically by increasing farmer's working hours, strengthening farmer's networks, maintaining product affordability, increasing expense savings, maintaining water availability, and enhancing integrated farming system so that farmers can achieve food security and gain significant income in the future.

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**SUSTAINABILITY ASSESSMENT WITH MULTIDIMENSIONAL SCALING
IN THE P2L PROGRAM (CASE STUDY: SEMARANG CITY)****REFERENCES**

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**SUSTAINABILITY ASSESSMENT WITH MULTIDIMENSIONAL SCALING
IN THE P2L PROGRAM (CASE STUDY: SEMARANG CITY)**

- Farming to Household Income and Its Sustainability in Yogyakarta City, Indonesia. *IOP Conference Series: Earth and Environmental Science*, 883(1), 1–11. <https://doi.org/10.1088/1755-1315/883/1/012035>
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**SUSTAINABILITY ASSESSMENT WITH MULTIDIMENSIONAL SCALING
IN THE P2L PROGRAM (CASE STUDY: SEMARANG CITY)**

<https://doi.org/10.21082/fae.v32n2.2014.123-135>



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[Agrisociconomics] Article Review Acknowledgement

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Dahlia Nauly:

Thank you for completing the review of the submission, "Sustainability Assessment with Multidimensional Scaling in the P2L Program (Case Study: Semarang City)," for Agrisociconomics: Jurnal Sosial Ekonomi Pertanian. We appreciate your contribution to the quality of the work that we publish.

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[Agrisociconomics] Article Review Request

1 pesan

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17 April 2023 pukul 09.47

Dahlia Nauly:

I believe that you would serve as an excellent reviewer of the manuscript, "ANALYSIS OF COCOA MARKETING IN MARGOLEMBO VILLAGE, MANGKUTANA DISTRICT, EAST LUWU REGENCY," which has been submitted to Agrisociconomics: Jurnal Sosial Ekonomi Pertanian. The submission's abstract is inserted below, and I hope that you will consider undertaking this important task for us.

Please log into the journal web site by 24-04-2023 to indicate whether you will undertake the review or not, as well as to access the submission and to record your review and recommendation.

The review itself is due 01-05-2023.

Submission URL: <https://ejournal2.undip.ac.id/index.php/agrisociconomics/reviewer/submission/11240?key=62YYqHm6>

Thank you for considering this request.

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"ANALYSIS OF COCOA MARKETING IN MARGOLEMBO VILLAGE, MANGKUTANA DISTRICT, EAST LUWU REGENCY"

Abstract

Marketing channel is an institution or company that cooperates with each other in distributing goods or services from producers to consumers who are ready to be used for consumption. Marketing is the main key in agribusiness so that agricultural products can reach the market or end consumers. The purpose of this research is to analyze the amount of margin in each marketing channel for cocoa beans that has been formed. The analysis in this study includes channel analysis and marketing functions, marketing margins and efficiency. The results showed that there were 2 marketing channels in Margolembo Village, where channel I: farmers --- wholesalers --- cocoa management companies --- company partners and channel II: farmers --- collectors --- wholesalers --- -cocoa management company---company partner. Marketing functions carried out by cocoa bean marketing institutions include exchange functions, physical functions and facility functions. The biggest margin, cost and profit value is in channel II, which is Rp. 4,000. Based on the marketing efficiency analysis obtained, the two marketing channels in Margolembo Village are efficient and channel I is the most efficient marketing channel with a value of 4.4% and marketing channel II with an efficiency value of 6.9%.

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ANALYSIS OF COCOA MARKETING IN MARGOLEMBO VILLAGE, MANGKUTANA DISTRICT, EAST LUWU REGENCY**ABSTRACT**

Marketing channel is an institution or company that cooperates with each other in distributing goods or services from producers to consumers who are ready to be used for consumption. Marketing is the main key in agribusiness so that agricultural products can reach the market or end consumers. The purpose of this research is to analyze the amount of margin in each marketing channel for cocoa beans that has been formed. The analysis in this study includes channel analysis and marketing functions, marketing margins and efficiency. The results showed that there were 2 marketing channels in Margolembo Village, where channel I: farmers --- wholesalers --- cocoa management companies --- company partners and channel II: farmers --- collectors --- wholesalers --- -cocoa management company---company partner. Marketing functions carried out by cocoa bean marketing institutions include exchange functions, physical functions and facility functions. The biggest margin, cost and profit value is in channel II, which is Rp. 4,000. Based on the marketing efficiency analysis obtained, the two marketing channels in Margolembo Village are efficient and channel I is the most efficient marketing channel with a value of 4.4% and marketing channel II with an efficiency value of 6.9%.

Keywords: *cocoa; marketing channel; marketing efficiency*

BACKGROUND

Most of the plantation crops produced in East Luwu Regency are cocoa. Based on 2020 BPS data, in 2019 East Luwu Regency produced as much as 6055 tons of cocoa and a cocoa plantation area of 13,792 hectare. Cacao is one of the leading plantation crops in East Luwu Regency which can improve the standard of living of farmers by applying mechanisms and technologies for cultivating cacao plants in an integrated manner, both through intensification and extensification activities.

Mangkutana District is one of the cocoa producers in East Luwu Regency. The area of cocoa plantations in the Mangkutana District in 2018 and 2019 was 1,295.10 ha and 1,043.31 ha with a production yield of 607.10 tonnes in 2018 and a production yield of 233.60 tonnes in 2019 (BPS Luwu East, 2020). Cocoa plantations in Mangkutana District have become entrenched in people's daily lives. Generally cultivated by farmers on a small (narrow) scale, they are said to be narrow because people's cocoa is usually managed with simple cultivation techniques in the form of fertilization according to the farmer's ability.

The cocoa marketing problem encountered is the lack of marketing channel information for farmers whereas from the farmer's point of view as producers, information regarding effective and efficient marketing channels is one of the things that can encourage increased cocoa production. The importance of access to marketing information for farmers so that farmers can find out directly the selling price of cocoa from each marketing agency.

Margolembo Village, Mangkutana District, East Luwu Regency, which is a research area, found the problem of farmers lacking information regarding effective and efficient marketing channels, resulting in farmers not knowing the selling price and marketing costs of cocoa from each marketing agency. In addition, there are differences in prices obtained by farmers and also an unequal profit level obtained by marketing agencies. Therefore, the authors are interested in

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conducting research to analyze the marketing channels and marketing functions carried out by each marketing agency for cocoa beans in Margolembo Village as well as the marketing margins and efficiency obtained by each marketing agency involved.

Research Gap (Novelty) The result of this research is that research on the marketing analysis of cocoa commodities has never been carried out in Margolembo Village, Mangkutana District, East Luwu Regency. Besides that, the researcher examines more about the analysis of cocoa marketing channels by analyzing channels and marketing functions, marketing margins and marketing channel efficiency for cocoa bean commodities.

The purpose of this study was to analyze the amount of margin for each marketing channel for cocoa beans in Margolembo Village, Mangkutana District, East Luwu Regency. So that it can be useful and add information to the marketing agencies involved.

RESEARCH METHODS

This research was conducted in Margolembo Village, Mangkutana District, East Luwu Regency. The research time lasts for one month which will be carried out in August 2022. The sampling technique in this study was carried out using the Simple Random Sampling method, namely selecting a sample size where each member of the population has the same opportunity to be selected as a member of the sample, so this method is often called the best method (Sugiarto et al, 2003). The total number of cocoa bean farmers in Margolembo Village is 203 people. According to Wiartha (2006), the number of samples can be selected as much as 10% of the population. Based on this, the number of respondents in this study were 20 cocoa bean farmers in Margolembo Village.

Determination of the trader sample is carried out by the Snowball Sampling method, which is a method by identifying and taking samples through a network. The selection of respondent farmers and marketing institutions is intended to obtain primary data using a questionnaire.

The type of data used in this study is divided into qualitative and quantitative data. Qualitative data analysis techniques, namely using channel analysis and marketing functions. Quantitative data, namely using margin analysis and marketing efficiency analysis.

Data analysis used in this research is analysis of marketing channels, marketing margins, marketing costs, marketing profits and marketing efficiency. To find out the marketing system for cocoa beans, descriptive analysis of marketing channels is used. Margin analysis is used to find out the marketing margins of cocoa beans at each marketing agency.

1. Marketing Margin

$$M = Hp - Hb$$

Where :

M = Marketing Margin (Rp/kg)

Mobile phone = Sales Price (Rp/kg)

Hb = Purchase Price (Rp/kg)

2. Marketing Efficiency

$$Eps = X 100\% \frac{BP}{NP}$$

Where :

ep = Marketing Efficiency (%)

BP = Total Marketing Cost (Rp/kg)

NP = Total Product Value marketed (Rp/kg)

The lowest Ep value = the most efficient

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Marketing efficiency decision-making rules (Soekartawi, 2002):

- if the Ep value <50% then the marketing channel is efficient
- if the Ep value is > 50% then the marketing channel is less efficient

RESULT AND DISCUSSION

Farmer Respondent Identity

The identity of the respondents described in the following discussion describes various aspects of the situation which include age, family responsibilities, education and experience of the respondents which will be described as follows:

Respondent Age

Age greatly affects a person's activities because it is directly related to physical and mental strength so that it is closely related to decision making. Respondents who are still young tend to have better physical abilities compared to respondents who are old. This is in accordance with the opinion (Aprilyanti, 2017) who said that those who are still in their productive age usually have a higher level of productivity compared to workers who are old so that they are physically weak and limited.

The characteristics of research respondents based on age ranges can be distinguished as shown in Table 1 below.

Table 1. Age of Cocoa Farmer Respondents in Margolembo Village, Mangkutana District, East Luwu Regency

No	Age Range (Years)	Number of people	Percentage (%)
1	30-40	5	25
2	41-50	7	35
3	51-60	5	25
4	61-70	3	15
Amount		20	100

Based on Table 1 above, it can be seen that the classification of research respondents based on age level concluded that 85% of respondents belonged to productive age which had an age range of 30-60 years. While the remaining 15% are classified as those who are no longer productive. This condition illustrates that most of the farmer respondents who run a business are classified as productive and have good physical abilities so they can run their business well.

Respondent Farmer Family Dependents

The large number of family dependents will be related to the availability of labor for farming activities and besides that it can encourage farmers to work harder to meet the needs of the family members. (Yusmel, Afrianto, & Fikrman, 2019).

The composition of the respondent's family dependents can be seen in Table 2 below.

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Table 2. Respondent's Family of Cocoa Farmers in Margolembo Village, Mangkutana District, East Luwu Regency.

No	Range of Dependents (Person)	Number of people)	Percentage (%)
1	1-2	8	40
2	3-4	11	55
3	5-6	1	5
	Amount	20	100

Based on Table 2, it can be seen that the number of dependents of the farmer respondent families has an almost equal percentage. The size of the number of family members in a household indicates the size of the burden that must be borne by the farmer as the head of the family.

Education Level of Farmer Respondents

The educational level of the farmer respondents can be seen in table 3 below.

Table 3. Education Level of Cocoa Farmers Respondents in Margolembo Village, Cocoa District, East Luwu Regency

No	Education Level	Number of people)	Percentage (%)
1	SD	9	45
2	JUNIOR HIGH SCHOOL	7	35
3	SENIOR HIGH SCHOOL	4	20
4	S1	0	0
	Amount	20	100

Based on Table 3 above, it can be seen that the percentage of education level of the farmer respondents is mostly only elementary school graduates/equivalent. With the education they have, it is expected that respondents can respond well enough to new things to develop their businesses. Farmers who have a higher level of education are usually quicker and more precise in the decision-making process when there is a problem that occurs in their farming business compared to farmers who have a lower level of education.

Experience of Farmer Respondents

Experience is a factor that influences the mindset in decision making. According to Sajogyo and Pudjiwati (2011), experience is knowledge experienced by someone in an unspecified period of time. The experience of respondents based on the length of time they have worked or been in business in the agricultural sector can be seen in Table 4 below.

Table 4. Experience of Cocoa Farmers Respondents in Margolembo Village, Mangkutana District, East Luwu Regency.

No	Experience (Year)	Number of people	Percentage (%)
1	5-10	8	40
2	11-15	3	15
3	16-20	4	20
4	21-25	5	25
	Total	20	100

Based on the table above, it can be seen that the most farming experience is less than 10 years as many as 8 people with a percentage of 40%. While the longest farming experience is 21-25 years as much as 25%. So it can be said that the working experience of farmers in cocoa farming is long enough so that farmers have a fairly good mindset in the decision-making process.

Trader Respondent Identity

1. Wholesalers

In this study, there were two wholesalers namely UD. Cenning belongs to Mr. Agus Supriyono who is in Balaikembang Village, Mangkutana District, East Luwu Regency and Toko Akbar owned by Mr. Akbar who is in Balaikembang Village, Mangkutana District, East Luwu Regency.

2. Collector Traders

There are two collecting traders in Margolembo Village, Mangkutana District, East Luwu Regency, namely Mr. Samsuriyadi and Mr. Ansar. Collector traders came directly to the wholesalers in Balaikembang Village, Mangkutana District, East Luwu Regency.

Collector traders then sell their dry cocoa beans to the wholesalers for a fee how to transport cocoa beans from the collector's house to the wholesaler's shop. Mr. Ansar as a collector in Margolembo Village sold it to Mr. Agus Supriyono as the owner of UD. Cenning who is in Balaikembang Village. Mr. Samsuriyadi sells his dry cocoa beans to Mr. Akbar who owns Toko Akbar in Balaikembang Village.

The characteristics of the trader respondents in this study include age, family responsibilities, education level and business experience which can be described as follows:

Age of Trader Respondents

Age is a factor that can affect a person's ability to work (Sengkey, Tumbel & Tumangkel 2018). The characteristics of research respondents based on age ranges can be distinguished as shown in Table 5 below.

Table 5. Range Age of Respondents Cocoa Traders

No	Age Group (Years)	Number of people	Percentage (%)
1	35-45	2	50
2	46-55	2	50
	Total	4	100

Based on Table 5, it can be seen that 100% of the respondent traders are classified as productive age because they are in the age range of 15-55 years. This shows that all respondents traders can run their business well. Ages that are still in their productive period usually have a higher level of productivity than workers who are old so that they are physically weak and limited.

Dependents of Respondents' Family Traders

Dependents are people or people who are still related to the family or are still considered related to the family and their lives are also borne (Halim, 2005). The composition of the dependents of the merchant respondent's family can be seen in Table 6 below.

Table 6. Respondents' Families of Cocoa Farmers

No	Range of Dependents (Person)	Number of people)	Percentage (%)
1	3-4	3	75
2	5-6	1	25
	Total	4	100

Based on Table 6 above, it can be explained that as many as 3 trader respondents (75%) have family dependents of 3-4 people and only 1 person (25%) trader respondents have family dependents of 5-6 people. The size of the number of family dependents will still influence the respondent to work harder in managing his business to meet the daily needs of his family.

Education Level of Traders Respondents

Education is an important factor that can affect the process of acceptance and application of a technology by someone (Sengkey, Tumbel & Tumangkel 2018). The education level of cocoa trader respondents can be seen in Table 7 below.

Table 7. Education Level of Cocoa Traders Respondents

No	Education Level	Number of people)	Percentage (%)
1	SD	1	25
2	JUNIOR HIGH SCHOOL	0	0
3	SENIOR HIGH SCHOOL	3	75
4	S1	0	0
	Total	4	100

Based on Table 7 above, it shows that 3 people (75%) of the trader respondents have graduated from high school/equivalent education level and the remaining 25% have only graduated from elementary school. This shows that the trader respondents have a good mindset so that they can manage their business well and can easily accept new innovations.

Business Experience of Respondents Traders

The respondent's trading business experience can be seen in Table 8 below.

Table 8. Trade Respondents Trade Business Experience

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No	Experience (Year)	Number of people	Percentage (%)
1	5-15	1	25
2	16-26	3	75
Total		4	100

Based on Table 8 above, it can be seen that 3 people (75%) of respondents have quite a long experience of trading cocoa beans, namely in the range of 16-26 years. Meanwhile, 1 person (25%) of respondents had only been in business for 5 years. In general, respondents have sufficient experience in managing their business so that with this experience respondents are able to overcome problems that occur in their trading business.

Marketing channel

The marketing channel for **dry cocoa beans** at the research location consists of interrelated sub-systems, namely:

1. Cocoa producers/farmers
2. Intermediary traders are collector traders
3. Wholesalers

The price of dry cocoa beans in the study area varies greatly, starting from Rp. 28,000 up to Rp. 32,000 per kilogram. Price differences that occur based on quality, length of the marketing chain and other factors.

The marketing channel for dry cocoa beans in the research location can be seen in the following figure.

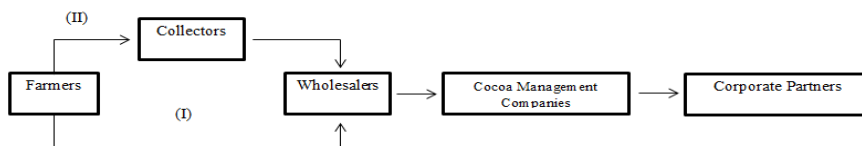


Figure 1. Schematic of the Marketing Channel of Dried Cocoa Beans in Margolembo Village, Mangkutana District, East Luwu Regency

In Margolembo Village, most of the farmers (75%) sell their cocoa beans to collectors. Then the collectors will sell cocoa beans to wholesalers and then forward them to cocoa management companies and distribute them to company partners. Farmers feel more profitable if they sell cocoa beans to collectors because none of the cocoa beans sold are returned because the collecting traders do not sort them. In addition, the distance from the cocoa drying location or the farmer's house is quite close to the selling location, namely the collector trader's house. Meanwhile, if farmers and collectors sell directly to wholesalers, there is a possibility that the cocoa beans will be returned because they do not meet the criteria/quality standards for cocoa beans.

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Based on the results of research in the field, there are 2 types of marketing channels for dry cocoa beans at the research location. The marketing channels formed in Margolembo Village, Mangkutana sub-district, East Luwu Regency can be seen in Table 9 below.

Table 9. Respondent Marketing Channels

Marketing Channel I	Number of people	Percentage (%)
Farmer		
Wholesalers	5	25
Cocoa Management Company		
Corporate Partners		
Marketing Channels II		
Farmer		
Collector Traders		
Wholesalers	15	75
Cocoa Management Company		
Corporate Partners		
Amount	20	100

Marketing Channel I

In channel I, farmers sell their cocoa beans directly to wholesalers, so there are no middlemen in this channel. Channel I scheme can be seen in Figure 2 below.

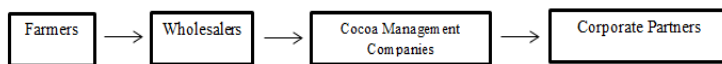


Figure 2. Marketing Channel I

Based on Figure 2 above, in this type of channel I farmers directly sell their dry cocoa beans to wholesalers, then distribute them to cocoa processing companies and distribute them to company partners. This is because farmers have more cocoa production. In addition, farmers feel that they get greater benefits because they are not going through intermediary traders (collecting traders). This form of marketing channel I is shorter than marketing channel II so that it can save on marketing costs for cocoa beans and in the end can increase the selling price of farmers and the income received by cocoa farmers.

Marketing channel II

Marketing channel II is a marketing channel that uses intermediary traders, namely collector traders. Where is this marketing channel from farmers who sell cocoa beans to collector traders and then collector traders sell cocoa beans to wholesalers. Schematic of marketing channel II can be seen in Figure 3 below.



Figure 3. Marketing Channels II

Based on Figure 3 above, it can be seen that in marketing channel II the farmers sell their dry cocoa beans to the collecting traders, then the collecting traders resell them to the wholesalers and the wholesalers distribute them to cocoa management companies and then to corporate partners. Farmers sell their dry cocoa beans to collectors because the production is not too much and the distance is quite close to the location of the collectors. So that farmers do not need to pay for transportation costs that are too large.

Marketing Functions of Each Marketing Institution

The marketing functions of cocoa beans carried out by each marketing agency can be seen in Table 10 below.

Table 10. Marketing Functions of Cocoa Beans Performed by Farmers and Traders

No	Marketing function	Farmer	Collector Traders	Wholesalers	Cocoa Management Company	Corporate Partners
1	Exchange function					
	a) sales function	√	√	√	√	√
	b) purchase function	X	√	√	√	√
2	physical function					
	a) storage function	√	√	√	√	√
	b) transport function	√	√	√	√	√
3	Facility function					
	a) standardization function	X	√	√	√	√

Information: √: carry out the function

X: does not carry out the function

Based on Table 10 above, it can be seen that each marketing agency plays a different marketing function. The sales function is carried out by all marketing agencies including farmers. While the purchasing function is carried out by all marketing agencies except farmers. This is because farmers only sell their cocoa beans and do not carry out the process of purchasing cocoa beans.

The storage function is also carried out by farmers and all marketing agencies. This is because farmers have to dry the cocoa beans for approximately 2-3 days before selling the cocoa beans to traders. Similarly, traders also carry out storage functions because the cocoa beans sold must reach quality standards to be passed on to wholesalers and cocoa processing companies. In addition, wholesalers also carry out a storage function because the quantity of cocoa beans must reach a minimum of 10 tonnes in order to be transported to cocoa processing companies. Cocoa processing companies store dry cocoa beans in a storage warehouse before processing them into semi-finished products such as cocoa powder, cocoa butter, cocoa liquid. Company partners carry out storage to then be processed into finished products.

The transport function is carried out by all marketing agencies. Farmers have to transport their dry cocoa beans to collectors or wholesalers. Collecting traders must transport their cocoa beans to wholesalers to carry out the sales function. Wholesalers also have to transport their cocoa beans to cocoa bean processing companies to carry out the sales function. The cocoa management company performs the transportation function to carry out the sales process to the company's partners. One of the biggest costs in any marketing agency is transportation costs.

The facility function performed is the standardization function. The standardization function is carried out in the storage warehouse together with the sorting carried out by collectors and wholesalers. Standardization is carried out to determine the quality of the cocoa beans so as to make it easier for sales to the next trader. The standardization carried out by collectors is regarding the water content. The standard water content from collectors is at least 12% of the farmers' cocoa beans. While the standardization carried out by wholesalers includes 7% moisture content, 4% mushroom content, 3% impurities content and 120/ounce grain standard.

Cost Components, Margin and Profit Analysis

Cost component

The marketing costs are borne by the marketing agencies involved, namely in the form of transportation (transportation), storage, and labor costs. The amount of marketing costs incurred by each marketing agency involved in marketing channel I can be seen in Table 11 below.

Table 11. Details of Marketing Channel Marketing Costs I

No	Marketing Institute	Price Sell (Rp/kg)	Sales Amount (IDR)	Transportation costs (IDR)	Storage Fee (Rp)	Labor Cost (Rp)	Total marketing costs (Rp)	Marketing Cost (Rp/kg)
1	Farmer	30,000	1.075	0	0	0	0	0
	Wholesaler							
2	s							
	a. Agus Supriyono	31,000	400	100,000	35,000	140,000	275,000	688
	b. Akbar	31,000	675	168,750	55,000	236,250	460,000	681
	Total		1.075	268,750	90,000	376,250	735,000	1,369

Based on Table 11 above, it can be seen that all parties incur transportation, storage and labor costs. All costs incurred will be explained as follows:

1. Transportation costs

Transportation is the process of transporting cocoa beans from one institution to another. Wholesalers incur transportation costs of Rp. 268,750, this is because wholesalers have to transport cocoa beans that are ready to be sold to cocoa processing companies. Wholesalers always rent cars to transport their cocoa beans to cocoa processing companies. The cost of renting this car is Rp. 250 per kilogram.

2. Storage fee

In the storage process, the cocoa beans are stored in a warehouse and packaged in a sack so that the cocoa beans are not damaged and moldy. Collector traders and

wholesalers pack their cocoa beans using sacks containing 100 kg which are purchased at a price of Rp. 5,000/sheet. The storage fee incurred by wholesalers is Rp. 90,000.

3. Labor costs

The labor costs incurred by wholesalers are to pay the wages of their employees who assist them in the process of purchasing, drying/drying, standardizing and transporting cocoa beans. The wage payment system for workers from wholesalers is calculated using a wholesale system, namely Rp. 350/kg. The labor cost incurred by wholesalers is Rp. 376,250.

So, the total marketing costs incurred on Channel I is Rp. 735,000 or Rp. 1.369 per kilogram.

Marketing channel II also incurs marketing costs including transportation, storage and labor costs. The details of the costs incurred in marketing channel II can be seen in Table 12 below.

Table 12. Details of Marketing Channel Marketing Costs II

No	Institution Marketing	Selling Price (Rp/kg)	Sales Amount (kg)	Transportation costs (IDR)	Storage Fee (IDR)	Labor Cost (IDR)	Total Marketing Expenses (IDR)	Marketing Cost (Rp/kg)
1	Farmer	28,000	1.475	0	0	0	0	0
2	Collector Traders							
	a.Samsuriyadi	30,000	760	76,000	60,000	190,000	326,000	429
	b. Ansar	30,000	715	71,500	55,000	178,750	305,250	427
	Total		1.475	147,500	115,000	368,750	631,250	856
3	Wholesalers							
	a. Agus Supriyono	32,000	760	190,000	60,000	266,000	516,000	679
	b. Akbar	32,000	715	178,750	55,000	250,250	484,000	677
	Total		1.475	368,750	115,000	516,250	1,000,000	1.356

Based on Table 12 above, it can be seen that all parties incur transportation, storage and labor costs. All costs incurred will be explained as follows:

1. Transportation costs

In the marketing channel II, the collectors pay a transportation fee of Rp. 147,500, this is because collecting traders have to transport their cocoa beans to be sold to wholesalers. Transportation costs incurred by collectors are Rp.100/kg. Meanwhile, wholesalers incur transportation costs of Rp. 368,750. This is because wholesalers have to transport cocoa beans that are ready to be sold to cocoa processing companies. Wholesalers always rent cars to transport their cocoa beans to cocoa processing companies. The cost of renting this car is Rp. 250/kg.

2. Storage fee

In the storage process, the cocoa beans are packaged in a sack so that the cocoa beans are not damaged and moldy. Collector traders and wholesalers pack their cocoa beans using sacks containing 100 kg which are purchased at a price of Rp. 5,000/sheet.

The storage fee incurred by the collecting trader is Rp. 115,000. While the storage costs incurred by wholesalers also amounted to Rp. 115,000.

3. Labor costs

Labor costs incurred by collecting traders are calculated using a wholesale system, namely Rp. 250/kg so that the total labor cost incurred by the two collectors is Rp.368,750. Meanwhile, labor costs incurred by wholesalers are also calculated using a wholesale system, namely Rp. 350 per kilogram, so the labor cost incurred by the two wholesalers is Rp. 516,250.

So, the total marketing costs incurred by the two collecting traders is Rp.631,250 or Rp. 856/kg and the two wholesalers are Rp. 1,000,000 so the marketing costs are Rp. 1.356/kg.

Margin Analysis and Marketing Profits

Cocoa marketing margin is the difference between the selling price and the purchase price of cocoa beans in the marketing channel for cocoa beans in Margolembo Village, Mangkutana District, East Luwu Regency. The price received by the farmers reaches the consumers in each channel, which is not the same, resulting in differences in prices, costs, profits and marketing margins for cocoa beans in Margolembo Village, Mangkutana District, East Luwu Regency. The marketing margin for cocoa beans in each marketing channel can be seen in Table 13 below.

Table 13. Margins and ProfitsMarketing of Cocoa Beans in Margolembo Village, Mangkutana District, East Luwu Regency

No	Channel	Status	Selling Price (Rp/kg)	Purchase Price (Rp/kg)	Margins (Rp/kg)	Marketing Cost (Rp/kg)	Profit (Rp/kg)
1	I	Farmer	30,000	-	-	-	-
2		Wholesalers	31,000	30,000	1,000	1,369	29,631
Total					1,000	1,369	29,631
1	II	Farmer	28,000	-	-	-	-
2		Collector					
3		Traders	30,000	28,000	2,000	856	29,144
3	Wholesalers	32,000	30,000	2,000	1.356	30,644	
Total					4,000	2,212	59,788

Based on the table above, it can be seen that the marketing margin for marketing channel I is Rp. 1,000/kg and in marketing channel II is Rp. 4,000/kg. The large marketing margin in marketing channel II is caused by the number of marketing agencies involved in distributing products from producers to wholesalers. With so many marketing agencies involved resulting in large marketing margins. This is in accordance with the opinion (Jumiati et al., 2013) which says that the longer the marketing channel, the greater the margin.

The results of the analysis also show that the more the number of marketing agencies involved will lead to an increase in the length of the marketing chain resulting in increased marketing costs and profits taken by each of these marketing channels. This can be seen in the profit and marketing costs column on channel II, where the total profit is Rp.59,788

and the costs incurred were Rp. 2,212/kg. While the profit on channel I is Rp. 29,631 and the marketing costs incurred amounted to Rp. 1.369/kg.

Marketing Efficiency

To see the marketing efficiency of cocoa beans can be seen in Table 14 below.

Table 14. Analysis of Cocoa Marketing Efficiency in Margolembo Village, Mangkutana District, East Luwu Regency

Channel	Marketing Cost (Rp/kg)	Product Selling Value (Rp/kg)	Efficiency (%)
I	1,369	31,000	4.4
II	2,212	32,000	6.9

Based on Table 14 above, it can be seen that channel I is the most efficient marketing channel because the lowest efficiency value is 4.4% compared to marketing channel II with an efficiency value of 6.9%. However, these two marketing channels are classified as efficient because their efficiency value is <50%. This is in accordance with the rules of marketing efficiency decision making according to Soekartawi (2002) which says that if the Ep value <50%, the marketing channel is said to be efficient and if the Ep value is > 50%, the marketing channel is said to be less efficient. In addition, marketing channel I is more efficient because the channel is shorter than channel II.

CONCLUSION AND SUGGESTION

Based on the results and discussion of the research that has been done, several conclusions can be drawn as follows:

1. There are 2 marketing channels for cocoa beans in Margolembo Village, Mangkutana District, East Luwu Regency. The first marketing channel is farmers - wholesalers - cocoa management companies - company partners. Meanwhile, the second marketing channel is farmers - collectors - wholesalers - cocoa processing companies - company partners. Each marketing agency performs different marketing functions, namely the exchange function, the physical function and the facility function.
2. The marketing margin for each channel is different, where the marketing margin for marketing channel I is Rp. 1,000/kg and in marketing channel II is Rp. 4,000/kg.
3. The efficiency level on channel I is 4.4% and the efficiency level on channel II is 6.9%.

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[Agrisociconomics] Article Review Acknowledgement

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3 Mei 2023 pukul 10.18

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Dahlia Nauly:

Thank you for completing the review of the submission, "ANALYSIS OF COCOA MARKETING IN MARGOLEMBO VILLAGE, MANGKUTANA DISTRICT, EAST LUWU REGENCY," for Agrisociconomics: Jurnal Sosial Ekonomi Pertanian. We appreciate your contribution to the quality of the work that we publish.

[Kutipan teks disembunyikan]