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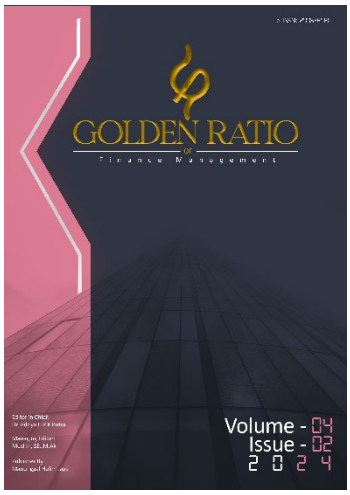

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FINANCE | RESEARCH ARTICLE

Value-added Finance Use Animal Waste as Conversion Fertilizer for Vegetable Farming Groups in the West Sinjai Region, Indonesia

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Abstract: Agriculture plays a crucial role globally, and addressing the sustainable management of livestock waste is a growing concern. Converting animal waste into fertiliser not only supports organic farming but also offers a sustainable solution for managing livestock waste. This study aims to evaluate the conversion of fertiliser to animal waste and its potential to generate higher economic value for vegetable farmers in the West Sinjai region. By applying theoretical concepts learned in academic settings to real-world problems, this research aims to enhance knowledge regarding the economic benefits of fertiliser conversion. Additionally, it serves as a valuable reference for future studies on the economic impact of using animal waste as a substitute for chemical fertilisers. The primary goal is to determine the financial benefits and added value of using animal waste in place of chemical fertilisers. This research follows a quantitative descriptive approach, using both primary and secondary data. The population consists of secondary crop farmers in the West Sinjai region, and the sample includes six groups of vegetable farmers in Gunung Perak Village. The results indicate that converting fertiliser to animal waste significantly enhances the economic value for farmers in the West Sinjai region, particularly in Gunung Perak Village. This improvement is due to the cost savings from using animal waste compared to chemical fertilisers per production unit, ultimately leading to higher profits for the farmers.

Keywords: Fertilizer, Animal Manure, Vegetable Farmers.

JEL Classification Code: Q12, Q52, O13

1. INTRODUCTION

The agricultural sector is a vital sector for the economy in Indonesia that can give a mark plus to the economy. Value-added economics not only covers the aspect of finance but also involves the evaluation of the social and impact environment caused by an action economy. Value-added economics covers aspects like efficient use of source power, sustainable environment, and social implications from policy economy. (Porter et all, 2011). Value-added economics have an essential role in the economy. Value-added high economics can increase the well-being of society and can also push the growth of the economy. Sector agriculture is a tendon pulse economy Because its role is very strategic, primarily as supplier material default, provider field work, creator mark add, and sector agriculture. This is expected to become one of the alternatives to overcome related issues with the nation's growing economy (Syahrul, 2018). Around 28.21% or 39.45 million residents have an eye livelihood in agriculture (BPS, 2023). That significantly contributes to sector agriculture as a work provider for a significant population.

Fertiliser is one of the most valuable production important in cultivation agriculture—several years. Lastly, fertiliser prices tend to increase drastically because of increased energy for production, transportation costs, and demand (Alley & Wysor, 2005). Ascension price fertiliser, of course, has affected the budget cost of production farmers, and one way that can be done for farmers with inefficient cost production business farmers is to minimise the cost of factor production. One of the methods to minimise cost production is to replace fertiliser from fertiliser chemistry with organic

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fertiliser (Nicholson, 1998). Conversion of dirt animals becomes fertiliser. Not only is agriculture organic, but it can also become a solution for sustainably managing waste farms. In the context of industry development agriculture, research contributes not only to the development of technology conversion fertiliser but can also enhance efficient source power, a sustainable environment, and welfare economy farmers (Suryadi & Susanto, 2020).

His high consumption of fertiliser chemistry shows that the agricultural sector depends on chemical inputs to increase productivity. Although fertiliser chemistry can give fast and effective results, it is necessary to remember that excessive use can hurt the environment and cause land and water pollution. Therefore, there is a need To push the adoption practice to a more agriculture-sustainable and friendly environment. The use of fertiliser is still high in the agricultural and farming sectors. Association Producer Pupuk Indonesia (APPI) recorded that fertiliser consumption in Indonesia reached 4.47 million in the semester I/2023. The amount reached 44.93% of the total consumption of Indonesian fertiliser throughout the year then, which is dominated by chemical fertiliser (inorganic). Temporary fertiliser use is only 5% of whole-use fertiliser (Association Producer Pupuk Indonesia, 2023).

Well-being farmers in South Sulawesi recorded getting better. This matter was confirmed through Exchange Rates South Sulawesi Farmers (NTP) in the first quarter of 2023, which was recorded as 103.52, or an increase compared to the quarterly period, the same in 2022, which will be 100.55. This matter shows that the level of ability and power makes farmers stronger. Exchange rate product Etani can fulfil the needs of house ladder farmers. It is suitable for the consumption of house ladders, not cost-producing agriculture (Bank Indonesia, 2023). In the first quarter of 2023, the average index received by farmers in South Sulawesi amounted to more than 117.95 high 3.82%compared to the fourth quarter of 2022 and beyond the high of 7.95% compared with the same period in the year previously. On the side else, the average of the paid index farmers in South Sulawesi in the first quarter of 2023 amounted to 113.94%, an increase of 0.51% compared to the fourth quarter of 2022 and increasing of 4.86% compared to the first quarter of 2022 (Bank Indonesia, 2023). Based on shared power work, sector agriculture still absorbs LU power work, the largest in South Sulawesi. However, on the side of others, people with low incomes in South Sulawesi are dominated by the region's rural. Therefore, it is necessary to make an effort to sustain the well-being of farmers. These efforts can enhance the capacity of farmers. For increased productivity and implementation of technology in the sector, farming and mowing chain supply in the distribution process results in agriculture.

Regency Sinjai is one of the regency producers of secondary crops that supply vegetable vegetables to several districts/cities in South Sulawesi and even in the Kalimantan and Papua regions. Of the 24 regencies /cities in the South Sulawesi Province Region, which are located on the East Coast of the Southern part of the South Sulawesi Peninsula, which is less than 223 km from Makassar City (capital of South Sulawesi Province). Regency Sinjai's area is 819.96 Km2. They are composed of 9 sub-districts, with villages of as many as 67 from 13 sub-districts. Production results in agriculture in the district Sinjai. This fertiliser can produce 4,200 tonnes of vegetable vegetables with the use of fertiliser Inorganic, amounting to 450 tons. These results require farmers to cover the costs of fertiliser amounting to IDR 1,815,000,000 during One season of secondary crops (Primary data from Afandi interview, 2024). Based on Mathers et al.'s findings. (1975), stating that using dirt, cows produce the best. Additionally, using a fertiliser pen was assessed as better than using fertiliser chemistry. The fertiliser it produces from dirt animals has the potency To increase fertility land and reduce dependency on farmers for fertiliser chemistry. The condition becomes the base for a deep study about the conversion of long fertiliser. Farmers use this for secondary crops in the Sinjai district. For that, the expected enhancement results in agriculture with existing conversion fertilisers becoming dirt animals (Santana, 2010).

The agricultural sector in the district Sinjai makes economic contributions from secondary crops amounting to IDR 560,000,000 or contributes 20 per cent of the Regency APBD Sinjai 2023. The largest vegetable-producing area in the district of Sinjai is Subdistrict West Sinjai. West Sinjai is a vegetable-producing area that supplies vegetables in almost all regions of South Sulawesi. Contribution sector agriculture, particularly in the production of vegetables in the Regency Sinjai, impacts economic levels and significantly benefits regional food resilience. West Sinjai Region is the centre of the production of vegetables and the largest in the district of Sinjai. This is supplied locally

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and has a widespread impact until the level province. Therefore, it is necessary to develop supporting strategies and policies for the growth and sustainable agriculture sector, ensure the continuity of the economy's public review, and upgrade resilient food at the regional level.

Study-related with mark plus economical conversion fertiliser with dirt animal Already Once researched by several empirical research, among others research conducted by Pangajouw et al. l (2016) shows that income business farmer tomato use mixed organic fertiliser taller than those who use it single nonorganic fertiliser. However, a different case with research conducted by Nirmawati et al. l (2014) shows that efficiency input usage is not yet efficient. The research results have not yet proven the maximum result, so the writer does study return. Study This is relevant in industry agriculture because it tries to overcome several challenges and crises farmers face. From the results, With a focus on value plus economical conversion fertiliser with dirt animals, research can become a sustainable and friendly solutions environment. Study This can also give an outlook valuable to the perpetrator industry, government, and society in general about the potency of the economy from the conversion of dirt animals into fertiliser. Research results show that this expectation can become a base policy for application practice, making agriculture more efficient, impactful, and positive on the well-being of farmers and the continuity of environment agriculture in Indonesia, especially in the West Sinjai region.

The problem is whether converting fertiliser with dirt animals gives a mark plus a higher economic high among farmers' vegetables in the Sinjai region West. The critical role of the public, including farmers and traders, in the supply chain of vegetables in West Sinjai is significant. A spirit of cooperation among residents is vital in managing and successfully marketing agricultural results. West Sinjai, one of the fertile areas in South Sulawesi, Indonesia, is known as the producer of vegetables. This region owns the land for extensive agriculture, especially on the low plains and high, which are utilised optimally for plant diverse type vegetables like cabbage, carrots, spinach, kale, tomatoes, and chillies, as well as vegetables typical local like shoots, pumpkin, and nuts long. The tropical climate of West Sinjai, with season-long rains and temperatures warm throughout the year, creates ideal conditions for the growth of plant vegetables. Sufficient rainfall also guarantees an adequate water supply.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Value-added economics was first developed by Stewart & Stern analyst finance company Stern Steward & Co. in 1993. Value model plus economic offers sufficient parameters objective Because leave from draft capital costs (cost of capital), namely reduce profit with burden capital costs, where burden this capital cost reflect level risk organisation. The calculation results mark plus positive economics reflect higher returns than capital costs (Mardiyanto, 2013). Value-added economics refers to improving something, a product, or a service. Economic value calculates profits generated or possibly generated by an asset in the future (Beierlein et al. l, 2013). Economic value is the size of benefits a product or service provides to the agent economy (people or company). Therefore, a value economy refers to the quantity of the highest willingly paid consumers for something, product, or service. In a socialist economy, how long is someone willing to wait to get goods or services provided by the government (Suparmoko, 2002)?

A study about mark plus results research by Dwi Tia Puteri Kusuma (2017) shows that analysis mark plus production waste dirt cattle House cut animal Pekan Baru city. The writer can conclude that the total value plus gross generated in production waste dirt cattle amounts to Rp. 28,543,000 in value plus net earned from production. This amounts to Rp. 28,338,000. Added value enjoyed by workers' production amounting to Rp. 14,271.5. Value-added This is the benefits obtained by workers' production of 1 kg raw. Research results in Pranoto et al. (2021) on all parameters viz tall plant corn, leaves, long cob, heavy cob, and heavy dry per plot on the plant corn, i.e., giving compost dirt cow with different doses everything gives the results have a genuine impact to tall plants and quantities leave at 2,3,4,5 and 6 WAP, long cob, heavy cob, and heavy dry per plot. The best treatment for growth and yield in plant corn is to treat P4 with a dose of 10 tons/ha of compost dirt cow or 7 kg per plot.

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Pangajouw et al (2016). The title is Economic Analysis of Use Mixture Fertilizer Organic Feces Cattle Cows in Tomato Farming (Lycopersicium et al.. L). Research result This shows that income business farmers who use mixed organic fertiliser more often than those who use nonorganic fertiliser singularly because the cost incurred by the user of mixed organic fertiliser is lower than that of a user of nonorganic fertiliser. Factors of production, such as the amount of organic fertiliser, the quantity of nonorganic fertiliser, the quantity of seeds, and the quantity of drugs, influence the production of tomatoes in the area studied.

Research results by Mangalisu et al. (2022) show an impact on increasing the public's well-being because a group of farmers who use organic fertiliser possibly push the public to produce organic fertiliser from waste livestock and create new fieldwork. In line with the study by Nugraha and Amini (2013), the critical use of organic fertiliser for plants and the benefits of maintaining soil minerals to dawn so that a period long can still give results of abundant harvest. The study also shows the impact of prolonged harmful fertiliser use on inorganic chemistry. Research by Yaser et al. (2023) shows that fertiliser's optimal inorganic use is 25%. There is no difference between treating fertiliser optimally inorganic and using organic fertiliser in quantity fruit results harvest chilli curly. Differences are seen in treating organic fertiliser, inorganic fertiliser 25% with control, and fertiliser 100%. Organic fertiliser is highly recommended for application in Indonesia's agriculture because it does not negatively impact the environment. Different uses of fertiliser can pollute the environment If used sustainably.

Research by Rahmat et al. (2017) shows that using production inputs in business farmer paddy fields in Posona Village could be more efficient. Hence, production input needs to be added to achieve efficient conditions. Research results from Nirmawati et al. (2014) show that efficient input usage is economical. Not yet efficient. Difference mark economic by Adzawla et al. (2018) between the uses of fertiliser cages and fertiliser chemistry in the production of maise in Ghana. Using a fertilizer pen gives more economical results than fertilizer chemistry.

3. RESEARCH METHOD AND MATERIALS

Type of research used in study This is quantitative in a descriptive comparative way with the use of calculation management finance. For comparison between values plus economical use fertilizer with mark plus economical after use dirt animal. Internal data sources study. These are secondary data and primary data. Study This was implemented in the West Sinjai area, precisely in Gunung Perak Village. Study This was held in time that needed to be more, more than 2 (2) months from December until January 2024. The population is group farmers. There are 25 groups of secondary crops domiciled in the West Sinjai region in the West Sinjai Region farmer.

Deep sample study There are four groups of farmers of vegetables in the West Sinjai region, specifically in Gunung Perak Village. Analysis techniques used are calculating and comparing big savings mark plus economical between agricultural input costs for the use of fertilizer and use of dirt livestock, counting and comparing big production between output agriculture for the use of fertilizer and use of dirt livestock, counting and comparing time production among agricultural inputs for use fertilizer and use dirt livestock, etc. calculate and compare high cost relevant between alternative uses fertilizer and use dirt cattle.

4. RESULTS AND DISCUSSION

Product vegetables in West Sinjai are marketed locally and reach large markets in the nearest city, even outside the possible marked area with high demand for quality product agriculture from this region. Study This focuses on the Mutiara Farmers Group, Tassoso Farmers Group, Tumbua Farmers Group, Barugayya Farmers Group, Bulu Batua Farmers Group, and Kabulojonna Farmers Group in Gunung Perak Village, District West Sinjai.

Mr. Sulaeman Ali chairs the group in Tassoso Hamlet, West Sinjai Region, with 29 members. Based on Table 1, input costs for using dirt animals tend to be lower than those for using fertilizer for every type of plant. Using dirt animals as production input in agriculture results in savings in cost

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production amounting to IDR 4,925,000, potentially providing profit a number mark the. Therefore, using dirt animals as replacement fertilizers is more profitable for the Pearl Farmers group.

Table 1. Addition Profit Pearl Farmers Group

		Use Fertilizer		Use Animal waste		Additional Output	
Potato	Results	5000 Kgs	62,500,000	5000 Kgs	62,500,000	0	Kg
Carrot	Results	4500 Kg	36,000,000	4500 Kgs	36,000,000		
Cabbage	Results	8000 Kgs	56,000,000	8000 Kgs	56,000,000		
Potato	Total Input Costs		26,900,000		25,125,000	1,775,000	
Carrot	Total Input Costs		10,600,000		9,025,000	1,575,000	
Cabbage	Total Input Costs		9,900,000		8,205,000	1,575,000	
Addition Profit						4,925,000	

Tassoso Farmers Group is in Tassoso Hamlet, chaired by Mr. Udding L, with 25 members. Based on information obtained from the Tassoso Farmers group about differences in production inputs with fertiliser and manure animals, there is quite a significant difference in input value. In contrast, capacity production and production volume Are different. Based on Table 2, input costs for using dirt animals tend to be lower than fertiliser costs for every type of plant. Using dirt animals as production input agriculture results in savings cost production amounting to IDR 4,020,000, potentially providing profit a number mark the. Therefore, using dirt animals as replacement fertilisers is more profitable for the Tassoso Farmers group.

Table 2. In addition, profit Tassoso Farmers Group

		Use Fertilizer		Use Animal waste		Additional Output	
Potato	Results	5000 Kgs	62,000,000	5000 Kgs	62,000,000	0	Kg
Carrot	Results	5000 Kg	25,000,000	5000 Kgs	25,000,000		
Cabbage	Results	5000 Kgs	35,000,000	5000 Kgs	35,000,000		
Potato	Total Input Costs		23,500,000		22,000,000	1,500,000	
Carrot	Total Input Costs		8,200,000		7,000,000	1,200,000	
Cabbage	Total Input Costs		7,420,000		6,100,000	1,320,000	
Addition Profit						4,020,000	

Tumbua Farmers Group in Tassoso Hamlet, chaired by Mr. Afandi, has 28 members. Several differences are significant from input value based on information obtained about differences in production inputs with fertiliser and manure animal use. In contrast, capacity production and production volume Are different. Based on Table 3, input costs for using dirt animals tend to be lower than those for using fertiliser for every type of plant, and using dirt animals as production input agriculture results in savings in production cost amounting to IDR 3,530,000, potentially providing profit a number mark. Therefore, using dirt animals as replacement fertiliser is more profitable for the Tumbua Farmers group.

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Table 3. In addition, the profit of Tumbua Farmers Group

		Use Fertilizer		Use Animal waste		Additional Output	
Carrot	Results	5000 Kg	25,000,000	5000 Kgs	25,000,000	0	Kg
Potato	Results	4500 Kg	56,250,000	4500 Kg	56,250,000		
Cabbage	Results	6000 Kg	42,000,000	6000 Kgs	42,000,000		
Carrot	Total Input Costs		7,760,000		6,600,000	1,160,000	
Potato	Total Input Costs		23,400,000		22,200,000	1,200,000	
Cabbage	Total Input Costs		5,520,000		4,350,000	1,170,000	
Addition Profit						3,530,000	

Barugayya Farmers Group, chaired by Mr Ibrahim, has 25 members. Based on information about differences in production inputs with fertiliser and manure, animals significantly differ from the input value. In contrast, capacity production and production volume Are different. Based on Table 4, input costs for using dirt animals tend to be lower than fertiliser costs for every type of plant. Using dirt animals as production input agriculture results in savings in cost production amounting to IDR 6,020,000, potentially providing profit a number mark the. Using dirt animals as replacement fertiliser is more profitable for the Barugayya Farmers group.

Table 4. In addition, the profit of Barugayya Farmers Group

		Use of Fertilizer		Use Animal waste		Additional Output	
Carrot	Results	5000 Kgs	25,000,000	5000 Kg	25,000,000	0	Kg
Potato	Results	4500 Kgs	56,250,000	4500 Kg	56,250,000		
Cabbage	Results	6000 Kg	42,000,000	6000 Kgs	42,000,000		
Carrot	Total Input Costs		7,760,000		6,600,000	1,160,000	
Potato	Total Input Costs		23,400,000		22,200,000	1,200,000	
Cabbage	Total Input Costs		5,520,000		4,350,000	1,170,000	
Additional Profits						3,530,000	

Chairman Mr. Herman's Batu Bulua Farmers group, which consists of 12 people, explained several significant differences between input value capacity production and production volume. No, There is a difference. Based on Table 5, input costs for using dirt animals tend to be lower than those for using fertiliser for every type of plant. Using dirt animals as production input agriculture results in savings in cost production amounting to IDR 6,050,000, potentially providing profit a number mark the. Therefore, using dirt animals as replacement fertilisers is more profitable for the Barugayya Farmers group.

Table 5 Additions profit Batu Bulua Farmers Group

		Use Fertilizer		Use Animal waste		Additional Output	
Carrot	Results	2000 Kgs	10,000,000	2000 Kgs	10,000,000	0	Kg
Cabbage	Results	3000 Kg	21,000,000	3000 Kg	21,000,000		
Mustard	Results	2000 Kgs	10,000,000	2000 Kgs	10,000,000		
Carrot	Total Input Costs		5,200,000		3,500,000	1,700,000	
Cabbage	Total Input Costs		4,520,000		2,740,000	1,780,000	
Mustard	Total Input Costs		4,240,000		2,260,000	1,980,000	
Additional Profits						6,020,000	

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Mr Muh chairs Batu Kabulojonna Farmers Group. Hud, who has 15 members, explained the differences in production inputs with fertiliser and manure animals. There is quite a difference between input value, capacity production, and production volume. No, There is a difference. Based on Table 6, input costs for using dirt animals tend to be lower than those for using fertiliser for every type of plant. Using dirt animals as production input in agriculture results in savings in cost production amounting to IDR 4,398,000, potentially providing profit a number mark the. Therefore, dirt animals are used as replacement fertilisers, which is more profitable for the Kabulojonna group.

Table 6. In addition, the profit of Kabulojonna Farmers Group

		Use Fertilizer		Use Animal waste		Additional Output	
Carrot	Results	3500 Kgs	17,500,000	3500 Kg	17,500,000	0	Kg
Tomato	Results	2500 Kgs	37,500,000	2500 Kg	37,500,000		
Cabbage	Results	3500 Kgs	24,500,000	3500 Kgs	24,500,000		
Carrot	Total Input Costs		6,900,000		5,650,000	1,250,000	
Tomato	Total Input Costs		15,800,000		13,250,000	2,550,000	
Cabbage	Total Input Costs		5,000,000		2,750,000	2,250,000	
Additional Profits						6,050,000	

4.1. Discussion

A whole group of farmers in the West Sinjai Region proved that using dirt animals as replacement fertiliser is more economical than using fertiliser (inorganic), so it can give a mark plus economic and practical—no direct profit for farmers. Using dirt animals gives farmers a mark plus economic benefits because they can buy from dirt animals at a relatively cheaper price and even produce from them themselves. Dirt animals concentrate more on nutrition and need more use than fertiliser. This reduces the cost incurred For buying the price of fertiliser. Enough height tends to increase yearly and is not easy to find. Besides, dirt animals can repair quality land over time, increasing water retention, gradually reducing dependence on fertiliser, and increasing harvest results sustainably.

Research results This aligns with research conducted by Pangajouw et al. (2016). The title is Economic Analysis of Use Mixture Fertilizer Organic Feces Cattle Cows in Tomato Farming (Lycopersicium et al.. L). Research result This shows that income business farmers who use mixed organic fertiliser and nonorganic fertiliser more often than those who use mixed organic fertiliser because the cost incurred by the user of mixed organic fertiliser is lower than that of nonorganic fertiliser. The research result also aligns with Adzawla et al. (2024) on the Economic Value of Manure and Inorganic Fertilizers in Maize Production in Ghana. Study This evaluates the difference in economic marks between the uses of fertiliser cages and fertiliser chemistry in the production of maise in Ghana. Using a fertiliser pen gives more economical results than fertiliser chemistry.

5. CONCLUSION

Based on the research results, it can be concluded that conversion fertiliser with dirt animal marks is more economical among farmers in the West Sinjai Region, specifically in Gunung Perak Village. That happens because of the savings in price usage for dirt animals compared with the price of fertiliser per unit production, which adds profit to farmers. The study recommends the researcher's cooperation with Group farmers in developing practices sustainably and improving agriculture marks plus Economic, more natural use of dirt animals. In general, To increase efficiency production, group farmers can choose dirt animals compared with fertiliser chemistry or as agricultural input. Group Farmers can organise training and counselling for the members and other farmers in their area about the benefits of using dirt animals as replacement fertilisers. Thus, knowledge about mark plus

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economics from conversion fertiliser with dirt animals and agriculture practices can spread broadly and be applicable effectively.

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