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Income Analysis of Cattle Business Integrated With Rice Farming in Semangga District, Merauke Regency, Indonesia

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ABSTRACT

Integration efforts generally have the main goal of increasing the production and productivity of both cattle and rice plants. Increased production and productivity will be in line with the increase in the income of farmers and will ensure the sustainability of the agribusiness system activities. The main objective of implementing integration is to increase cattle and rice plant production. The increase in production will correspond to an increase in the income of farmers and breeders, ensuring the sustainability of the agribusiness system. The purpose of this quantitative research was to evaluate the income of the cattle business integrated with rice farming. The method used was a survey with Stratified Random Sampling technique and the location chosen was Semangga because it is one of the districts in Merauke Regency with the highest rice production where the majority of the farmers integrate cattle and rice farming businesses. In this research, the population consisted of farmers as well as breeders who work together. Primary and secondary data were employed with income analysis followed by R/C Ratio analysis. In conclusion, the cattle business integrated with rice farming has the potential to be a commercial business because it can increase farmers' income by IDR 34,434,752 within one year with an R/C of 1.90.

Keywords: cattle, income, integration, rice business

INTRODUCTION

Semangga is one of twenty districts in Merauke Regency located near urban areas with a population of 14,698 people and a density of 16.23 km^2 (BPS, 2020). According to the initial survey results, the community is mainly characterized by transmigration with livelihoods as farmers and breeders. A close relationship exists between Livestock and agricultural businesses in terms of supporting economic development that generates community income (Lindawati, 2015; Kusumastuti et al., 2022; Sulfiar et al., 2022). One benefit of these two businesses is that they have a symbiotic relationship, hence, they can support the development of the agricultural and livestock sectors, such as the beef self-sufficiency program which has been endorsed as a priority scale by the Ministry of Agriculture (Zulkarnain et al., 2021; Rusli et al., 2021).

One indicator of the success of the government's beef self-sufficiency program is the development of the cattle business integrated with rice farming in terms of production and productivity (Wardani et al., 2021). This business has the potential to be developed because it has a promising economic value and the beef can be consumed by communities for the fulfillment of the daily nutritional requirements (Rizal et al., 2021; Watuwaya & Syamsu, 2021; Zamaya et al., 2022). Similarly, the rice business has enormous prospects because it is a primary human necessity. In practice, cattle are fed rice straw while rice plants are fertilized with cow dung. The harvested rice area is 9,614 ha with a production of 55,184.36 tons and a productivity of 5.74 tons/ha (BPS, 2020).

The main objective of implementing integration is to increase cattle and rice plant production (Kurniati et al., 2019). The increase in production will correspond to an increase in the income of farmers and breeders, ensuring the sustainability of the agribusiness system (Hastuty, 2015; Amam et al., 2021). Based on these conditions, this study aims to determine the income of cattle farming integrated with rice crops in Semangga District, Merauke Regency by using income analysis and followed by R/C ratio analysis.

MATERIAL AND METHOD

In this research, the sample consists of farmers who work as rice farmers and breeders in an integrated manner. This quantitative research utilizes a survey method with the Stratified Random Sampling technique. Semangga Disctrict was chosen as the research location because it is one of the districts in Merauke Regency with the highest rice production and the majority of the population are rice farmers who integrate with cattle.

Several techniques were utilized in the collection of primary and secondary data. These techniques include direct observation of the object in the field to acquire the initial data, followed by direct interviews with the respondents, namely farmers and breeders. These interviews were conducted with the help of questionnaires tailored to the research needs and documentation was carried out in the form of photographs, data, reports, and relevant journals.

The operation and measurement of research variables are as follows: (a) The cattle business is integrated with the rice plant business during the one-year production period, (b) Cattle production includes all business activities that produce cattle commodities that are ready to be sold as consumer goods, (c) Rice production includes all farming activities that produce rice commodities as foodstuffs, (d) Cattle production factors comprise labor measured by people, materials measured by fruit, and machines measured by units, (e) Rice production factors include fertilizers measured by kg, pesticides measured by kg, labor measured by people, and tools measured by units, (f) Total costs include all expenses incurred in carrying out the integration, and (g) Revenue is the final result obtained by breeder farmers after deducting all costs used.

The data analysis used is income analysis with the following formula:

$$P_d = TR - TC \text{ (Soekartawi, 2006)}$$

Note: P_d = Income earned by integrated farming (IDR); TR = Total revenue multiplied by selling price (IDR); TC = Total cost or all expenses incurred in the integrated business (IDR).

Furthermore, an analysis of the R/C Ratio, which is known as the ratio between revenues and costs, was carried out. Mathematically, this can be written using a formula (Soekartawi, 2006), if the R/C ratio = 1, then there is no profit or loss, while if the R/C ratio is greater than one, then the integrated business is profitable.

RESULTS AND DISCUSSION

Analysis of Production, Total Cost, and Business Income

Fixed and variable costs are the expenses incurred in the integrated business of cattle and rice farming. These costs are issued with planting twice in one year. Furthermore, this business has assumed that the means of production are expressed in rupiah (IDR). The cost components used are shown in Table 1 below.

According to the table above, the total fixed cost incurred for cattle business was IDR 6,393,610 which was derived from the depreciation cost of IDR 1,110,277 and the initial capital cost of IDR 5,283,333. The depreciation cost was obtained from the depreciation of tools such as cages, boat shoes, ropes, hoes, buckets, machetes, and sickles utilized during the period. Meanwhile, the initial capital was obtained from the value of the cattle during the business run, whether purchased directly or through a rowdy system. The variable cost of the cattle business was IDR 6,904,722 and obtained from the purchase of forage, straw, bran, medicine, and labor, although the labor used was family.

The total cost for the rice business was IDR 25,003,582 obtained from a fixed cost of IDR 18,311,666 and a variable cost of IDR 6,691,916. Fixed cost in this business includes land rent, tractor rental, depreciation of equipment, and tax payments. Meanwhile, the variable cost includes the purchase of fertilizers, seeds, pesticides, and labor (Bakari, 2019). The labor used was a family with an average of three people.

Rice seeds are still used traditionally because they are acquired from harvests carried out by farmers and not certified. This will undoubtedly have an impact on the amount of rice produced by farmers (Fatmawati, 2019). In addition, pesticides and inorganic fertilizers used by farmers were purchased at farm shops while

organic fertilizers were obtained from cow dung released in rice fields which are converted to a usable form.

Table 1. Average production cost of cattle and rice integrated business

	Cost Component	Value (IDR)
A.	*Cattle Business*	
	Fixed cost	
	Initial capital	5,283,333
	Depreciation	1,110,277
	Total	6,393,610
	Variable Cost	
	Forage Feed	3,960,000
	Straw	456,333
	Bran	2,280,000
	Medicine	77,833
	Labor	1,800,556
	Total	6,904,722
B.	*Rice Business*	
	Fixed cost	
	Depreciation cost	12,050,000
	Tax	20,000
	Land Rent	2,658.333
	Tractor Rental	3,583,333
	Total	18,311,666
	Variable Cost	
	Seed	565,000
	Fertilizer	1,616,250
	Pesticide	1,079,000
	Labor	3,431,666
	Total	6,691,916
	Total Fixed and Variable Costs	38,301,914

Source: Primary Data Processed in 2021

Integrated Business Production and Revenue Analysis

Identifying the overall production cost of the beef cattle integrated rice business is crucial for analyzing the production and revenue of this business. Furthermore, it is related to the amount of production and revenue of the integrated business.

Table 2. Average Revenue of Cattle and Rice Integrated Business

Production and Revenue Components	Value (IDR)
Rice Production at Planting Period 1	34,865,000
Rice Production at Planting Period 2	22,538,333
Total	57,403,333
Cattle Sales	15,333,333
Total	15,333,333
Total Production and Revenue	72,736,666

Source: Primary Data Processed in 2021

The table above shows that the production from the rice business was calculated for two plantings periods in one year. Rice production during planting periods one and two was IDR 34,865,000 and IDR 22,538,333, respectively. Furthermore, the cattle sale was IDR 15,333,333 generated from the sale of calves, brooders, and bulls sold by farmers for one year. The total revenue generated from the integrated cattle and rice farming business was IDR 72,736,666.

Analysis of Production, Income Level, and Farming Profits

Production and income analysis is an analytical process related to the breakdown of the production facility cost, the amount produced, and farming income. Farming income is the difference between revenue and production costs incurred during one year of integrated business (Soekartawi, 2006).

According to Table 3, the total cost incurred was IDR 38,301,914 obtained from the fixed and variable costs (Mustamin, 2018). There is a decrease in costs of feed and fertilizer since the integrated cattle and rice farming business reduces the production cost. Rice straw can be used as feed by cattle while cow dung is used as fertilizer for rice plants. This reduces the amount of expenditure incurred by farmers in farming, resulting in an increase in income.

The total revenue from the integrated cattle business with rice farming was IDR 72,736,666 with an income of IDR 34,434,752. The R/C Ratio obtained from the analysis of integrated farming production and total costs was 1.90. Therefore, it can be stated that implementing integrated farming is profitable because the R/C Ratio is greater than 1. This means that the greater the R/C Ratio, the more profitable the farming activities are because the amount of revenue obtained by farmers from each production cost incurred by 1 unit will be even greater.

Table 3. Recapitulation of Total Cost, Revenue, and Farming Income

Description	Value (IDR)
Total cost	38,301,914
Rice Production	57,403,333
Cattle Sales	15,333,333
Revenue	72,736,666
Income	34,434,752
R/C Ratio	1.90

Source: Primary Data Processed in 2021

CONCLUSION

The integrated cattle business with rice plants has the potential to be developed as a commercial business because it can increase farmers' income. The amount of income generated from the integrated cattle and rice farming business in one year is IDR 34,434,752 with an R/C of 1.90.

CONFLICT OF INTEREST

The author also states that there is no conflicts of interest with financial relationships, personal, or otherwise with a person or organization others related to the material discussed in the script.

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REFERENCES

Amam, H.B. Setyawan, M.W. Jadmiko, P.A. Harsita, S. Rusdiana, & M. Luthfi. 2021. Pengaruh Sumber Daya Manusia Terhadap Aksesibilitas Sumber Daya Usaha Ternak Sapi Potong Rakyat. Jurnal Ilmu dan Teknologi Peternakan Tropis 8(1):57-65. [Indonesian]

Bakari. Y. 2019. Analisis karakteristik biaya dan pendapatan usaha tani padi sawah. Jurnal Sosial Ekonomi Pertanian 15(3):265-277.

[BPS] Badan Pusat Statistik. 2020. Kabupaten Merauke Dalam Angka 2020. BPS KabupatenMerauke. Merauke. [Indonesian]

Kurniati, N., E. Efrita, & D. Damaiyanti. 2019. Sistem usaha tani integrasi berbasis padi dan Sapi Meningkatkan Pendapatan Petani di Kelurahan Rimbo Kedui Kabupaten Seluma Provinsi Bengkulu. Agrikan 12(1):64-69. [Indonesian]

Kusumastuti, A.E., R.B. Nugroho, & U Wisaptiningsih. 2022. Peran Kelompok Ternak Margo Makmur Mandiri terhadap pendapatan peternak sapi perah di Dusun Brau, Kota Batu. Jurnal Ilmu dan Teknologi Peternakan Tropis 9(1)129-140. [Indonesian]

Fatmawati. 2019. Local knowledge of farmers in farming tradition of Tapango Community in Polewali Mandar. Journal Walasuji 10(1):85-95.

Hastuty, S. 2015. Pola Usahatani Terpadu dalam Upaya Pengembangan Agribisnis di Kecamatan Bara Kota Palopo. Journal of Mathematics and Natural Sciences 4(1):1-14. [Indonesian]

Lindawati. 2015. Analisis Faktor yang Memengaruhi Perilaku Ekonomi dan Kesejateraan Rumah Tangga Petani Usahatani Terpadu Padi-Sapi di Provinsi Jawa Barat. Institut Pertanian Bogor. Bogor. [Indonesian]

Mustamin. 2018. Faktor-faktor yang mempengaruhi biaya usaha tani. Jurnal Hukum Ekonomi Syariah 2(2):135-144. [Indonesian]

Rizal, A., M. Abadi, Surahmanto, & L. Harudin. 2021. An Analysis of the Development and Income of Sahiwal Cross Cattle Business during the Covid 19 pandemic in Konda District South Konawe Regency. Journal Chalaza of Animal Husbandry 6(1):6-11.

Rusli, M., L.O. Nafiu, & H. Hafid. 2021. Strategi pengembangan ternak sapi potong melalui program Upsus Siwab di Sulawesi Tenggara. Jurnal Ilmu dan Teknologi Peternakan Tropis 8(3):353-361. [Indonesian]

Soekartawi. 2006. Analisis Usahatani. Jakarta. UI Press. Jakarta. [Indonesian]

Sulfiar, A.E.T., C. Agustin, & T. Nugroho. 2022. Profile and income of bali cattle farmers under different farming systems in Southeast Sulawesi, Indonesia. Jurnal Ilmu dan Teknologi Peternakan Tropis 9(2):536-542.

Wardani, L.A., M.F. Sitepu, & E. Frimawaty. 2021. Pengembangan peternakan sapi rakyat melalui penerapan kandang komunal berkelanjutan. Jurnal Ilmu dan Teknologi Peternakan Tropis 8(3):310-318. [Indonesian]

Watuwaya, B.K. & J.A. Syamsu. 2021. Potensi pengembangan sapi sumba ongole berdasarkan pemanfaatan limbah pertanian: studi kasus Kabupaten Sumba Timur. Jurnal Ilmu dan Teknologi Peternakan Tropis 8(3):328-336.

Zamaya, Y., A. Pramana, A.R. Ningsih, D. Kurnia, & L. Manis. 2022. Analysis of supply chain beef cattle in Riau Province. Jurnal Ilmu dan Teknologi Peternakan Tropis 9(2):529-535.

Zulkarnain, D., M. Rusdin, B. Purwanti, & L.O. Munadi. 2021. Potensi integrasi ternak sapi bali dan tanaman pangan di Kabupaten Muna Barat. Jurnal Ilmu dan Teknologi Peternakan Tropis 8(3):381-389.