UDC 332

ANALYSIS OF COMPARATIVE AND COMPETITIVE ADVANTAGES OF CATTLE BUSINESS IN EAST NUSA TENGGARA PROVINCE, INDONESIA

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ABSTRACT

This study aimed to analyze the comparative and competitive advantages of cattle in the province of East Nusa Tenggara. This research method is descriptive-analytic, with primary and secondary data sources. The sampling technique used is stratified sampling. The research location is Timor Tengah Selatan Regency. The results showed that the Domestic Resource Cost Ratio value of cattle reared with a loose system tended to be lower than those raised with a tie system; it was because the higher the number of livestock owned, the lower the Domestic Resource Cost Ratio value. The Private Cost Ratio value obtained can explain that to obtain an additional unit of rupiah, an additional domestic resource cost are required for the value of the Private Cost Ratio. For the cattle business to be more economically efficient in the tie system, each business household must raise 4-5 cows, to obtain social benefits with a Domestic Resource Cost Ratio value of 0.54 and a Private Cost Ratio of 0.49, while each household has to raise 25-26 cows with a Domestic Resource Cost Ratio value of 0.08 and a Private Cost Ratio value of 0.07.

KEY WORDS

Livestock, private cost ratio, domestic resource cost ratio.

The development of the livestock sub-sector in Indonesia is a source of national agricultural growth. The role of the livestock sub-sector is increasingly important and strategic with indications of an increase in demand and per capita consumption of various livestock products. Significant demand is thought to be due to increasing population, per capita income, changes in people's tastes and developments in the number and scale of industry. Delgado, et al (2013) stated that the combination of increased income, population growth and per capita consumption will drive an increase in demand for livestock products at an increasingly rapid rate. This condition is a considerable pulling force as the basis for the livestock revolution in developing countries, including Indonesia.

The Directorate of Food and Agriculture stated that several specific constraints were substantial problems in the livestock sector, which resulted in the slow achievement of self-sufficiency in beef, including: a) gaps in domestic meat production and consumption; b) the vulnerability of the local market to the influence of the global market; c) low productivity of local cattle; d) non-programmed crossbreeding of local cattle; e) barriers to the national cattle population and f) institutional barriers. The level of demand for livestock products, especially meat, milk and eggs is reflected in the trend of national consumption. Statistics and Animal Health (PKH) data from the Ministry of Agriculture (2021), shows that national fresh meat consumption between 2016-2020 shows an increase of 9.01% per year, which is an increase from 56.02% kg/cap/year in 2016 to 62.19% kg/cap//year in 2020. Consumption of eggs and milk decreased by 0.51%, from 61.13% kg/cap/year in 2016 to 60.20% kg/cap/year year in 2020. Based on the trend of fresh beef consumption, in 2016 the portion was 0.417% kg/cap/year increasing to 0.469 kg/cap/year.

The increase in population, the improvement in per capita income and the awareness of the importance of better nutrition in the community has resulted in the fulfillment of the need for meat, eggs and milk as basic needs that must be met. Based on the description of the level of demand for various livestock products, it can be explained that meeting the needs of national livestock products is an important and strategic matter to encourage increased livestock productivity in a sustainable manner. In essence, the national beef supply

is inseparable from the production capacity that is spread across various regions. Domestic livestock production data should be initial and important information for the development of national livestock while still considering the current national potential capacity and capability. Directorate General of PKH, Ministry of Agriculture (2021) reports that the cattle population in Indonesia tends to increase in 2016-2020.
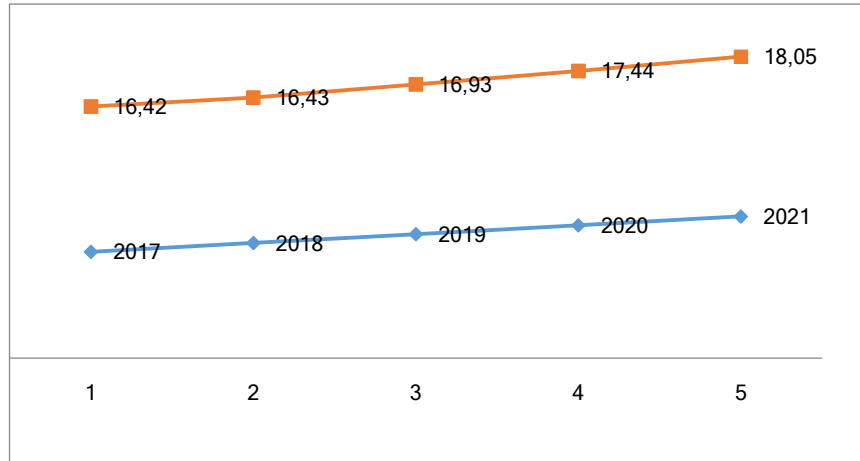

Figure 1 – Development of Cattle Population in 2017-2021. Source: Statistical Data and Animal Health, Ministry of Agriculture (2021)

Figure 1 explains that in 2017 the number of cattle was recorded as many as 16,429,102, then increased to 18,053,710 in 2021. Population development data for the period 2017-2021 indicates that on average there has been an increase in the national cattle population by 1, 02% per annum. Up to now, five provinces in Indonesia have played an important role as the main supplier of national beef needs, namely East Java with 4,978,874 heads (27.35%); Central Java with 1,863,327 heads (10.32%); South Sulawesi with 1,461,457 heads (8.09%); West Nusa Tenggara with 1,336,324 individuals (7.40%); and East Nusa Tenggara with 1,248,930 heads (6.91%).

Total national beef production in 2021 will reach 486,319.65 tonnes, which is an increase from 437,783.23 tonnes in 2017 (Director General of PKH, Ministry of Agriculture, 2021). Thus the effort to accelerate the increase in cattle productivity in the main supply areas with high growth index is an alternative strategy to be considered for its development to meet the national demand for beef. The option to develop cattle in new development areas outside Java is relevant enough to encourage its implementation.

East Nusa Tenggara Province (NTT) is one of the provinces in NTT whose economic condition is still based on an agrarian economy, this is because the NTT region is a strategic area for developing the agricultural sector, which is characterized by the large role of the agricultural sector in the formation of Gross Regional Domestic Product (GRDP). The economy of East Nusa Tenggara has a considerable dependence on the agricultural sector because it forms capital, supplies food, industrial raw materials and preserves the environment through environmentally friendly farming practices. The agricultural sector is also a source of food security which is the main requirement for achieving economic and social security. The agricultural sector is an important sector that can improve the economy in NTT Province through improving the quality of life of agricultural communities. Therefore agricultural development plays an important role in the economy of the NTT Province so that it can increase income and achieve sustainable food self-sufficiency.

Data from the Central Statistics Agency of NTT Province (2022) shows that the structure of the business fields of the NTT Province is still dominated by the agricultural, forestry and fishery business fields. This can be seen from the large role of the agricultural sector in the formation of the Gross Regional Domestic Product (GRDP) in the Province of NTT. In 2020 the agricultural, forestry and fishery business fields made the largest

contribution to the economic structure of NTT (28.51%) followed by the government administration, defense and compulsory social security business fields (14.26%); wholesale and retail trade, car and motorcycle repair (11.16 percent); construction business field (9.82 percent); and Education services business field (10.08 percent). Data from the Central Statistics Agency of NTT Province (2020) if broken down by group, the livestock sub-sector in the Province of NTT plays a strategic role which is reflected in its contribution to the Formation of GRDP of the Province of NTT. Based on current prices, the size of the sub-sectors forming the agricultural sector in NTT, apart from the food crops sub-sector, holds the highest rank with a contribution of 9.89% (10,530.45 billion rupiah) in 2020, an increase from 9.44% (7,906.54 billion rupiah) in 2016, or experienced an average increase of 0.47% per year.

The value of the GRDP in the livestock sub-sector comes from the production and various trading activities of a number of livestock commodities which are the mainstay of and are developed by the people and regions in NTT. This is because livestock for the people of NTT function as savings, marriage dowries, donations for customs and a source of income for the people of the Province of NTT. Therefore, livestock development is one of the development targets in NTT Province. One of the livestock commodities that is widely developed by the community is cattle as a large livestock.

Until now, the province of NTT is one of the areas that supply the national beef demand. Its role is shown through the activity of sending cattle to meet national meat needs. In 2021 the NTT Provincial Animal Husbandry Service reported that the average total large livestock (cattle, horses and buffalo) traded out of NTT between 2021 was recorded at 79,649 heads, where the average number of cattle shipments reached 70,942 heads , 4,100 buffaloes and 4,607 horses.

The regional government of NTT sets an expenditure quota with the aim of maintaining development and population in the Province of NTT. Cattle released are generally fattening bulls and also have good quality, so if the amount of cattle from NTT is not controlled, it can affect the structure of the population, including disrupting its future development. Lole (2015) found that the total population in NTT was affected by the total productive cows, total calf production, and lag total calf production. This means that a large number of productive broodstock, high Net Calf Crop (NCC), and export controls are important for increasing the population in NTT.

Based on data from the Central Statistics Agency for the Province of NTT, (2020) it is explained that in 2020 the spread of the beef cattle population in West Timor was recorded at 623,292 heads (52.42%), mainland Flores as many as 210,362 (17.69%) and mainland Sumba as many as 81,395 (6.84%). The highest distribution of cattle in West Timor regencies was in South Central Timor (TTS) District, namely 254,759 (21.42%) with 44,247 cattle farming households. TTS Regency is an important area that supports the development of cattle and various agricultural businesses in and around it.

Cattle raising systems that reflect the type of business (typical farm of beef cattle production) that are generally practiced by most breeders in TTS Regency are the grazing system and the tethering system. Sugeng (2013) explained that the cattle rearing system in Indonesia is divided into three, namely: intensive, extensive and mixed farming. In the maintenance of an intensive system, the cows are penned at night and the cattle are grazed during the day. The pattern of intensive cattle rearing is mostly practiced by cattle breeders in Java, Madura and Bali. In extensive rearing livestock are kept in pastures with sedentary farming patterns or in the forest. This pattern is mostly practiced by breeders in East Nusa Tenggara, Kalimantan and Sulawesi. Cattle rearing using the loose system in West Timor includes three variants of releasing cattle in the morning with limited supervision and in the afternoon in pens; releasing cattle continuously and only being put in pens when the mothers give birth or for disease management, branding or when they want to sell. The third variant is releasing livestock for a limited time of 3-6 days, and then being kept in pens for 1-2 days and releasing them again for the same period of time.

The cultivation of cattle with a tie system carried out by breeders in TTS Regency is relatively new, namely since the late 1990s. This began with the introduction of Artificial

Inseminas (AI) technology by WWF as a response to the impact estimates arising from the implementation of the release system in protected areas. Maintenance of cattle with a tie system is generally young and adult male livestock with the aim of fattening. Cattle are tied/tethered in simple cages in the form of wooden bars and also a simple roof is added. Disease control in the form of vaccination and or administration of vitamins, although limited, is also the focus of breeders, including routine cage cleaning. Feeding in the form of grass and various forage leaves as well as food crop residues is quite routine and intensive. The overall management of raising cattle with a tie system, although at a simple level, has the potential to significantly boost the growth rate of cultivated cattle.

However, it must be admitted that with the domination of the loose (extensive) system, even taking a location in the TTS area which hydrologically needs to be preserved, it often becomes a controversy that leads to conflicts over the use of the area in question. This is because everyone thinks that the existing resources are common property, so that everyone feels entitled to use them. Ciriacy-Wantrup and Bishop (2005) state that an item that is a Common Property indicates that not everyone owns it.

Comparative advantage and competitive advantage in the cattle business are closely related to the utilization of existing and dispersed resources, both those controlled by breeders and those available in and around the area. Various potential resources that are controlled by breeders and are used as a mainstay are family labor, a limited number of feed gardens and a number of food plants which have been used as a source of feed. This causes the distribution of natural resources in the form of natural pastures to be the main component in supporting the development of cattle which is cultivated by the majority of the livestock community. The reliability of the support of natural resources in the form of pastures is reflected in the dependence on the application of cattle rearing systems which vary both with the loose system (traditional extensive) and the tie system (intensive).

METHODS OF RESEARCH

The research design is in the form of descriptive analytic research, namely explaining comparative and competitive advantages and the impact of government policies on cattle farming in the Province of East Nusa Tenggara. The research location was carried out in South Central Timor District. The types of data used in this research are primary data and secondary data. The population in this study were all cattle business houses in South Central Timor District. The population in this study were 44,274 cattle business households in South Central Timor District. Based on the calculation of the slovin formula, the number of samples taken is at least 100 cattle farming households. The sampling technique used is stratified sampling. In this technique the population is grouped or categorized which are called strata. Where the strata are based on the ownership and maintenance system of cattle with a loose system and a tie system simultaneously. Strata-I in freelance rearing are breeders with <8 head of beef cattle, and stratum-II are breeders with ≥8 head of cattle. For rearing with strata-I tie system are breeders with 1-2 heads, and strata-II are breeders with >2 heads. The selected respondents are those who in the last 1-2 years have sold or have sold cattle. The combination of the maintenance system and the ownership stratum is taken for the maintenance of the tie system as many as 50 respondents and the maintenance of the loose system as many as 50 respondents, with a minimum quota of 25 respondents for each stratum. Thus the total number of respondents taken is at least 100 respondents. The number of respondents planned to be taken respectively represents the specifications of the maintenance system on a loose and bond basis as well as the ownership strata.

The data collection instrument in this study was carried out by interview, which is a data collection technique that was carried out by conducting question and answer directly to cocoa farmer respondents using a questionnaire. Observation, namely making direct observations at the research location to obtain a more in-depth description of the research object, and a more comprehensive analysis can be carried out. Documentation, namely the technique of collecting data through reports or records that become the policy agenda. The analytical model used in this research is the Policy Analysis Matrix (PAM).

RESULTS AND DISCUSSION

The use of tradable inputs in the beef cattle business in TTS Regency with the loose system and tie system is slightly different, namely the use of equipment such as ropes, buckets and machetes. This is because in the tie system the feeding is carried out in a cut and carry manner. In rearing with a loose system, the feed is searched for by the cattle themselves in the grazing area. The function of the rope is to tie up the cattle, buckets to take and give water to the cattle and machetes are used by family workers to find and provide feed to the cattle. It can be seen in Table 4 which describes the physical inputs and outputs of cattle farming with a loose system in TTS district.

Table 1 – Identification of Inputs and Outputs for Cattle Livestock Businesses with a Loose System

No	Kinds input and output	Physical Unit	Loose System	
			Strata-I	Strata-II
A.	Tradable inputs			
1	Number of cattle herd	UT/HF	6,8	20,5
2	Drugs/vaccines	Unit/UT	1,50	1,80
3	Vitamins	Unit/UT	1,50	1,80
B.	Domestic Factors			
1	Land	Ha/HF	0,35	0,45
2	Barn	Unit/UT	1,00	1,00
3	Labor	HKP/HF	1,00	2,00
4	Feeds			
	a. Grass	Kg/UT/Thn	1.593	5.416
	b. *Kaliandra/Lamtoro/Dadap*	Kg/UT/Thn	2.500	3.943
	c. Banana Stem	Stem/UT/Thn	40,93	59,93
	d. Forage Forest Plants	Kg/UT/Thn	1.794	5328
D.	Outputs			
1	Number of cattle sold	UT/HF	4,5	20,5
2	Private Selling Price	Rp/Tail	8.500.000	8.500.000
3	Social Selling Price	Rp/Tai	8000.000	8000.000

Source: Primary Data, 2022.

Table 1 above explains the administration of drugs/vaccines and vitamins varies depending on the availability of funds for procuring factor inputs. Provision of drugs and vitamins is usually limited to at least once a year, when cattle are temporarily penned. The purpose of giving vitamins is as a preventive measure especially when facing extreme weather changes when entering the rainy season. Types of drugs and or vitamins given such as teramicin, panto and B-Comp. The amount of administration varies, which ranges from 1.50 -1.80 units/UT for medicines or the equivalent of 6 - 9 cc/UT and vitamins as much as 1.50 - 1.80 or the equivalent of 8.5 - 13.5 cc/UT. Domestic factor inputs include land, labor cages and feed. The land in question is land planted with forage crops such as grass and tree legumes, namely raja grass, lamtoro, dadap and calliandra. The average area of land planted with fodder plants ranges from 0.35 – 0.45 ha/household farmer (HF). Feed is given only when cattle are temporarily penned. The type of feed given is in the form of forage grass, legumes, banana stems and leaves of forest plants. The amount of feed given varies, namely king grass (penisetum purpupoides) ranging from 1,593 – 5,416 kg/UT/year; dadap/kaliandra/lamtoro leaves amounted to 2,500 – 3,943 kg/UT/year; banana stems between 40.93 – 59.93 stems/UT/year. Provision of forest plant leaves is relatively more than other types of feed. The amount of feeding of forest plant leaves ranges from 1794- 5328 kg/UT/year. Cattle pens are made of local materials (wood and stone), in the form of round fences 1-1.5 m high, generally located around farmers' gardens and adjacent to grazing areas. The workforce that helps supervise livestock is family labour. The average number of workers involved is 1.00 – 2.00 HKP/ household farmer/breeders. The output is obtained from the sale of cattle which are cultivated based on the distribution of respondents and ownership strata. The average number of sales of cattle ranges from 4.5 – 20.5 UT/ household farmer/Year. This amount of sales is equivalent to 4 adult cows and 4 calves up to 20 adult cows and 5 calves.

The number of physical inputs and outputs used by cattle breeders in TTS District who

apply the tie system can be seen in Table 2. Table 2 explains that in the tie system, the use of tradable inputs is relatively different from the loose system, namely in addition to administering drugs/vaccines and vitamins, plastic rope, buckets and machetes are also added. Cattle rope is used to tie cattle to the bar/cage permanently or cattle which are bound to move every day. The feed given is generally cut and carry so that the availability of feed needed by cattle is largely determined by the intensity of attention given by breeders. The average number of drugs/vaccines ranged from 1.21-1.33 units/UT or the equivalent of 6.05-7.0 cc/UT. Giving vitamins ranged from 1.40-1.45 units/UT or the equivalent of 9.8-10.8 cc/UT. The frequency of giving is once a year, except for cattle showing symptoms of illness or to increase the livestock's appetite, usually the frequency of giving vitamins and or drugs is increased. The average use of plastic rope to tie livestock ranges from 6.53-7.71 m/UT. Likewise there are buckets and machetes that are used as drinking facilities for livestock and animal feed. The various domestic factors in the tie system are not much different from the loose system, which include land, labor, cages and feed. Control that directly supports cattle farming is land used for grass and forage tree leguminous crops, with an average area of 0.35-0.38 ha/HF. The workforce involved in managing cattle is generally family workers with an average of 1.00 HKP/HF. These workers are generally involved in supervising, finding and feeding livestock, cleaning stables and livestock, and various other related activities.

Table 2 – Identification of Input and Output of Cattle Livestock Business with Tie System

No	Kinds input and output	Physical Unit	Tie System	
			Strata- I	Strara-II
A.	Tradable inputs			
1	Number of cattle herd	UT/HF	1,72	4,16
2	Drugs/vaccines	Unit/UT	1,33	1,21
3	Vitamins	Unit/UT	1,45	1,40
4	Plastic strap	m/UT	7,71	6,53
5	Pail	Pcs	1,00	1,8
6	Cleaver	Pcs	1,00	1,20
B.	Domestic Factors			
1	Land	Ha/HF	0,35	0,38
2	Barn	Unit/UT	1,00	1,00
3	Labor	HKP/RT	1,00	1,00
4	Feeds			
	a. Grass	Kg/UT/Year	2.952	7416
	b. Kaliandra/Lamtoro/Dadap	Kg/UT/ Year	3.115	6948
	c. Banana Stem	Btg/UT/ Year	107,47	125,54
	d. Forage Forest Plants	Kg/UT/ Year	3.704	8421
D.	Outputs			
1	Number of cattle sold	UT/HF	1,41	3,0
2	Private Selling Price	Rp/Tail	8.500.000	8.500.000
3	Social Selling Price	Rp/Tail	8000.000	8000.000

Source: Primary Data, 2022.

The cages used are simple cages in the form of a bar without walls and thatched with gebang/lontar leaves, and are usually built in the yard around the breeder's house. Breeders who apply a moving tie system are generally not equipped with fixed cages. The type of feed given is in the form of forage grass, tree legumes (badap, Kaliandra, and lamtoro), banana stems and leaves of other forest plants. The amount given varies, depending on the number of livestock kept. The average king grass given ranges from 2952-7416 kg/UT/year. Consumption of forage dadap/kaliandra/lamtoro is 3115-6948 kg/UT/year. Forage for forest plant leaves is given in relatively excessive amounts compared to other types of forage, which range from 3784-8421 kg/UT/year. Banana stems are provided in addition to meeting the adequacy of feed, as well as a source of water for livestock. The average distribution of banana stems ranged from 107.47-125.54 stems/UT/year. It is necessary to know whether the amount of feeding and consumption of cattle feed, whether reared loosely or as a tie, is in accordance with the average requirement per head of cattle per day. This is important considering that at the business level of smallholder farmers, the availability of feed is an obstacle faced by most of the farmers in West Timor, especially during the dry season.

The average feed consumption as presented in the table and the next table is

contrasted with the dry matter content (BK) of each type of feed, namely 24.8% lamtoro leaves, 28.3% turi leaves, 7.5% banana stems and 21. 8% for various types of forage forest plants, it is estimated that the total consumption of BK feed for each UT per year is as follows: a) Loose System, the total consumption per UT per day is 11.8 kg consisting of 3.79 kg of king grass; 3.35 kg of lamtoro/dadap/kaliandra; 0.05 kg of banana stems and 3.98 kg of forage leaves of forest plants, and b) Tie system, total consumption per UT per day of 33.02 kg, consisting of 11.08 kg of king grass; 9.72 kg of lamtoro/adap/gamal, 0.29 kg of banana stems and 11.94 kg of forage forest plant leaves. Based on the dry matter content of the intended feed type, the total consumption of BK per UT/day of loose system cattle is 2.09 kg/UT/day and in the tie system is 6.27 kg/UT/day. The actual BK consumption of cattle kept in bunches and loose when compared with the standard BK requirements for maintenance is 1.4-3% of live weight, which in this study is estimated at 1 UT of 250 kg or approximately 5.5 kg/UT/day , then in the loose system there is still a shortage of consumption of 3.41 kg/UT/day and in the tie system there is an excess of consumption of 0.67 kg/UT/day. The difference in the amount of consumption of different BK feed between the cattle that are kept in tie and loose will have an impact on the length of maintenance between the two systems in question. In the tie system, the maintenance time range is 1-2 years while in the loose system it is 4-6 years. The condition of the shortage of BK consumption in cattle with the loose system is an implication of the lack of availability of feed in grazing areas, as well as the low attention of farmers in business management such as feeding and other management aspects. The output value is obtained from the number of sales of cultivated cattle. The average number of sales of cattle ranges from 1.41-3.0 UT/RT/Year. The average number of sales is influenced by the average number of ownership and is determined by demands for cash funds to finance urgent household needs. At the time of urging the fulfillment of cash funds to increase, it will encourage an increase in the number of cattle being sold.

The results of the calculation of the PCR value of cattle farming in TTS District with the loose and tie system and the ownership strata can be seen in Table 3.

Table 3 – Calculation of the PCR Value of Cattle Livestock Businesses in TTS District with a Tie and Loose System and Ownership Strata (Rupiah)

No	Tie System		Loose System	
	Strata-I	Strata-II	Strata-I	Strata-II
A.	4.300.000	10.400.000	17,000.000	64.000.000
	86.450	78.650	97.500	117.000
	65.250	63.000	67.500	81.000
	46.260	39.180	-	-
	23.500	42.300	-	-
	54.000	64.800	-	-
Total	4.575.460	10.687.930	17.165.000	64.198.000
B.	875.000	950.000	875.000	1.125.000
	272.160	564.165	241.000	383.000
	2.399.400	2.399.400	2.399.400	4.798.800
a.	516.000	1.297.800	278.775	947.800
b.	389.375	868.500	312.500	492.875
c.	537.350	627.700	204.650	299.650
d.	283.800	631.875	134.550	399.600
Total	5.273.085	7.339.140	4.445.875	8.446.725
C.	11.985.000	25.500.000	38.250.000	174.250. 000
PCR Value	0,71	0,49	0,21	0,07

Source: Primary Data, 2022.

Table 3 explains that cattle farming with a loose system with different ownership strata has a competitive advantage as indicated by a PCR value <1, which ranges from 0.07 – 0.21. The PCR value of cattle cultivated using the loose system in stratum II is lower than that of stratum I, this is due to the fact that the number of ownership and land area is larger than that of strata I. In the tie system, the PCR value obtained is less than one, which ranges from 0.49 – 0.71. However, there is a difference between the PCR values of cattle cultivated with the tie system and the loose system. At different ownership strata, the PCR value of

cattle that are independently cultivated indicates that the larger the ownership stratum, the lower the PCR value. In the tie system, the PCR value of strata II is lower than that of strata I, the PCR value obtained can explain that to obtain an additional unit of foreign exchange, an additional domestic resource cost equal to the PCR value is required. This means that the smaller the PCR value obtained, the more competitive the cattle business will be. The PCR value < 1 in cattle farming in TTS District at different ownership scales and rearing systems is thought to be due to the relatively low price per unit of domestic production factors. The low price of factors of production is more due to the fact that the factors of production used are sufficiently available locally and are generally under the control of breeders.

Table 4 explains that the results of DRCR calculations, which are generally a measure of the comparative advantage of cattle in TTS District, show that the loose system ranges from 0.08 – 0.22 and the tie system ranges from 0.54 – 0.77. The DRCR value of cattle reared by the loose system tends to be lower than that of the cattle reared by the tie system. The higher the number of cattle owners, the lower the DRCR value. The factor of production that is suspected as the cause is the lower number of domestic factors used so that the costs incurred are relatively lower. As a result, the utilization of domestic resources is more effective and efficient in supporting the increase in the productivity of cultivated cattle.

Table 4 – Calculation of the DRCR Value of Cattle Livestock Businesses in TTS Regency with a Loose and Bonding System and Ownership Strata

No	Tie System		Loose System	
	Strata-I	Strata-II	Strata-I	Strata-II
A.	4.300.000	10.400.000	17.000.000	64.000.000
	78.669,5	71.571,5	88.725	106.470
	59.377,5	57.330	61.425	73.710
	39.321	33.303	-	-
	21.250	38.070	-	-
	48.870	58.644	-	-
Total	4.547.388	10.658.918,5	17.150.150	64.180.180
B.	875.000	950.000	875.000	1.125.000
	272.160	564.165	241.000	383.000
	2.348.773	2.348.773	2.348.773	4.697.546
a.	516.000	1.297.800	278.775	947.800
b.	389.375	868.500	312.500	492.875
c.	537.350	627.700	204.650	299.650
d.	283.800	631.875	134.550	399.600
Total	5.222.458	7.288.513	4.395.248	8.345.471
C.	11.280.000	24.000.000	36.000.000	164.000.000
DRCR Value	0,77	0,54	0,22	0,08

Source: Primary Data, 2022.

Based on the results of the calculation of the DRCR nilsi as a whole it can be said that cattle farming in East Nusa Tenggara Province in general and especially in TTS Regency has an economically viable comparative advantage. The difference in the DRCR and PCR values in the cattle rearing system in the Province of NTT which shows the loose system is lower than the tie system, is due to the use of production inputs in the loose system compared to the tie system. The lower DRCR and PCR values of cattle farming with the loose system compared to the tie system are not enough to conclude that the loose system is efficient compared to the tie system, this is because the loose system is more resistant to the business risks faced, especially related to the threats to the sustainability of the area that may be faced as well as business institutional systems.

The results of research by Rouf, et al (2014) said that the competitiveness of beef cattle is caused by many factors including potential resources such as feed and cattle breeds, labor, technology, and market demand. The availability of feed for agricultural and forage waste, cattle breeds that are adaptive to the tropical climate and relatively competitive labor wages are sources of comparative advantage in cattle farming in Indonesia (DRCR < 1). Factors in the condition of the area in relation to increasing the business capacity of local cattle in TTS Regency, such as the availability of natural resources, labor resources and infrastructure can be said to be quite adequate in supporting the development of the

commodity in question. The distribution of natural resources supporting production in TTS Regency is an important source of feed, not to mention other sources of feed originating from the cultivation of forage crops in the area of land at the livestock level, crop residues of agricultural waste and various other public land areas. The availability of family labor is a potential source of labor that can be utilized optimally in supporting the development of a cattle business. The potential for this workforce can be further enhanced in terms of skills to increase managerial capability and capacity in the management of cultivated cattle. Increasing the competitiveness of cattle in TTS Regency must be supported by various policies, both technical and economic. Technical policies are directly related to aspects of cultivation, while economic policies are needed as a condition for adequacy, especially in dealing with various challenges that are beyond the control of breeders.

CONCLUSION AND POLICY RECOMMENDATION

Based on the results of the research and the entire discussion, it can be concluded that based on the rearing system, what indicates that cattle farming is economically efficient and has a higher comparative advantage is the freelance rearing system. Strata I and strata II tie maintenance systems have DRCR values ranging from 0.54 to 0.77, where in strata II the DRCR value is lower than strata I, namely 0.54. Strata I and strata II loose maintenance systems have DRCR values ranging from 0.08 to 0.22, where in strata II the DRCR value is lower than strata I, which is 0.08. The DRCR value of cattle raised by the loose system tends to be lower than that raised by the tie system, this is because the higher the number of cattle owners, the lower the DRCR value. The factor of production as the cause is the lower number of use of domestic factors of production so that the costs incurred are relatively less. Based on the rearing system, what indicates that the cattle farming business is financially efficient is that the loose rearing system with different ownership strata has a competitive advantage and has a lower PCR value than the tie system. Maintenance systems with strata I and strata II tie systems have PCR values ranging from 0.49 to 0.71, where in strata II PCR values are lower than strata I. Maintenance systems with strata I and strata II loose systems have PCR values ranging from 0.07 – 0.21, where in strata II the PCR value is lower than strata I, which is 0.07. The PCR value obtained can explain that to obtain an additional unit of foreign exchange, an additional domestic resource cost equal to the PCR value is required. This means that the smaller the PCR value obtained, the more competitive the cattle business being run.

In order for the cattle business to be more economically efficient in the tie system, each business household must raise 4-5 head of cattle, in order to obtain a social benefit of Rp. 6,052,568.5 with a DRCR value of 0.54, while in the loose system each household must raise 25-26 head of cattle in order to obtain a profit of Rp. 91,474,349 with a DRCR value of 0.08, so that the use of domestic resources is more effective and efficient in supporting increased productivity of cultivated cattle. In order for the cattle business to be more financially efficient in the tie system, each business household must raise 4-5 head of cattle, in order to obtain a social benefit of Rp. 7,472,930 with a PCR value of 0.49, while in the loose system each household must raise 25-26 head of cattle in order to obtain a profit of Rp. 101,605,275 with a PCR value of 0.07.

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