Development potential of beef cattle business and alternative strategies development of beef cattle in Pamekasan

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Abstract. This study aims to (1) determine the potential development of beef cattle business based on the availability of natural resources and human resources in Pamekasan; (2) to determine alternative-strategy of beef cattle development in accordance with Kabupaten Pamekasan. This research uses descriptive analysis, LQ analysis, KPPTR analysis and SWOT analysis. This study was conducted from July 15, 2017, to July 31, 2017, using survey method, to obtain primary data by using 60 respondents from 4 sub-districts selected purposively and 2 stakeholders in Kabupaten Pamekasan. The data used consist of primary data and secondary data. Primary data is obtained directly from interviews with farmers and related parties. Secondary data obtained from the Department of Animal Husbandry, Department of Agriculture and Central Statistics Agency (BPS) Pamekasan District. The results showed that (1) the potential area of the development of beef cattle farming based on the availability of natural resources in Kabupaten Pamekasan based on LQ> 1 value ranging from 1.0129 to 1.3889 obtained from Tlanakan, Pademawu, Pamekasan, Palengaan, Pakong, Waru, Batumarmar and Pasean, as the base area of livestock development with maximum natural resources potential of 221,252 ha, and maximum potential of livestock equal to 152,121,1 AU (2) The results of analysis of policy strategies that can be suggested for the development of beef cattle in Kabupaten Pamekasan are: (a) To optimize the government program (UPSUS SIWAB) in producing calves of beef cattle (b) Providing education and training programs to farmers in the field (c) Exploiting unproductive land for cattle ranching (d) Strengthening farmer institutions so that farmers have strong bargaining power (e) Utilizing livestock markets to increase the selling and demand of beef cattle.

1. Introduction
Kabupaten Pamekasan is one of the regions producing beef cattle in East Java. The population of beef cattle in Kabupaten Pamekasan showed an increasing trend since 2011 to 2016, were: 127,674 heads (2011); 142,445 heads (2012); 149,855 heads (2013); 152,045 heads (2014); 155,086 heads (2015) and 190,635 heads (2016) [1]. Factors that influence the business of beef cattle include the availability of land and feed, capital of farmers, animal health workers [2]. This study aims to determine the potential development of beef cattle business based on the availability of natural resources and the availability of human resources in Kabupaten Pamekasan and determine alternative development strategies that are appropriate to Kabupaten Pamekasan, so as to inform policymakers in planning the development of Madura cattle as beef cattle and stockers.
2. Research materials and method
The study was conducted using primary data using information from respondents (stakeholders, veterinary medical personnel, and farmers) in Pamekasan district. Information is obtained through interviews and observation, to obtain information in the effort to develop beef cattle business. Secondary data were obtained from the Department of Agriculture and Horticulture, the Department Food Security Service and Animal Husbandry, and the Central Statistics Agency in Pamekasan District. This study begins (1) analyzes Location Quotient (LQ) and (2) Capacity of Ruminant Livestock Population Increase (KPPTR), then continued with (3) analyzes the development strategy of beef cattle by SWOT.

Determination of the sample of research respondents purposively sampled on districts with high and low cattle population, each selected 2 sub-districts. Farmers from the selected sub-districts were selected purposively by 15 respondents who raised beef cattle so that there were 30 respondents for high cattle population districts and 30 respondents for low cattle population districts.

The LQ method was used to identify superior commodities in an area [3] with the formula:

\[ LQ = \frac{v_i / v_t}{V_i / V_t} \]

Remark:
\( v_i = \) Total Population of Beef Cattle District
\( v_t = \) Total Number of District Familys
\( V_i = \) Total District Cattle Population
\( V_t = \) Total Number of District Familys

LQ calculation results Hendayana [4] explain produce 3 criteria, namely (1) if LQ> 1 means: the commodity is a source of growth, the results can not only meet the needs in the relevant region but also be exported out of the region (2) if LQ = 1 means: the commodity was classified as non-base. Do not have cooperative excellence. The results can only meet the needs of the region itself and cannot be exported out of the region (3) LQ <1 means: the commodity is also classified as non-base. Results commodities used only sufficient area itself and the need to supply or imported from outside the region.

Determination of Ruminant Livestock Population Enhancement Capacity (KPPTR) referred to Fariani [5], then each sub-district based on the data of potential agricultural waste and ruminant livestock in Pamekasan district can be determined:

a. Maximum Potential based on Natural Resources / PSML (Regional carrying Capacity) is formulated: PSML = Carrying Capacity of Agricultural Land + Carrying Capacity of Food Crops. The method for determining PSML is as follows:

\[ \text{Agricultural Land Carrying Capacity} = \text{Agricultural Land Contribution} \times 3.75. \]
\[ \text{Carrying Capacity of Food Crops} = \frac{\text{Agricultural Waste Production}}{2.3}. \]

b. Maximum Potential based on Farmer Families (PMKK) is formulated:

\[ \text{PMKK} = c \times KK \]

Where:
\( c \) : The coefficient calculated based on Animal Unit (AU), can maintained by a family that is 1.70 ST / KK.
\( KK \) : farmer’s family

KPPTR Value:
\[ \text{KPPTR (SL)} = \text{PSML} - \text{Popril} \]
\[ \text{KPPTR (KK)} = \text{PMKK} - \text{Popril} \]
Where:
- KPPTTR (SL): Ruminant Animal Population Increase Capacity based on natural resources
- KPPTTR (KK): Ruminants Livestock Population Enhancement Capacity (AU) based on farmer’s family
- Popril: Real population (livestock population research location)

Based on the value of KPPTTR (KK) and KPPTTR (SL) obtained elective KPPTTR values:
- Effective KPPTTR: KPPTTR (SL), if KPPTTR (SL) < KPPTTR (KK)
- Effective KPPTTR: KPPTTR (KK), if KPPTTR (KK) < KPPTTR (SL)

Determination of alternative development strategies that are appropriate to the Kabupaten Pamekasan area, is carried out using a SWOT Analysis. SWOT analysis is used to identify various internal Strengths and Weaknesses as well as external Opportunities and Threats systematically to formulate the most suitable strategy to be applied in the development of beef cattle business. The Internal factors are all factors that directly affect the development of Madura cattle business which consists of strengths and weaknesses that are within the scope of Madura cattle business development. The External factors are all factors that indirectly affect the development of Madura cattle business which consists of opportunities and threats that are outside the scope of development of Madura cattle business.

In measuring respondents' answers used a Likert scale where answers to positive and negative questions are divided into five scales. The Research uses a significant level of 5% meaning that research takes the risk of a decision as much as 5% or correct in its decision at least 95% [6]. The results of the analysis of internal and external environmental factors are used to create a SWOT strategy matrix and determine alternative strategies for developing beef cattle in Pamekasan.

3. Results and discussion

3.1. General conditions of Kabupaten Pamekasan

Kabupaten Pamekasan is located on Madura Island which was part of East Java Province with a geographical position between 6°51’-7°13’ LS and 113°19’-113°58’ BT. Its regional boundaries include the Java Sea in the North, Kabupaten Sumenep in the East, Madura Strait in the South, and Kabupaten Sampang in the West. Administratively, the Pamekasan area had an area of 79,230 Ha, and it is divided into 13 sub-districts covering 189 villages. The land use pattern in Kabupaten Pamekasan is largely influenced by the undulating topography of the area, where land use for settlements, government service centers and trade tends to focus on the south along the main road, starting from the sub-districts of Pamekasan, Proppo, Larangan, Pademawu, and Galis. Other land use patterns as areas of business land are in the form of rice fields, production forests and ponds / salt ponds, where the location of ponds / salt ponds in accordance with the existing space conditions in Tlanakan, Pademawu, and Galis Districts with a land area approximately 2,095 Ha.

| District     | Rice Field (Ha) | Fields (Ha) | Community forest (Ha) |
|--------------|----------------|-------------|-----------------------|
| Tlanakan     | 1411           | 2440        | 40                    |
| Pademawu     | 3031           | 2834        | 0                     |
| Galis        | 981            | 584         | 34                    |
| Larangan     | 639            | 2174        | 0                     |
| Pamekasan    | 1069           | 660         | 0                     |
| Proppo       | 3402           | 2253        | 64                    |
| Palengaan    | 570            | 6802        | 0                     |
| Pegantenan   | 448            | 5758        | 240                   |
| Kadur        | 970            | 3541        | 0                     |
| Pakong       | 1565           | 884         | 114                   |
| Waru         | 1139           | 5214        | 40                    |
| Batumarmar   | 2407           | 6367        | 183                   |
| Pascan       | 1152           | 5645        | 264                   |
| **Total**    | **18784**      | **45156**   | **979**               |
3.2. Livestock population of Kabupaten Pamekasan

Table 2. The real number of ruminant animals in Kabupaten Pamekasan (measured in AU).

| No | District       | Cattle Adult Male | Cattle Adult Female | Cattle Young Female | Goats and sheep | Real Population |
|----|----------------|-------------------|---------------------|--------------------|-----------------|-----------------|
| 1  | Tlanakan       | 8215              | 7891                | 1262,5             | 1984,4          | 19352,9         |
| 2  | Pademawu       | 9185              | 3062                | 490                | 407,0           | 13144,0         |
| 3  | Galis          | 3612              | 598                 | 95,5               | 1399,6          | 5705,1          |
| 4  | Larangan       | 7439              | 4184                | 669,5              | 2198,9          | 14491,4         |
| 5  | Pamekasan      | 3910              | 3467                | 554,5              | 632,4           | 8563,9          |
| 6  | Proppo         | 6673              | 10437               | 1670               | 698,1           | 19478,1         |
| 7  | Palengaan      | 1934              | 15644               | 2503               | 1038,9          | 21119,9         |
| 8  | Pegantenan     | 9118              | 7767                | 1242,5             | 592,9           | 18720,4         |
| 9  | Kadur          | 7366              | 6026                | 964                | 260,1           | 14616,1         |
| 10 | Pakong         | 990               | 9786                | 1566               | 356,6           | 12698,6         |
| 11 | Waru           | 4635              | 13165               | 2106,5             | 448,4           | 20354,9         |
| 12 | Batumarmar     | 10641             | 13005               | 2081               | 775,3           | 26502,3         |
| 13 | Pasean         | 963               | 20922               | 3347,5             | 510,9           | 25743,4         |
| Total | 74681             | 115953           | 18552,5             | 11303,4           | 220490,9       |

Source: Department of Animal Husbandry and Food Security (2016)

3.3. Characteristics of respondent farmers

In general, farmers aged 31 to 60 years are 78.3% in Kabupaten Pamekasan is still classified as productive, with an average age of 50-year-old cattle breeders, in accordance with Siswati [7], Sani et al. [8], Mwanyumba et al. [9], Sonbait et al. [10], that age ranges from 30 years to 60 years is a productive age, because it greatly affects the physical ability to do work.

The level of education of farmers is still below, mostly their education level only finished until elementary school (SD), which approximately 70% of population. The results of this study are not much different from the results of Hartono's [3] study which states that the educational level of farmers in Madura Island is Primary Schools (SD) of 62-78%. Fewer farmers in Pamekasan District still have attended non-formal education in the field of animal husbandry. Farmers gain knowledge and skills from fellow farmers, so some farmers are not aware of good breeding information.

The main occupation of farmers is as farmers and traders, which is 76.72%. Farmers in Kabupaten Pamekasan generally maintain cattle only as savings, if needed for farming, celebration, and school fees. Cattle are considered to be able to provide additional income and maintenance can be done in their spare time after doing the main work.

The highest number of family dependents is 4 people (30%). Livestock raising business activities are looking for grass, feeding and drinking, bathing cows and cleaning cages generally done by family labor (somah). The average ownership of livestock farmers in Kabupaten Pamekasan is 2-3 head of cattle. The use of labor is still not efficient so it is still possible to add the number of beef cattle that must be maintained. Experience is a breeder's knowledge obtained through daily activities. Generally, the longer the breeding experience is, the better attitudes, knowledge and skills compared to farmers experience less. The most farming experience ranges from 11-20 years, which is 38.3%.

Table 3. Characteristics of farmers in Kabupaten Pamekasan.

| No | Description | Frequency (person) | Percentage (%) |
|----|-------------|--------------------|----------------|
| 1  | Age (years) |                    |                |
| 20 – 30 | 4              | 6.7              |
| 31 – 40 | 12             | 20              |
| 41 – 50 | 14             | 23.3            |
| 51 – 60 | 21             | 35              |
| 61 – 70 | 8              | 13.3            |
| 71 – 85 | 1              | 1.7             |
Table 3. Cont.

| 2 | Formal Education | 6 | 10 |
|---|------------------|---|----|
| uneducation | | | |
| Primary School | 42 | 70 |
| Yunior High school | 6 | 10 |
| Senior High School | 6 | 10 |
| College | / | 0 |
| Academy | | |

| 3 | The main job |
|---|---------------|
| farmer | 46 | 76,7 |
| Trader | 4 | 6,7 |
| entrepreneur | 2 | 3,3 |
| Fisherman | 2 | 3,3 |
| Teacher | 3 | 5,0 |
| Construction laborers | 3 | 5,0 |

| 4 | Farming Experience (years) |
|---|-----------------------------|
| 1 – 10 | 16 | 26,7 |
| 11 – 20 | 23 | 38,3 |
| 21 – 30 | 15 | 25,0 |
| 31 – 40 | 2 | 3,3 |
| 41 – 55 | 4 | 6,7 |

| 5 | Number of family |
|---|------------------|
| 2 person | 9 | 15,0 |
| 3 person | 15 | 25,0 |
| 4 person | 18 | 30,0 |
| 5 person | 10 | 10,0 |
| 6 person | 2 | 3,3 |
| 7 person | 4 | 6,7 |
| 8 person | 2 | 3,3 |

Source: Secondary Data Processed (2017)

3.4. Basis and non-base areas of beef cattle in Kabupaten Pamekasan

Table 4. Base of cattle base in Kabupaten Pamekasan.

| No | District | LQ   | Remark |
|----|----------|------|--------|
| 1  | Tlanakan | 1.0589 | Base   |
| 2  | Pademawu | 1.0957 | Base   |
| 3  | Galis    | 0.6396 | non Base |
| 4  | Larangan | 0.8209 | non Base |
| 5  | Pamekasan| 1.1746 | Base   |
| 6  | Proppo   | 0.8467 | non Base |
| 7  | Palengaan| 1.2935 | Base   |
| 8  | Pegantenan| 0.7422 | non Base |
| 9  | Kadur    | 0.7413 | non Base |
| 10 | Pakong   | 1.0129 | Base   |
| 11 | Waru     | 1.1529 | Base   |
| 12 | Batumarmar| 1.3889 | Base   |
| 13 | Pasean   | 1.0862 | Base   |

Source: Secondary Data Processed (2017)

Kabupaten Pamekasan consists of 13 sub-districts which are beef cattle breeding bases because the Location Quation (LQ) calculation results in 8 subdistricts that have LQ> 1, namely: Tlanakan District, Pademawu District, Pamekasan District, Palengaan District, Pakong District, Waru District, Subdistrict Batumarmar and Kecamatan Pasean means that the 8 sub-districts are able to produce beef cattle for the benefit of the region itself or help other areas that lack beef cattle. LQ value <1 which means non basis includes Galis Subdistrict, Larangan Subdistrict, Proppo Subdistrict, Pegantenan Subdistrict, Kadur
Subdistrict meaning that the results can only meet the needs of the region itself so that it needs to supply or import from outside the region. LQ calculation results can be seen in Table 4.

3.5. Population increased capacity ruminant (KPPTR)

| No | District      | PMSL     | PMKK      | KPPTR-SL | KPPTR-KK | KPPTR (E) |
|----|---------------|----------|-----------|----------|----------|-----------|
| 1  | Tlanakan      | 7424.3   | 11847.3   | -11928.6*| -7505.6  | -11928.6  |
| 2  | Pademawu     | 6468.9   | 8396.3    | -6675.1* | -4747.7  | -6675.1   |
| 3  | Galis        | 514.4    | 4862      | -5190.7* | -843.1   | -5190.7   |
| 4  | Larangan     | 8235.4   | 10815.4   | -6255.9* | -3676.0  | -6255.9   |
| 5  | Pamekasan     | 2515.9   | 4877.3    | -6048.0* | -3686.6  | -6048.0   |
| 6  | Preggo        | 12072.8  | 16019.1   | -7405.3* | -3459.0  | -7405.3   |
| 7  | Palengaan     | 29956.6  | 11213.2   | 8836.7   | -9906.7* | -9906.7*  |
| 8  | Pegantenan    | 12501.4  | 17640.9   | -6218.9* | -1079.5  | -6218.9   |
| 9  | Kudur        | 19394.9  | 15007.6   | 4778.8   | 391.5    | 391.5*    |
| 10 | Pakong        | 2944.1   | 8800.9    | -9754.5* | -3897.7  | -9754.5   |
| 11 | Waru          | 23770.9  | 12471.2   | 3416.0   | -7883.7  | -7883.7*  |
| 12 | Batumarmar    | 35674.3  | 13390.9   | 9172.1   | -13111.4 | -13111.4* |
| 13 | Pasean        | 41256.9  | 16779     | 15513.5  | -8964.4  | -8964.4*  |

Source: Secondary Data Processed (2017)

* Note = The value selected as KPPTR is effective
SL effective = SL < KK = 8 effective KK = KK < SL = 5

3.6. Beef cattle business development strategy
Based on the results of the SWOT analysis of internal environmental factors and external environmental factors in the development of beef cattle business in the Kabupaten Pamekasan obtained the following results. The results obtained from the strengths and weaknesses are total (score 3.59). This shows that the internal environmental conditions of cattle business development in Kabupaten Pamekasan are good, and can support the beef cattle business development plan. Based on the results of the calculation of the internal factor matrix (Table 6) it is shown that the main strength in the development of beef cattle business in Kabupaten Pamekasan is to increase farmer income, easy marketing of cattle, and the experience of raising cattle is good. The main strength of increasing income has a score of 0.44, which is the main factor that can support the smooth development of beef cattle business. The second factor that can support the smooth development of beef cattle business is the ease of marketing of cattle, and the experience of good cattle breeding has the same score (0.40). Willingness of seeds and going to beef cattle and adequate labor have the same score (0.40).

| A. Strengths                                           | Weight | Rating | Score | Remark |
|-------------------------------------------------------|--------|--------|-------|--------|
| 1. Availability of stockers beef cattle               | 0.09   | 3      | 0.27  | Strong |
| 2. Easy marketing of cattle                            | 0.11   | 4      | 0.44  | Very strong |
| 3. Adequate labor                                     | 0.09   | 3      | 0.27  | Strong |
| 4. Increase income                                    | 0.11   | 4      | 0.44  | Very strong |
| 5. The experience of raising cattle is good            | 0.10   | 4      | 0.40  | Very strong |
| B. Weaknesses                                         |        |        |       |        |
| 1. Lack of feed availability                          | 0.11   | 4      | 0.44  | Very strong |
| 2. Low land potential                                 | 0.10   | 4      | 0.40  | Very strong |
| 3. Feed given low quality                             | 0.11   | 4      | 0.44  | Very strong |
| 4. There is a continuous Productive Cattle slaughter   | 0.08   | 3      | 0.24  | Strong |
| 5. The uncertainty of cattle price                    | 0.10   | 4      | 0.40  | Very strong |
| Total                                                 | 1.00   | 3.59   |       |        |

Source: Secondary Data Processed (2017)

The main weakness factor in the development of beef cattle business in Kabupaten Pamekasan is the provision of low quality feed (score 0.44) and lack of availability of feed (score 0.40). Feed is the first
alternative needed by livestock, because it can affect the smooth development of beef cattle business. Low land potential and uncertain cattle prices have the same score (score 0.40). The weakness factor that occupies the lowest position is the continuous slaughters of productive cattle with the number (score 0.24). Table 7 shows that the total score obtained from the opportunity and threat factors is 3.42.

Table 7. Results of external environmental factor analysis.

| External Factors | Weight | Rating | Score | Remark |
|------------------|--------|--------|-------|--------|
| C. Opportunities |        |        |       |        |
| 1. The existence of a cattle market | 0.10   | 4      | 0.40  | Very strong |
| 2. Increased demand for beef | 0.09   | 3      | 0.27  | Strong |
| 3. The existence of government programs (UPSUS SIWAB) | 0.10   | 4      | 0.40  | Very strong |
| 4. The large number of farmers | 0.09   | 3      | 0.27  | Strong |
| 5. Support natural resources | 0.11   | 4      | 0.44  | Very strong |
| D. Threats |        |        |       |        |
| 1. Farmer education is still low | 0.11   | 4      | 0.44  | Very strong |
| 2. There is no training for farmers | 0.11   | 4      | 0.44  | Very strong |
| 3. The decline in the genetic quality of cattle | 0.09   | 3      | 0.27  | Strong |
| 4. changes in land Functions | 0.09   | 3      | 0.27  | Strong |
| 5. Limitation of farmer capital | 0.11   | 4      | 0.44  | Very strong |
| Total | 1.00 | | 3.42 | |

Source: Primary Data Processed (2017)

The existence of a livestock market and natural resource support with a score of 0.40 has a great opportunity in the development of beef cattle business in Kabupaten Pamekasan. The large number of breeders (score 0.27), increased demand for beef and fulfillment of meat for the community have a score of 0.27.

The main threat factor in the development of Madura cattle business is that there is no training for farmers (score 0.44). Farmer education is still low and the capital limitations of breeders have the same score (score 0.40). The fourth threat is a decrease in the genetic quality of Madura cattle (score 0.27). The lowest threat factor is reduced market demand (score 0.24).

Efforts to determine the strategy of beef cattle development are continued with the beef cattle development matrix (Table 8) which consists of several strategy choices. These strategies are further analyzed in accordance with the order of choice of strategy choices (Table 9).

Table 8. Beef cattle business development matrix.

| Internal Factor | Strength (S) | Weakness (W) |
|-----------------|--------------|--------------|
|                 |              |              |
| Opportunities   |              |              |
| 1. Availability of stockers beef cattle | 1. Optimizing government programs (UPSUS SIWAB) in producing stockers cattle |
| 2. easy marketing of cattle | 2. Utilizing the livestock market to increase the sale and demand value of beef |
| 3. adequate labor | 3. The experience of raising, breeding good technical and resource support to improve livestock productivity |
| 4. Increase income |                          |
| 5. The experience of raising cattle is good |                          |
| Threats         |              |              |
| 1. Farmer education is still low | 1. Improving the quality and quantity of feed for cattle |
| 2. There is no training for farmers | 2. Provide information and tighten rules to improve the productivity of slaughter cattle |
| 3. The decline in the genetic quality of cattle | 3. Optimizing the natural resources by planting forage sources around the cage |
| 4. changes in land Functions |                          |
| 5. Limitation of farmer capital |                          |

Source: Primary Data Processed (2017)
Based on the results of the Internal Environmental Factor Analysis and the Results of External Environmental Factor Analysis and followed by a strategy and choice analysis, a strategy that can be applied based on ranking is obtained, namely:

- Optimizing government programs (UPSUS SIWAB) in producing calves and going for beef cattle
- Providing education and training programs to farmers in the field of feed
- Utilizing unproductive land for cattle farming
- Strengthen farmer institutions so that farmers have strong bargaining power
- Utilizing the livestock market to increase the sale and demand value of beef
- Improve the quality and quantity of feed for beef cattle
- Experience farming, good breeding techniques and natural resource support to increase livestock productivity
- Establish cooperation with various parties to get capital
- Optimizing natural resources by planting forage sources around the cage
- Provide information and tighten cattle cutting rules to increase cattle productivity
- Increasing the number of cattle by increasing livestock business
- Utilizing good experiences to improve livestock growth

| STRATEGY | Vision | Mission | Value | Score | Ranking |
|----------|--------|---------|-------|-------|---------|
| S O:     |        |         |       |       |         |
| 1. Optimizing government programs (UPSUS SIWAB) in producing calves | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 43 | I |
| 2. Utilizing the livestock market to increase the sale and demand value of beef | 3 | 4 | 3 | 3 | 4 | 3 | 4 | 4 | 4 | 3 | 39 | V |
| 3. The experience of raising, breeding good technical and resource support to improve livestock productivity | 4 | 3 | 3 | 4 | 3 | 4 | 3 | 3 | 3 | 4 | 37 | VII |
| S T:     |        |         |       |       |         |
| 1. Increasing the number of cattle by increasing livestock business | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 33 | XI |
| 2. Using a good experience to increase livestock growth | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 2 | 3 | 3 | 3 | 32 | XII |
| 3. Establish cooperation with various parties to get capital modal | 3 | 3 | 4 | 3 | 3 | 4 | 4 | 3 | 3 | 3 | 3 | 36 | VIII |
| W O:     |        |         |       |       |         |
| 1. Improving the quality and quantity of feed for cattle | 3 | 4 | 4 | 4 | 3 | 3 | 3 | 4 | 3 | 3 | 4 | 38 | VI |
| 2. Provide information and tighten rules to improve the productivity of slaughter cattle | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 34 | X |
| 3. Optimizing the natural resources by planting forage sources around the cage | 4 | 4 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 35 | IX |
| W T:     |        |         |       |       |         |
| 1. Provide education and training programs on the farmers in the field of feed | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 3 | 4 | 4 | 4 | 42 | II |
| 2. Utilizing unproductive land for cattle farming | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 4 | 4 | 41 | III |
| 3. Strengthen institutional farmers so that farmers have a strong bargaining power | 3 | 4 | 4 | 3 | 4 | 3 | 4 | 4 | 3 | 4 | 4 | 40 | IV |

Source: Primary Data Processed (2017)

Furthermore, as a result of a policy strategy analysis that can be suggested for the development of beef cattle in Pamekasan district, among others:

- Optimizing government programs (UPSUS SIWAB) in producing calves of beef cattle
- Providing education and training programs (training) for farmers in the field of feed
- Utilizing unproductive land for cattle farming
- Strengthen farmer institutions so that farmers have strong bargaining power
- Utilizing the livestock market to increase the sale and demand value of beef
4. Conclusion and recommendations

4.1. Conclusion

a. The sub-district which is the base of beef cattle as many as 8 sub-districts namely Tlanakan, Pademawu, Pamekasan, Palenga, Pakong, Waru, Batumarmar and Pasean Districts.

b. The capacity of Ruminasia Livestock Population Increase based on natural resources (KPPTTR SL) is 41,717.1 ST spread in 5 sub-districts: Palenga, Batumarmar, Waru, Pasean and Kadur.

c. The effective Ruminant Animal Population (KPPTTR) Increase Capacity is -59,477.2 ST, meaning that the capacity to increase the ruminant population based on natural resources in Pamekasan District is less than the capacity to increase the ruminant population based on the head of the farmer family.

d. The results of the policy strategy analysis that can be suggested for the development of beef cattle in Pamekasan district include
   - Optimizing government programs (UPSUS SIWAB) in producing calves of beef cattle
   - Providing education and training programs for farmers in the field of cattle feeding
   - Utilizing unproductive land for cattle farming
   - Strengthening farmer institutions so that farmers have strong bargaining power
   - Utilizing the livestock market to increase the selling value and demand for beef

4.2. Suggestion

The beef cattle business in Kabupaten Pamekasan has considerable potential to be developed so that all stakeholders are expected to optimize UPSUS SIWAB, education and training in feed processing for farmers, marginal land use and strengthen farmer institutions and bargaining power of livestock.

References

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