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Local Culture Development Strategy for Sonok Cattle with Quantitative Characterization of Cattle and Digital Market Development in Pamekasan, Madura

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ARTICLE INFO

Article history:

Received 16 September 2025

Revised 20 November 2025

Accepted 27 Desember 2025

Keywords:

Maximum

Five

Word

Key

Important

IEEE style in citing this article:

Bambang Kurnadi, Selvia Nurlaila, Badar Said, Dimas Bima W, Salman Alfarisi" Local Culture Development Strategy for Sonok Cattle with Quantitative Characterization of Cattle and Digital Market Development in Pamekasan, Madura," *Animal Husbandry Journal: Scientific Journal of the Faculty of Animal Husbandry, Lamongan Islamic University*, vol. 16, no. 2, pp. 235-242, 2025.

ABSTRACT

The Sonok cattle culture also supports the development of culture-based tourism while maintaining local values and social harmony, and can boost the local economy. One of the obstacles to the development of the Sonok cattle culture is that Sonok cattle breeding is still limited to certain areas in Madura, due to the limited market for Sonok cattle, which is still conventional in nature. This study aims to obtain clear data on the quantitative characteristics of Madura Sonok cattle and to improve the marketing of Madura Sonok cattle. To support the development of the local Sonok cattle culture and increase the marketing of Sonok cattle through digital markets. This research was conducted from July 2025 in the Sonok cattle breeding area in Pamekasan Regency, Madura. Research methods The methods used in this research were direct surveys at the contest site or at the homes of cattle owners, as well as interviews with Sonok cattle owners, judges, and Sonok cattle experts. Research Results Sonok cattle were divided into two age groups, namely 12-18 months and above 24 months, with the following results for body length, height, and chest circumference (cm): 124.82 ±4.28; 124.64 ± 3.14; 148.73 ±10.39 and 137.71 ±5.06; 137.26 ±4.74; 174.13 ±9.97. Meanwhile, the biggest obstacles and threats to the development of the Madura Sonok cattle breed in Pamekasan Regency are related to the limited availability of specialised capital and conventional trading venues (markets). The conclusion of this study is that the average body size of Sonok cattle exceeds the 2023 SNI standard, and marketing breakthroughs are needed through digital markets.

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Introduction

Sonok cattle culture is a Madurese cultural tradition that utilises Madurese cattle other than karapan cattle, namely two female Madurese cattle that are decorated and beautified in such a way that they can be entered into competitions. Sonok cattle culture is actually a type of karapan cattle as well, but for female cattle that are competed for their beauty and harmony when walking from the start line to the finish line (gate), the quantitative characteristics of the cattle, and the way the cattle are dressed, accompanied by traditional Madurese music

(saronen music). The Sonok-type Madurese cattle contest is held as an effort to introduce the sonok cattle cultural tradition to the wider community, including people outside Madura Island, as well as to promote the cultural identity and local pride of the Madurese people [2]. This Sonok cattle culture also supports the development of culture-based tourism while maintaining local values and social harmony and can improve the local community's economy [3,6-7]. High-quality Madura cows from various parts of Madura Island are preparing to participate in the Madura Sonok cattle contest amidst the dry and barren geographical conditions of Madura Island. However, the people of Madura Island are still able to produce high-quality cattle that can elevate the status of Madura cattle.

The Sonok type Madura cattle culture must continue to survive and develop into agrotourism so that it can attract tourists and have high economic value. This requires standardisation of quantitative characteristics (body size) supported by accurate data on the assessment of Sonok type Madura cattle [4,6-10]. One of the obstacles in developing the Sonok cattle culture is that the cultivation of Sonok cattle is still limited to certain areas in Madura [11-12], due to the limited market for Sonok cattle, which is still conventional in nature. Based on these considerations, clear data on the assessment of the quantitative characteristics of Madura Sonok cattle is needed, as well as improved marketing of Madura Sonok cattle. Based on the above description, the research question for this study is as follows: How to determine the quantitative characteristics (body size) of Madura cows that can support the development of the local Sonok cattle culture and improve the marketing of Sonok cattle through digital markets. The urgency of this research lies in understanding the actors of the Sonok cattle culture in assessing the body size of cattle that has cultural value and understanding the importance of marketing that can improve the community's economy and preserve and develop the Sonok cattle culture in Madura.

State of the Art

The assessment of Sonok cattle, in addition to the qualitative characteristics of Sonok cattle breeders, also assesses cattle based on body size in accordance with the 2023 Madura cattle SNI, namely body length, body height and chest circumference, as well as other assessments such as neck thickness, front leg height, head length and head width. These assessments are indicators of the price of a Sonok cow. The novelty of this research is also to improve the economy of farmers through the application of digital markets [19-21].

Method

This research will be conducted in July 2025. Interviews with farmers and measurements of sonok cattle that have participated in contests in the sonok cattle breeding area, namely the Papabaru area (Pakong, Pasean, Batumarmar and Waru sub-districts, Pamekasan Regency). Research materials (materials and tools) Measuring tape made of thick and durable vinyl-coated fibreglass, measuring sticks made of stainless steel, and a tape measure to measure chest circumference. Research materials: 60 Madura sonok female cattle that had participated in sonok cattle contests aged 12-18 months and over 24 months. Research method: The method used in this study was a direct survey at the contest site or at the cattle owners' homes, as well as interviews with sonok cattle owners, judges, and sonok cattle experts.

Results and Discussion

A. General Description of the Research Location

The source area for Sonok cattle is Papabaru (Pakong, Pasean, Batumarmar and Waru subdistricts) in the northern part of Pamekasan Regency, bordered by Larangan and Kadur subdistricts to the south, Sampang Regency to the west, Sumenep Regency to the east, and the Java Sea to the north. Climatologically, the research location is part of a tropical climate zone influenced by two seasons, namely the dry season and the rainy season. The dry season lasts from May to November, while the rainy season lasts from December to April. Rainfall data for Pamekasan Regency shows 1421 mm/year with 119 rainy days (Pamekasan Regency Central Statistics Agency, 2019). The Papabaru area experiences a rainy season between October and June and a dry season. From June to October, the air temperature ranges from 28-30°C with an average humidity of 80%. The agricultural/livestock sub-sectors that contribute the most to the gross regional domestic product (GRDP), which regulates the gross value added arising from all economic sectors in the Pamekasan Regency (based on current prices), are, respectively: food crops (22.17%), livestock (7.78%), annual plantations (6.82%), forestry and logging (0.02%), and fisheries (1.37%). Agriculture is the main potential of Pamekasan Regency. The agricultural sector, which consists of the food crops, plantation, forestry, fisheries, and livestock sub-sectors, plays a significant role in the economy of Pamekasan Regency.

B. Characterisation of Quantitative Traits in Cattle

In this research, Madura cattle of the Sonok type in Pamekasan Regency, Madura, showed variations in body size based on age group. Table 1 below presents the average body size values of Madura Sonok cattle, including body length, body height, chest circumference, chest width, leg height, forehead width, and forehead length in three age groups: above 24 months (PI4) and 12-18 months (PI2).

Table 1. Results of Vital Statistics Measurements of Madura Cattle of the Sonok Type

Variable	Range (cm)	Average (cm)	Meets SNI Criteria Class I (cm)
Age 12-18 month (PI2)			
Body Length	118-131	124,82 ±4,28	≥123;15 animal (68,18%)
Body Height	120-131	124,64 ± 3,14	≥120 ;22 animals (100%)
Chest Circumference	129-170	148,73 ±10,39	≥147 =;13 animals (59,09%)
Chest Width	26-35	29,73 ±2,23	-
Foot Height	65-89	80,14 ± 5,58	-
Forehead Width	15-22	16,95 ± 1,70	-
Forehead Length	35-45	37,18 ±2,20	-
Age ≥ 24 month (PI4)			
Body Length	129-148	137,71 ±5,06	≥134 ; 29 animals (76,32%)
Body Height	128-144	137,26 ±4,74	≥131 ; 36 animals (94,74%)
Chest Circumference	155-189	174,13 ±9,97	≥168 ;;27 animals (71,05%)
Chest Width	30-50	36,87 ±3,88	-
Foot Height	80-95	84,59 ±3,76	-
Forehead Width	15-22	18,79 ±1,87	-
Forehead Length	37-53	41,83 ±2,68	-

Based on the table above, the measurement results for the group of cattle aged over 24 months (PI4) show that the body length of Madura Sonok type cattle ranges from 129 to 148 cm, with an average of 137.11 ± 5.06 cm. From these results, 29 cattle (76.32%) had a body length above the 2023 Madura cattle SNI (134 cm) and 9 Madura Sonok type cattle (23.68%) had a body length below the 2023 Madura cattle SNI. The results of the research on body height showed a range of 128-144 cm with an average of 137.26 ± 4.74 cm. The research data also showed that there were 36 Sonok-type Madura cattle (94.74%) with a height above the 2023 Madura cattle SNI (131 cm) and 2 Sonok-type Madura cattle (5.26%) with a height below the 2023 Madura cattle SNI. The chest circumference measurement results showed the greatest variation between 155-189 cm, with an average of 174.13 ± 9.97 cm. The research results on the chest circumference showed that 27 Sonok-type Madura cattle (71.05%) had a chest circumference above the 2023 Madura cattle SNI (168 cm), and 11 Sonok-type Madura cattle (28.95%) were below the 2023 Madura cattle SNI. The chest width ranged from 30 to 50 cm, with an average of 36.87 ± 3.88 cm. The leg height ranged from 80 to 95 cm, with an average of 84.59 ± 3.76 cm. The forehead width and length ranged from 15-22 cm and 37-53 cm, respectively, with an average of 18.79 ± 1.87 cm and 41.83 ± 2.68 cm, respectively.

The results of vital body measurements of Madura cattle of the Sonok type show that, on average, they are above the SNI for Madura female cattle in category I, namely body length, height and chest circumference of 131 cm, 134 cm and 168 cm respectively (SNI Madura Cattle 2023). The results of vital body measurements of Madura Sonok type cattle aged 12-18 months (poel 1) show a body length ranging from 118-131 cm with an average of 124.82 ± 4.28 cm. The height ranged from 120 to 131 cm with an average of 124.64 ± 3.14 cm. The chest circumference ranged from 129 to 170 cm with an average of 148.73 ± 10.39 cm. The chest width ranged from 26 to 35 cm with an average of 29.73 ± 2.23 cm. Leg height ranged from 65 to 89 cm, with an average of 80.14 ± 5.58 cm. Forehead width and forehead length ranged from 15 to 22 cm and 35 to 45 cm, respectively, with averages of 16.95 ± 1.70 cm and 37.18 ± 2.20 cm, respectively. The results of vital body measurements of 18-month-old Madura Sonok cattle show that, on average, they are above the SNI for Madura cows, namely 121 cm in body length, 124 cm in height, and 148 cm in chest circumference (SNI Madura Cattle 2023).

The measurement results show that as Madura Sonok cattle age, the size of their body parts increases. This is in line with the opinion of Hartatik et al (2009), who stated that morphometric measurements of Madura Sonok cattle show clear variation between different age groups. This variation indicates significant growth and development as the cattle age (Prihandini et al., 2019). The body length and height of Madura Sonok cattle showed a consistent increase from 6-12 months of age (PI0) to over 24 months of age (PI4), which is in line with the literature that cattle tend to experience rapid growth in the first two years of their lives before reaching physical maturity at the age of three years or more (Nugraha et al., 2015). Chest circumference is the parameter that shows the greatest variation among the three age groups (Afolayan et al., 2006; Albertí et al., 2008; Aytakin et al., 2018). This indicates that Madura Sonok cattle experience significant development in the chest area, which may be related to greater lung and heart capacity with age. Chest width and forehead length also increase with age, reflecting structural development that supports overall body size increase.

C. Factors Affecting Sonok Cattle Development

The purity of Madura cattle is strictly maintained, so crossbreeding with other breeds is prohibited in the Madura region. The Sonok-type Madura cattle centre is an area with superior Madura cattle performance. This centre contributes to increasing the availability, sustainability and purity of Madura cattle (Nurlaila and Zali, 2020). The Sonok-type Madura cattle is a contest that produces Madura cattle breeds with superior performance. To become a Madura Sonok type cow, there are several stages that must be passed. Starting with taccek cows, pajhangan cows, and Madura Sonok type cows. These three stages have specific criteria, so it can be concluded that Madura Sonok type cows are Madura cows that have passed various selections and are prepared to become brood cows that produce superior Madura cattle offspring. The preservation and development of the Madura Sonok cattle culture to produce superior Madura cows in Pamekasann district is certainly influenced by various factors, including internal and external factors.

Internal factors originate from within the Sonok-type Madura cattle business environment, can be controlled by farmers, and directly influence Sonok-type Madura cattle cultural events, while external factors originate from outside the Sonok-type Madura cattle business environment, cannot be controlled by farmers, but indirectly influence the performance of cultural cattle development in Madura. The existing conditions of the Sonok-type Madura cattle cultural event as a factor in the development and preservation of the Sonok-type Madura cattle culture in Pamekasan Regency are measured using a Likert scale and analysed using the steps described by Akdon and Riduwan (2007), so that the assessment categories for each parameter and variable indicator are known. The following are the influence values of each internal and external variable factor, described as follows:

Economic factors in research were measured using four parameters. A summary of the responses of livestock farmers for each parameter can be seen in Figure 1 below.

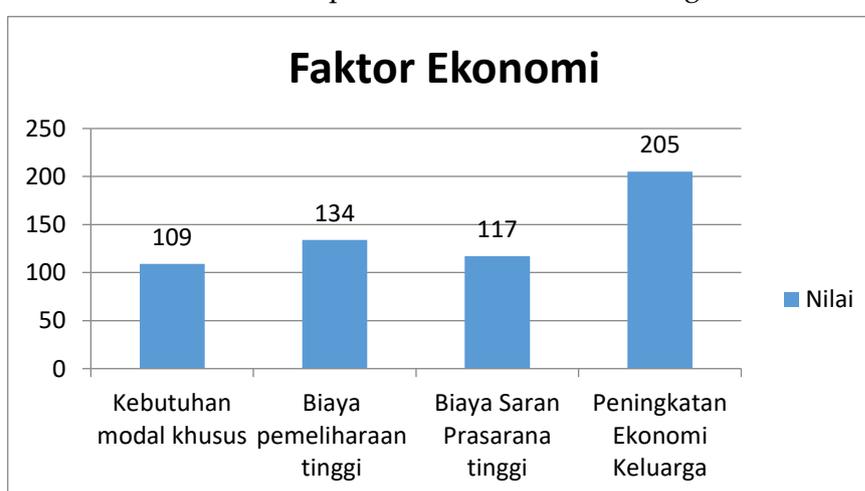


Figure 1. Graph of Economic Factors in the Development and Preservation of Madura Sonok Cattle Culture

Source: Processed Primary Data (2025)

Based on Figure 1, it is evident that the total economic indicator score falls within the weak category. This indicates that economic parameters from the perspective of farmers pose a threat that affects efforts to promote the Madura Sonok cattle cultural event. This is due to high costs, both in terms of maintenance and infrastructure. The results of the research indicate that the greatest threat to the Madura Sonok cattle cultural event in Pamekasan Regency is related to the limited availability of specialised capital. Farmers in the study area generally

only earn a living as farmers, small traders and other entrepreneurs. One of the advantages of raising Madura Sonok cattle is that the selling price of these cattle is relatively higher than that of Madura beef cattle. This allows Madura Sonok cattle farmers to save money, as one of the purposes of raising Madura Sonok cattle is as family savings. Budiraharjo (2003) states that smallholder livestock farming has weaknesses related to decision-making regarding purchasing, selling, and determining selling prices, which are often done without careful consideration. According to Nurlaila et al. (2017), this problem arises because livestock farming is used as family savings that can be used at any time in case of urgent needs. The selling price of Madura Sonok cattle at the time of research was as follows: Madura Sonok cattle (calves Rp7,000,000 to Rp20,000,000); (young Rp10,000,000 to Rp40,000,000); and (adult Rp40,000,000 to Rp100,000,000). According to Riszqina (2014), these prices fluctuate because they are influenced by urgent needs and the cultural calendar.

The development and preservation of the Madura Sonok cattle breed must be accompanied by the development of the Madura cattle breeding agribusiness in rural areas on Madura Island, which is expected to lead to an agribusiness with high added value, not only focused on cultivation or on-farm activities. In addition, it is also necessary to develop the mental attitude and culture of the breeder community to be market and industry oriented, so that the livestock sector can become the main driver (primemover) for the regional economy. For this reason, the Madura cattle breeding centre village must be transformed into a Madura cattle breeding-based industrial village (Farahdilla, 2019). However, it is known that one of the weaknesses in the sonok cattle agribusiness is that the market is only conducted conventionally, namely buying and selling only at contest locations and traditional animal markets. On one hand, cattle contests can be used as a place for buying and selling cattle, but on the other hand, attending and participating in contests requires considerable costs. According to several farmers, participating in a contest once requires costs of between 3 and 5 million rupiah, depending on the distance between their home and the contest location.

Conclusions

The results of this research lead to the following conclusions:

1. The size of the cattle is one of the factors supporting the development of the local sonok cattle culture and the economic value of the cattle.
2. The average size of sonok cattle is above the 2023 Madura cattle SNI standard.
3. To improve cattle marketing and the economic level of the community, marketing breakthroughs are needed, one of which is through digital markets.

Acknowledgements

The authors would like to thank Universitas Madura and the Directorate of Research and Community Service, Ministry of Education, Culture, Research, and Technology of the Republic of Indonesia, for funding this research through the Beginner Lecturer Research Scheme (Penelitian Dosen Pemula) under Grant Numbers: 128/C3/DT.05.00/PL/2025; 036/LL7/DT.05.00/PL/2025; and 156/E.02/UNIRA-LPPM/VI/2025, in 2025.

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