BALI CATTLE FARMING BUSINESS DURING COVID-19 AND POST COVID-19

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Abstract

This research is a literature study on livestock economics. This study aims to analyze the Bali cattle farming business during covid-19 and post-covid-19. The research method used in this study is a qualitative descriptive method. The type of data used in this study is qualitative data, which is categorized into two types, namely primary data and secondary data. Sources of data obtained through library research techniques (library study) which refers to sources available both online and offline such as: scientific journals, books and news sourced from trusted sources. The results of the study concluded that the percentage of smooth cattle business in. The first quarter of the pandemic period in March-May 2020 is 56%, the second quarter of June-August 2020 is 52% in the third quarter, which is 96% and the last quarter is 52% in December-February 2021. the pandemic can still go well. After the Covid-19 pandemic, the beef cattle population continued to increase but beef production decreased. Beef cattle population increased by an average of 2.39%. while beef production decreased by an average of 2.46. Post-pandemic cattle business can run well

Key words: *Livestock Economy, Bali Cattle Business, Covid-19 Pandemic*

INTRODUCTION

Livestock plays an important role in the Indonesian economy, both in the formation of gross domestic product (GDP) and employment, as well as in the supply of raw materials for industry. Its effect on economic growth shows that in the first quarter of 2019, the livestock industry increased by 7.96%, and its contribution rate to gross national product was 1.56%. This contribution was greater than 0.20% in the agriculture and hunting services subsector, 1.47% in the horticultural crops subsector, compared to 3.03% in the food crops subsector and 3.30% in the cultivated crops subsector (General Administration of Livestock) and Animal Health, 2019) (Astiti, 2018a). Livestock is an integral part of agriculture, so livestock development plays a very important role in increasing food security, especially in maintaining the supply and adequacy of animal protein, which is mainly found in meat, eggs and milk in livestock. commodities whose supply is still partially dependent on imports (Tanjungsari, 2020).

The demand for meat in Indonesia comes from ruminants, namely Bali cattle, buffalo, goats and sheep, as well as poultry and other monogastric livestock (Astiti, 2019). According to the Directorate General of Livestock and Animal Health (2019), as of December 2019, Indonesia's meat production was 4886121 tons, including 678021 tons of ruminant meat (13.9%) and poultry meat and monogastric livestock. A total of 4208100 tons (86.1%) (Altieri & Nicholls, 2020). Among ruminants, beef production is 490421 tons (72.3%), followed by lamb 91000 tons (13%), goat 72600 tons (11%) and buffalo 24000 tons (3.5%). The Covid-19 pandemic has lasted more than two years, and the impact of the pandemic has affected almost all human activities, especially those related to public health and the economy. The COVID-19 pandemic has changed the order of life, affecting all sectors of life, including the livestock sector (Suharno, 2020) (Smith, Duncan, Edgar, & McColl, 2021)

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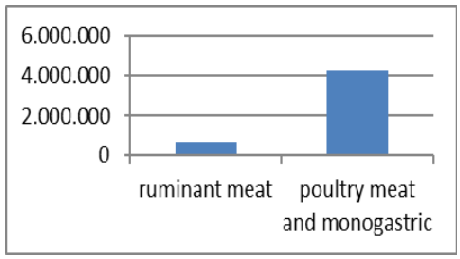

Fig. 1. Meat Production in Indonesia as of December 2019

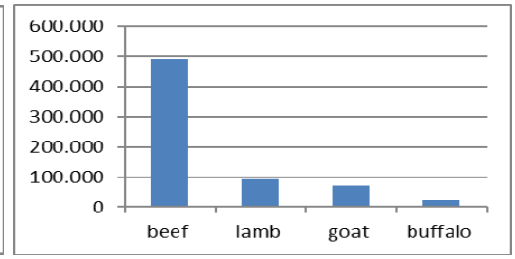

Fig. 2. Ruminant Meat Production

This study aims to (1) analyze the Bali cattle farming business during the COVID-19 pandemic and (2) analyze the Bali cattle farming business after the Covid-19 pandemic. (Harly & Mulyani, 2022) conducted a similar study entitled "The Impact of the Covid 19 Pandemic on Cow Sales". The difference between previous research and this research lies in the scope of the analysis. In previous studies, only livestock operations during the 2020 pandemic were analyzed, but in this study, researchers also analyzed post-pandemic livestock operations (Biswal, Vijayalakshmy, & Rahman, 2020) (Tjiptono, Adi Permana, Setyawan, & Widaharthana, 2022).

MATERIALS AND METHODS

The research method used in this study is a qualitative descriptive method. The type of data used in this study is qualitative data, which is categorized into two types, namely primary data and secondary data. Sources of data obtained through library research techniques (library study) which refers to sources available both online and offline such as: scientific journals, books and news sourced from trusted sources. These sources are collected based on discussion and linked from one information to another. Data collection techniques used in this study were observation, interviews and research. This data is analyzed and then conclusions are drawn (Timilsina et al., 2020).

RESULTS AND DISCUSSION

Bali Cattle Farming Business During the Covid-19 Pandemic

The Covid-19 pandemic began to enter Indonesia on March 2, 2020 and then quickly spread throughout Indonesia. As of the 2nd week of June, the Covid-19 pandemic has been confirmed in 34 provinces and 424 regencies/cities (Ministry of Health, 2020) . To break the chain of transmission of the Covid-19 pandemic, the government has issued an appeal to reduce social interaction through social distancing and physical distancing (Harly & Mulyani, 2022). In addition, Large-Scale Social Restrictions (PSBB) and temporary restrictions on the operation of sea, land and air transportation facilities have been established in several parts of Indonesia (Laynurak, 2022). This certainly has an impact on the socio-economic aspects of the community, especially in terms of meeting the needs of life, especially food needs, including livestock products (Hashem et al., 2021) (Subawa, Widhiasthini, Permatasari, & Sri Wisudawati, 2022). Supply and demand for beef/buffalo for the period January-May 2020 according to the optimistic scenario developed by the Directorate General of Livestock and Animal Health is shown in Table 1.

Table 1 Beef availability and demand 2020

Month	Availability (tons)	Needs (tons)	balance (tons)
January	60899	53720	7179
February	59764	49850	9914
March	62941	36806	26135
April	68305	42976	25329
May	87451	47405	40046

Source: Directorate General of Livestock and Animal Health (2020)

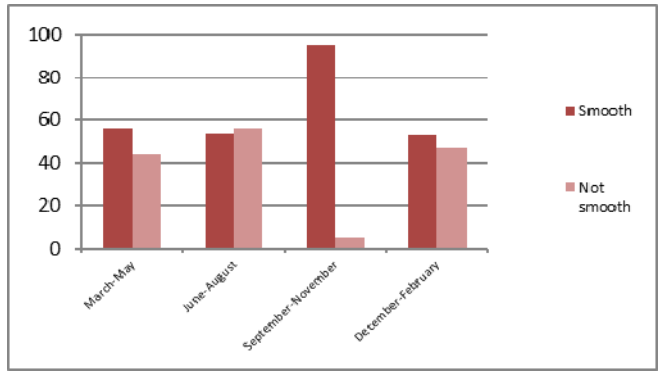

Fig. 3. Cattle Sales Percentage Chart

Based on the data, demand for meat is expected to fall 36% between March 2020 and October 2020 due to the COVID-19 pandemic. However, in some areas, the number of cattle slaughtered in abattoirs has decreased by more than 50% (Astiti et al., 2021). Since Indonesia was declared an area affected by COVID-19, people's consumption patterns for livestock products, especially Balinese beef, began to change. These changes include the types of goods purchased, transaction patterns and a focus on product quality (Astiti et al., 2019).

Bali cattle breeding business during Covid-19 will be analyzed for the percentage of Bali cattle sales, including distribution and smooth sales from farmers to livestock traders (Astiti et al., 2016). Smooth sales of Bali cattle were observed in four semesters, namely:

• Quarter 1 March-May 2020
• Quarter 2 June-August 2020
• Quarter 3 September-November 2020
• Quarter 4 December 2020-February 2021

(Salim, nd) explains the gap between the demand and supply of meat. The national demand for meat is 650000 tons per year, equivalent to 38-39 million heads, while the total stock of beef cattle in 2019 is only 17118650 heads.

Currently the demand for meat is increasing because it can be consumed by various groups of people in Indonesia, so that beef consumption is also increasing. As the population and the number of middle and upper class people increase, the need for animal protein also increases (Astiti, 2018b).

The pandemic in early March 2020 caused the economy to be disrupted by restrictions on the movement of people. The application of WFH by the office and the limited availability of restaurants, restaurants, and rice stalls have an impact on the demand for beef menus (Astiti, 2021). The results showed the percentage of cattle sales in the first quarter of the pandemic was smooth 56% not smooth 44%, the second quarter smooth 54% not smooth 46%, the third quarter smooth 95% not smooth 5% and the fourth quarter smooth 53% not smooth 47 %. It can be seen more clearly the sales results from Fig 3.

Sales percentages were divided into four groups, one group filling a three-month span. As can be seen from Fig 3, sales in the first and second quarters fell by 44% and 48%, respectively, with an average decline of 46%. During this period, restrictions on government activities and community activities, such as work from home activities (WFH), the impact of this policy resulted in the closure of many food stalls, except for the activities of high finance offices which continued to be limited (Nur-E-Alam, Hoque, Ahmed, Basher, & Das, 2020). The easing of restrictions based on fewer people exposed to COVID-19 resulted in a 96% increase in sales. However, with the exposure to COVID-19, the rules changed again, and sales fell again to 52%. (Holland, 2020) said that the Covid-19 pandemic had an impact on the people's beef cattle business. Therefore, assistance from all parties, including academics, is important to help farmers survive. It can be explained that the sale of cattle has changed according to what happened.

There are three forms of payment systems at the time of sale: cash, debt and agreement (Suarsana, 2020). The results showed that cash payments accounted for 40%, debt accounted for 20%, and negotiated payments accounted for 40%. Up to 40% of agribusinesses in the study sites receive commercial funding from grants/loans, and the remainder are self-funded. (Malahayati, Masui, & Anggraeni, 2021) explains that 94.74% of farmers sell cattle by selling them to traders/traders.

Cattle business in the first year of the pandemic, 56% in the first quarter of March-May 2020, 52% in the second quarter of June-August 2020, and 52% in the second quarter of September-November 2020 96% in the third quarter, December 2021 to February 2021, 52% in the previous quarter. Sales are also influenced by local government policies. 72% of the cattle farming system is intensive, and the supply of pasture is still sufficient to meet the size of 1-3 cows, but beyond this number, if the farmer does not have grass, it is not enough. The cow business can still run well during the pandemic.

Bali Cattle Farming Business Post Covid-19

Development and optimization of regional beef cattle production centers The development and optimization of beef cattle requires regional grouping that is adjusted to carrying capacity as a model for future development (Santoso, 2020) . To realize the plan, Minister of Agriculture Decree No. 472/kpts/RC.040/06/2018 has been issued regarding the location of the development of national agricultural areas for superior commodities such as food crops, horticulture, plantations and livestock (Djailani et al., 2021).

Business development areas (new sources of growth) with breeding and fattening models need to be mapped to support an increase in the number of livestock (Pradanu & Hartono, 2021). Bali cattle farming in grazing fields is a supportive alternative to accelerate the achievement of Bali cattle self-sufficiency, especially nurseries managed by community farms (extensive farming).

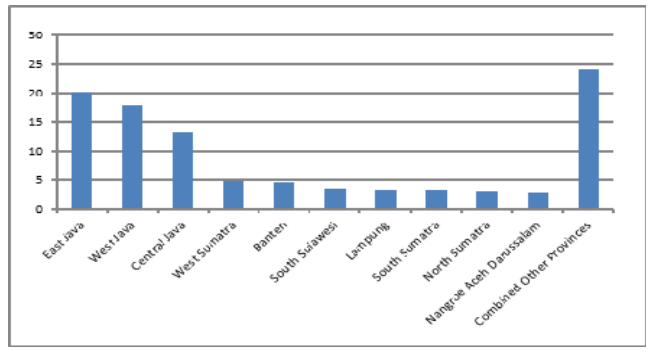

Fig. 4. Total Beef Cattle Population In Indonesia

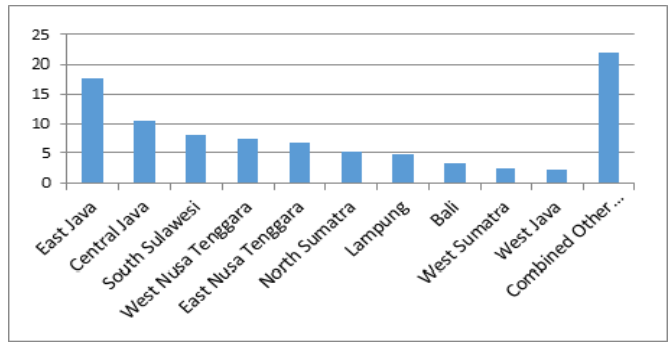

Fig. 5. Total Beef Beef Production in Indonesia

Table 2. Cattle Population and Production in Indonesia in

Cattle Population Year		Beef Production	
2021	2022	2021	2022
17440393	18053710	437783	436700

Source: National Statistics Agency 2022

Fig. 4. generally describes the number of beef cattle population in Indonesia which differs between provinces. The highest population of beef cattle in Indonesia is 17,440,393 heads in 2020 with an average beef cattle of each province in Indonesia is 530,991 heads in 2020. The main cattle population center in Indonesia by province in 2020 is East Java with a national contribution of 27.66 %. The region with the second largest national contribution is Central Java at 10.53% and the third largest is South Sulawesi at 8.06%. West Nusa Tenggara and East Nusa Tenggara contributed 7.37% and 6.74% respectively. The other provinces combined contributed 21.81. The province with the largest irreplaceable Cattle population is East Java because almost all areas in East Java Province are cattle breeding centers (Pariwongkhuntorn, Wongmonta, Praesri, & Khemapanya, 2021).

On the other hand, although the population of beef cattle continues to increase, the production of beef cattle has decreased. The following is data on the number of beef cattle production in Indonesia: on fig. 5.

Fig. 5. generally describes the number of beef cattle production in Indonesia which differs between provinces. The highest number of beef cattle production in Indonesia is 504802.31 tons in 2020 with the average beef cattle for each province in Indonesia is 14847 tons in 2020. The main cattle production center in Indonesia by province in 2020 is East Java with a national contribution of 20.08%. The area with the second largest national contribution is West Java at 17.86% and the third largest is Central Java at 13.22%. The other provinces combined contributed 21.81. The province with the largest beef production is East Java. The post-Covid-19 pandemic has seen changes in the Bali cattle business, including the continued increase in the number of beef cattle, but a decline in beef production (Purnomo, Adiguna, Widodo, Suyatna, & Nusantoro, 2021). The following is data on population and beef production in Indonesia in 2021-2022: Table 2.

The cattle population in Indonesia in 2021 is estimated to reach 17440393 heads and in 2022 it is estimated to reach 18053710. In proportion, Java is the largest contributor to the cattle population (Roubík et al., 2022). Most likely due to several factors, including the level of demand/consumption of meat in Java is relatively larger than the demand for meat outside Java. Another factor is the infrastructure, technology and livestock industry which is more advanced in Java compared to other areas, especially the animal feed supply industry so that the livestock sub-sector can develop better. When compared between 2021 and 2022, the cattle population has increased by an average of 2.46% (Rozaki, 2021).

Beef production in Indonesia in 2021 is estimated to reach 437783 thousand tons and in 2022 it is estimated to reach 436700 thousand tons. In proportion, Java is the largest contributor to beef and buffalo production, amounting to 59.12 percent or around 258.17 thousand tons. Meanwhile, the island of Sumatra contributes around 16.47 percent and the islands of Bali & Nusa Tenggara contribute around 13.22 percent to the total production of beef in 2022. Meanwhile, the other islands make a less significant contribution, which is less than 8 percent. When compared between 2021 and 2022, cattle production has decreased by an average of 2.39%.

After the Covid-19 pandemic, the beef cattle population continued to increase but beef production decreased. The population of beef cattle until 2021 will increase by an average of 2.39%. while beef production decreased by an average of 2.46%.

CONCLUSION

Percentage of smooth running of cattle business in. The first quarter of the pandemic period in March-May 2020 is 56%, the second quarter of June-August 2020 is 52% in the third quarter, which is 96% and the last quarter is 52% in December-February 2021. the pandemic can still go well. After the Covid-19 pandemic, the beef cattle population continued to increase but beef production decreased. Beef cattle population increased by an average of 2.39%. while beef production decreased by an average of 2.46. Post-pandemic cattle business can run well.

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REFERENCES

1. Altieri, Miguel A., & Nicholls, Clara I. (2020). Agroecology And The Reconstruction Of A Post-Covid-19 Agriculture. The Journal Of Peasant Studies, 47(5), p. 881–898.
2. Astiti, Ni Made Ayu Gemuh Rasa. (2018a). Pengantar Ilmu Peternakan. Penerbit Universitas Warmadewa.
3. Astiti, Ni Made Ayu Gemuh Rasa. (2018b). Sapi Bali Dan Pemasarannya. Warmadewa University Press.
4. Astiti, Ni Made Ayu Gemuh Rasa. (2021). Bali Cattle Marketing Channels And Margins In The Covid-19 Era.
5. Astiti, Ni Made Ayu Gemuh Rasa, Astara, I. Wayan Wesna, & Eryani, I. Gusti Agung Putu. (2021). Bali Cattle Cultivation And Eco-Tourism In Ayunan Village Abiansemal District, Badung. Civil And Environmental Science Journal (Civense), 4(2), p. 202–207.
6. Astiti, Ni Made Ayu Gemuh Rasa, Rukmini, Ni Ketut Sri, Rejeki, Igads, & Balia, Roostita L. (2019). The Farmer Socio-Economic Profile And Marketing Channel Of Bali-Calf At Bali Province. Series "Management, Economic Engineering In Agriculture And Rural Development," 19 (1), p. 47–51.
7. Astiti, Ni Made Ayu Gemuh Rasa, Suparta, I. Nyoman, Lanang Oka, I. Gusti, & Antara, I. (2016). Marketing Systems Of Calf Bali. International Research Journal Of Engineering, It Scientific Research (Irjeis), 2(11), p. 73–80.
8. Biswal, Jyotsnarani, Vijayalakshmy, Kennady, & Rahman, Habibar. (2020). Impact Of Covid-19 And Associated Lockdown On Livestock And Poultry Sectors In India, Veterinary World, 13(9), p. 1928.
9. Djailani, Lius, Mukhtar, Muhammad, Pateda, Sri Yenny, & Imran, Supriyo. (2021). Jalur Distribusi Pemasaran Sapi Potong Di Masa Pandemi Covid-19, Jambura Journal Of Animal Science, 4(1), p. 34–40.
10. Harly, Resolinda, Mulyani, Sri. (2022). The Impact Of Covid 19 Pandemic On The Cattle Sales, Journal Of Tropical Animal Science And Technology, 4(1), p. 10–16.
11. Hashem, Nesrein M., Hassanein, Eman M., Hocquette, Jean François, Gonzalez-Bulnes, Antonio, Ahmed, Fayrouz A., Attia, Youssef A., Asiry, Khalid A. (2021). Agro-Livestock Farming System Sustainability During The Covid-19 Era: A Cross-Sectional Study On The Role Of Information And Communication Technologies. Sustainability, 13(12), p. 6521.
12. Holland, Kerri. (2020). Canada's Food Security During The Covid-19 Pandemic. The School Of Public Policy Publications.
13. Laynurak, Yoseph M. (2022). Potensi Pengembangan Peternakan Di Wilayah Pesisir Solusi Dimasa Pandemi Covid-19. Prosiding Seminar Nasional Teknologi Agribisnis Peternakan (Stap), 9, p. 804–812.
14. Malahayati, Marissa, Masui, Toshihiko, Anggraeni, Lukytawati. (2021). An Assessment Of The Short-Term Impact Of Covid-19 On Economics And The Environment: A Case Study Of Indonesia. Economia, 22(3), p. 291–313.
15. Nur-E-Alam, Mohammad, Hoque, Mohammad Nasirul, Ahmed, Soyed Mohiuddin, Basher, Mohammad Khairul, Das, Narottam. (2020). Energy Engineering Approach For Rural Areas Cattle Farmers In Bangladesh To Reduce Covid-19 Impact On Food Safety. Sustainability, 12(20), p. 8609.
16. Pariwongkhuntorn, Nuttharin, Wongmonta, Seri, Praesri, Siriporn, Khemapanya, Vilasinee. (2021). Business Management Factors In The Marketing Of Ecotourism; Tourism Gains New Norms After The Covid-19 Crisis In Nonthaburi Province. Asia Pacific Journal Of Religions And Cultures, 5(2), p. 158–178.
17. Pradanu, Bima, Hartono, Ir Budi. (2021). Analisis Pendapatan Peternak Sapi Perah Rakyat Selama Pandemi Covid-19. Universitas Brawijaya.
18. Purnomo, Boyke Rudy, Adiguna, Rocky, Widodo, Widodo, Suyatna, Hempri, Nusantoro, Bangun Prajanto. (2021). Entrepreneurial Resilience During The Covid-19 Pandemic:

Navigating Survival, Continuity And Growth. Journal Of Entrepreneurship In Emerging Economies.
19. Roubík, Hynek, Lošťák, Michal, Ketuama, Chama Theodore, Procházka, Petr, Soukupová, Jana, Hakl, Josef, Karlík, Petr, Hejcman, Michal. (2022). Current Coronavirus Crisis And Past Pandemics-What Can Happen In Post-Covid-19 Agriculture Sustainable Production And Consumption, 30, p. 752–760.
20. Rozaki, Zuhud. (2021). Food Security Challenges And Opportunities In Indonesia Post Covid-19, Advances In Food Security And Sustainability, 6, p. 119–168.
21. Salim, Sekolah Tinggi Pertanian Haji Agus. (N.D.). Dampak Pandemi Covid 19 Terhadap Penjualan Ternak Sapi.
22. Santoso, Budi. (2020). Prospek Pengembangan Sapi Potong Di Era Normal Baru Pasca Pandemi Covid-19. Prosiding Seminar Teknologi Agribisnis Peternakan (Stap) Fakultas Peternakan Universitas Jenderal Soedirman, 7, p. 15–23.
23. Smith, Anne M. J., Duncan, Peter, Edgar, David, & Mccoll, Julie. (2021). Responsible And Sustainable Farm Business: Contextual Duality As The Moderating Influence On Entrepreneurial Orientation, The International Journal Of Entrepreneurship And Innovation, 22(2), p. 88–99.
24. Suarsana, Komang. (2020). Ketahanan Pangan Berbasis Adat (Tantangan Penanganan Covid-19 Di Bali). Prosiding Webinar Nasional Universitas Mahasaraswati Denpasar 2020.
25. Subawa, Nyoman Sri, Widhiasthini, Ni Wayan, Permatasari, Ni Putu Intan, Sri Wisudawati, Ni Nyoman. (2022). Msmes Envisaged As The Economy Spearhead For Bali In The Covid-19 Pandemic Situation, Cogent Economics & Finance, 10(1), p. 2096200.
26. Suharno, Bambang. (2020). Prospek Peternakan Di Era Normal Baru Pasca Pandemi Covid-19 (Sudut Pandang Media). Prosiding Seminar Teknologi Agribisnis Peternakan (Stap) Fakultas Peternakan Universitas Jenderal Soedirman, 7, p. 36–40.
27. Tanjungsari, Ardina. (2020). Strategi Pemberdayaan Peternak Sapi Bali Akibat Pandemi Covid-19 Di Desa Tiga, Kecamatan Susut, Kabupaten Bangli, Provinsi Bali, Jurnal Biologi Dan Pembelajarannya, 7(2), p. 8–14.
28. Timilsina, Binita, Adhikari, Nitu, Kafle, Sheetal, Paudel, Susmita, Poudel, Sushmita, Gautam, Deepak. (2020). Addressing Impact Of Covid-19 Post Pandemic On Farming And Agricultural Deeds, Asian Journal Of Advanced Research And Reports, 11(4), p. 28–35.
29. Tjiptono, Fandy, Adi Permana, Ida Bagus Gede, Setyawan, Andhy, Widaharthana, I. (2022). The Perfect Storm: Navigating And Surviving The Covid-19 Crisis. In Covid-19 And The Evolving Business Environment In Asia, Springer, p. 145–172.