

DIFFERENCES IN CHARACTERISTICS AND INCOME OF DUCK FARMING IN SUKRA AND SINDANG DISTRICTS, INDRAMAYU REGENCY

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Abstract

Duck farming serves as a vital source of income for farmers in the Indramayu Regency, supporting their families financially. Within the region, two primary areas, Sukra District and Sindang District, play a significant role in providing duck-related products. This study aims to discern variations in various attributes of breeders, including their livestock experience, age, family size, proximity to marketing centers, farm expenses, duck farming costs, duck farming revenue, and farmer income per annum. The research methodology involved surveying 100 farmers who were selected as participants, and data collection was carried out through interviews using structured questionnaires. The findings revealed that, to execute a reliable independent sample t-test, several preliminary steps were essential. These steps included the elimination of outliers and variables that did not conform to a normal distribution. This process ultimately yielded four valid variables, which were then subjected to the difference test. Notably, the study identified two variables that significantly differed between duck farmers in Sukra and Sindang Districts: the average age of breeders and the average cost of duck rearing. This divergence can be attributed to distinct sources of production inputs and the challenges of optimizing production factors, stemming from a relatively modest livestock count, typically less than 1000 ducks per farmer.

Keywords: Ducks, Breeder Characteristics, Income Disparity Analysis

PERBEDAAN KARAKTERISTIK DAN PENDAPATAN USAHA TERNAK ITIK DI KECAMATAN SUKRA DAN KECAMATAN SINDANG KABUPATEN INDRAMAYU

Abstrak

Itik merupakan produk andalan para peternak di Kabupaten Indramayu yang memberikan penghasilan untuk memenuhi kebutuhan keluarga. Daerah utama penyuplai produk itik di daerah ini adalah Kecamatan Sukra dan Kecamatan Sindang. Penelitian ini bertujuan untuk mengungkap perbedaan ciri-ciri peternak, antara lain pengalaman beternak, umur peternak, tanggungan keluarga, jarak ke pusat pemasaran, biaya peternak, biaya usaha beternak itik, penerimaan tahunan peternak, dan pendapatan tahunan peternak. Penelitian ini menggunakan metode survei terhadap 100 petani partisipan, dengan menggunakan wawancara dan kuesioner untuk pengumpulan data. Temuannya menunjukkan bahwa uji-t sampel independen yang valid memerlukan langkah-langkah khusus, seperti menghilangkan outlier dan menangani variabel dengan distribusi data yang tidak normal. Setelah proses ini, empat variabel valid dipilih untuk uji perbedaan. Pada akhirnya, perbedaan mencolok muncul pada rata-rata usia peternak dan rata-rata biaya beternak itik di antara peternak di Kecamatan Sukra dan Sindang. Perbedaan tersebut timbul karena variasi sumber input produksi dan efektivitas penggunaan faktor produksi, terutama karena jumlah ternak yang relatif sedikit, yaitu kurang dari 1000 ekor per peternak.

Kata Kunci: Itik, Karakteristik Peternak, Ketimpangan Pendapatan

INTRODUCTION

The concept of livestock development is evident in its core objectives: (1) Enhancing farmer income and well-being by adopting a more cost-effective approach to farming that leverages competitive advantages in geographical regions and specific agricultural

products. (2) Improving community nutrition through a nationwide initiative that supports increased production, livestock productivity, and livestock products, contributing to an overall enhancement of nutrition. (3) Creating job opportunities and business prospects, particularly in the domains of agribusiness and

agro-industrial activities. In accordance with In accordance to Basriwijaya et al.'s statement (2019), livestock development embodies a collective effort to uplift farmers welfare and foster economic growth through competitive and productive endeavors. Moreover, the development of the livestock sub-sector is geared towards conserving livestock resources and amplifying production. Special attention is directed towards advancing smallholder farms, which represent the largest segment of breeders in Indonesia.

A promising avenue for realizing these objectives is enhancing livestock productivity, particularly in duck farming. Ducks are highly valued for their egg production and are especially favored commodities in rural areas of Indonesia. Duck farming proves successful in both lowland and highland regions, often expanding in regions rich in natural resources, particularly those with abundant water bodies.

Ducks play a crucial role as a source of livelihood for rural communities, given that a significant number of duck breeders reside in these settings. Raising ducks is relatively straightforward, due to their robust disease resistance, and their dietary requirements can be fulfilled from the surrounding environment. Acknowledging this potential and the prevalence of thriving water-related areas, the government has designated waterfowl as a pivotal commodity alongside other livestock. Consequently, ducks are expected to empower breeders and enhance their well-being.

Future livestock development requires coordinated efforts to harness livestock resources and optimize suitable technology, encompassing both hardware (mechanical, chemical, and biological elements) and software (workforce skills, knowledge, organizational structures, and business planning) (Soecardono, 2009). Regional development, as part of the national development agenda, focuses on achieving equitable development. The push for decentralization and regional autonomy give birth to strategies that involve establishing duck production centers, fostering livestock product growth through agribusiness activities, and spatial development mapping.

Indramayu Regency aims to transform its local livestock into one of its primary economic sources by creating a symbiotic relationship within a comprehensive and integrated agribusiness management, both vertically and

horizontally. Indramayu Regency holds significant potential for becoming a thriving livestock hub, with the goal of transforming Indramayu into a national food production center. The extensive rice fields within the region offer an excellent opportunity for the development of duck farming. The overall status of duck farming in Indramayu Regency indicates a highly promising contribution to the region's economic development. This potential is further bolstered by the availability of suitable land, a responsive workforce, and breeding institutions, as well as a robust supply of feed resources.

The importance of this research is underscored by the need to bridge existing knowledge gaps and attain a more profound understanding of the duck farming sector within Indramayu Regency. Several factors emphasize the significance of this research. Notably, local attributes, such as geographic, social, and economic variations, can significantly influence duck farming ventures. Without a comprehensive grasp of these regional nuances, efforts to advance the duck farming sector may fall short of their potential. Therefore, this research serves as a crucial means to identify the key determinants that contribute to disparities in characteristics and income between the two sub-districts.

Moreover, the findings from this study can form a robust foundation for devising enhanced strategies to support the duck farming sector. Should the differences in duck business characteristics in Sukra and Sindang prove to be substantial, it could pave the way for tailored guidelines crafted to address specific local needs. This, in turn, has the potential to enhance productivity and sustainability in duck farming operations in Indramayu Regency. Ultimately, this progress can lead to improved farmer welfare, bolster sustainability, and stimulate local economic growth.

MATERIALS AND METHODS

Object of research

This study was directed at individuals involved in duck rearing, particularly those utilizing intensive and semi-intensive farming approaches. The primary focus of this research was to investigate the traits and earnings of duck breeders within the duck farming industry, along with the strategies employed by these

breeders to advance their duck-related endeavors in the Indramayu region.

Data Types and Sources

This research employed a combination of numerical and descriptive information, encompassing both internal and external elements. Data was collected during the period from October 2020 to September 2021, with a specific focus on the duck farming sector. Two distinct sources of data were utilized: primary data, acquired through direct interviews with duck breeders, and secondary data, extracted from reports provided by animal husbandry services, governmental bodies, and related organizations. These sources provided valuable insights into the regional context.

Sampling Method

The research approach employed in this study involved conducting a survey. The chosen sampling method was non-probability sampling through incidental sampling. This selection was made due to the lack of precise knowledge about the population size. However, information provided by the Livestock Service Office of Indramayu Regency indicated that Sindang District and Sukra District were significant centers for both egg and duck production. Moreover, these districts had received government assistance for duck livestock. As a result, the number of samples required was calculated using the Lemeshow formula. (Riduwan and Akdon, 2010).

$$N = \frac{Z^2 \times P \times Q}{L^2}$$

In the formula used for sample size determination, the variables are defined as follows: *n* represents the required sample size, *Z* corresponds to the standard value of the distribution, and *P* denotes the estimated proportion value, which can reach a maximum of 0.5. The variable *Q* is equivalent to 1 - *P*, while *L* stands for the desired level of accuracy, set at 0.11. Applying this formula yields a sample size 'n' of approximately 80 respondents.

It's important to note that due to the lack of knowledge regarding the total population in each sub-district, it was not feasible to allocate the sample proportionally to each sub-district. Consequently, there is no specific minimum requirement per sub-district. In practical terms,

a minimum of 80 breeders were interviewed to gather primary data over the course of one year.

Normal Distribution and Independent Sample t-Test

Before conducting the difference test analysis, a test for normality was conducted. The data processing was carried out using IBM SPSS software. The analysis covered eight dimensions: experience in duck farming, age, the count of family dependents, proximity to shopping centers, breeder expenses, duck farming costs, duck farming revenue, and the annual income of farmers per person.

RESULTS AND DISCUSSION

Breeders remain active in their working years, with an average age of 43, although some are as old as 80. This indicates that duck farming is not excessively challenging, allowing farmers to continue supporting their families even in their later years.

A significant 86% of breeders are male, while the remaining 14% are female. The ease of raising ducks, from the initial stages to the final production, makes it a viable option for women. This is further facilitated by the presence of marketing agents who visit the farms to collect livestock products. In contrast to the findings of Basriwijaya et al. (2021), who observed duck farming in Rokan Hulu District, Riau Province, where men predominantly engage in duck farming due to their perceived physical strength and ability to manage the livestock business. Meanwhile, female breeders in duck farming primarily serve as supervisors when their husbands are unavailable to manage the farm.

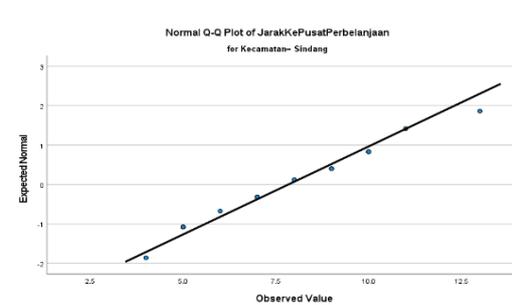
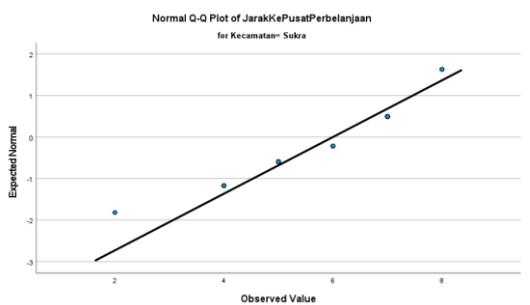
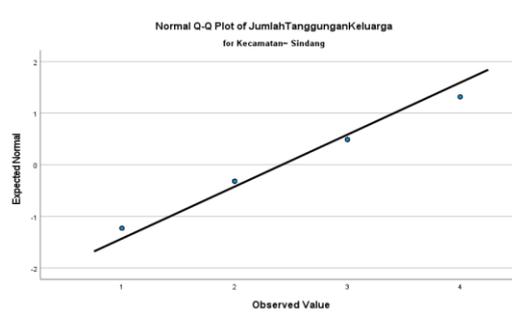
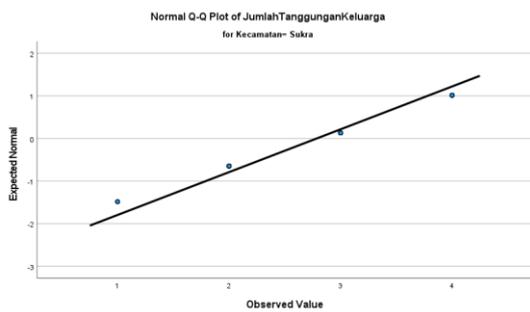
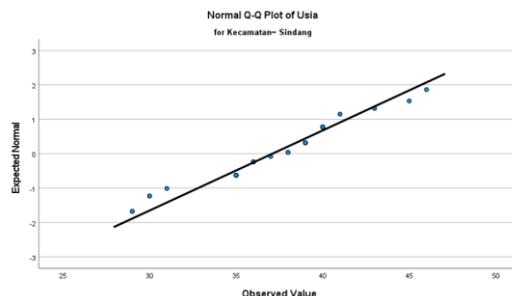
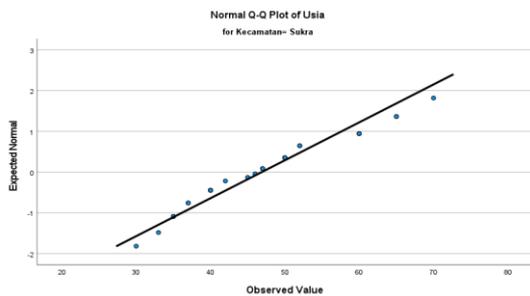
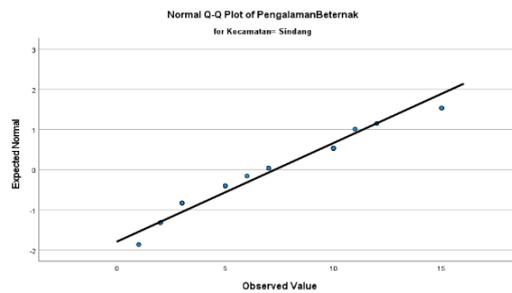
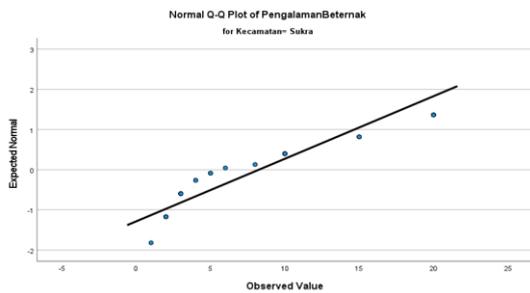
Many breeders have received only elementary school education, though some have pursued higher education up to the D3 level. This suggests that a higher level of education does not pose a hindrance to duck farming. Santoso (2023) also reported similar findings in his research, stating that most duck farmers in Brebes Regency have elementary school backgrounds, a lower level of education that does not impede their success in duck farming or hinder their ability to run a duck farm.

Duck farmers in Indramayu Regency use more natural resources as a source of their duck's feed. After the farmers had harvested paddy, the pasture fields were occupied by duck

breeders from nearby areas, both within and outside the district. The extensive rearing, rather than kept in cages, has been passed down from generation to generation. Duck breeders often leave the house to accompany the ducks in the rearing area. Departure time can vary from 1 to 2 weeks depending on the availability of snails in the paddy fields after the rice harvest. Competition for feed sources and using other production inputs causes differences in the costs of duck egg and meat production.

The variety of socio-economic characteristics of breeders and variations in the financial structure of breeders provide a unique picture, thus generating interest for more profound research regarding the differences in the location of the basis for supplying duck farming products.

Judging from the normal QQ plot, all variables appear to follow a straight line with no visible outliers. The following are eight illustrations of normal QQ plots differentiated by sub-district.



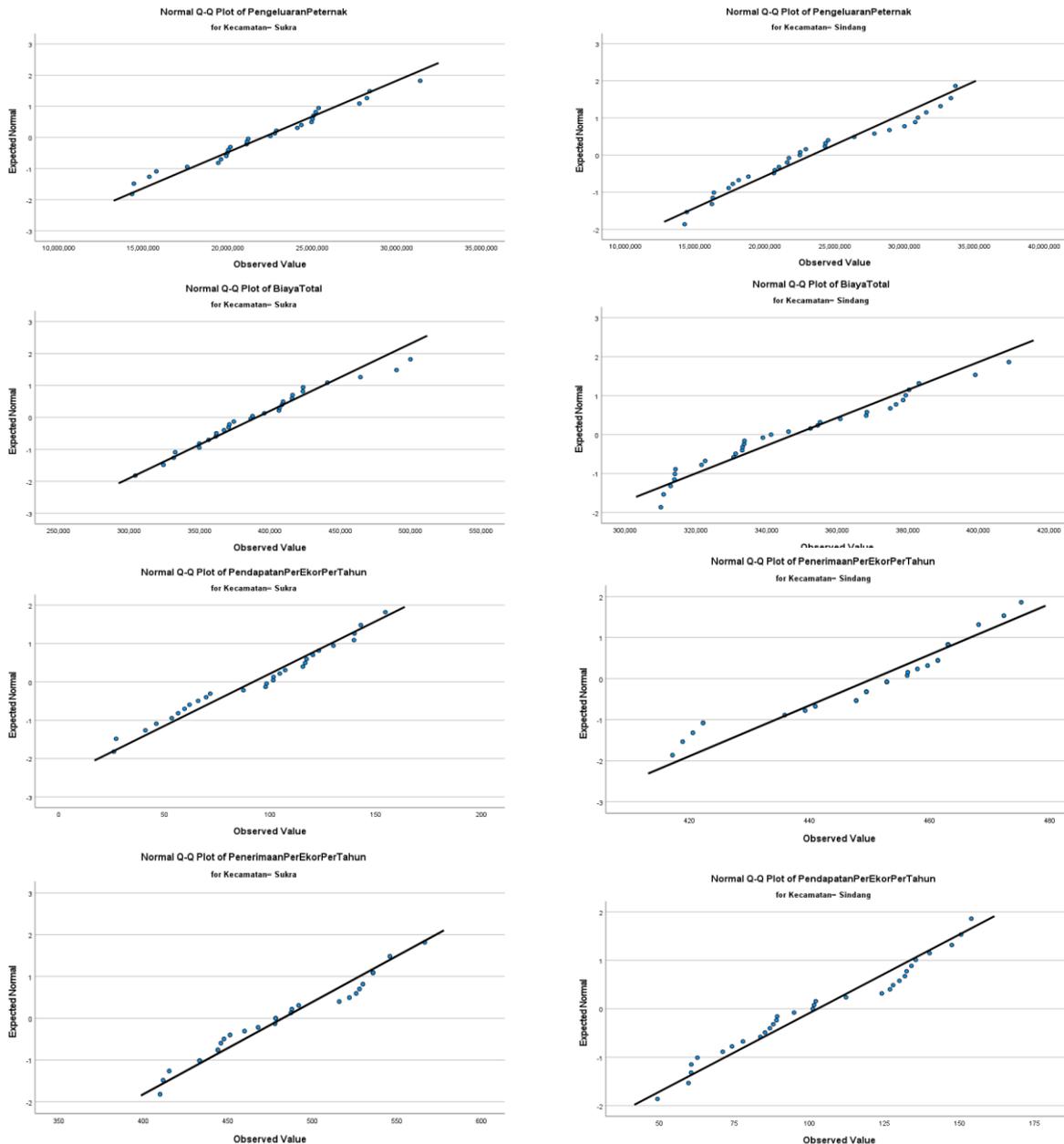


Illustration 1. Normal QQ Plot for 8 dimensions based on district

Assessing the results of our tests for data normality, it becomes clear that not all the data follows a typical distribution pattern. The Kolmogorov-Smirnov test result indicates that the ages in Sukra District, expenditures in Sindang District, and livestock business costs in Sindang District tend to have a normal distribution. However, the Shapiro-Wilk test result shows that the only data that follow a normal distribution is the livestock business costs in Sindang District.

The primary reason for the data not adhering to a normal distribution is the presence

of extreme data points that significantly deviate from the sub-district averages, causing uneven variation in the data. To address this issue, approximately 40% of we outliers were eliminated, resulting in a final sample size of 60 breeders who served as respondents. This observation aligns with the findings of Ghozali (2016), who suggests that a P-Plot graph signifies data as non-normally distributed when data points do not align with the diagonal line, while it is considered normally distributed when data points closely follow the diagonal line.

Table 1. Normality Test

	Subdistrict	Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistics	df	Sig.	Statistics	df	Sig.
Livestock Experience	Sukra	.194	28	.009	.851	28	.001
	Sindang	.166	31	.029	.931	31	.046
Age	Sukra	.132	28	.200*	.950	28	.194
	Sindang	.151	31	.068	.949	31	.146
Number of Family Dependents	Sukra	.192	28	.009	.871	28	.003
	Sindang	.212	31	.001	.882	31	.003
Distance to shopping center	Sukra	.288	28	.000	.857	28	.001
	Sindang	.130	31	.196	.949	31	.150
Breeder Expenditures	Sukra	.093	28	.200*	.973	28	.674
	Sindang	.109	31	.200*	.944	31	.109
Total Cost	Sukra	.099	28	.200*	.969	28	.564
	Sindang	.144	31	.101	.940	31	.084
Revenue Per Head Per Year	Sukra	.129	28	.200*	.948	28	.174
	Sindang	.174	31	.018	.897	31	.006
Income Per Head Per Year	Sukra	.134	28	.200*	.959	28	.328
	Sindang	.143	31	.104	.945	31	.115

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Table 2. Difference Test

		Independent Samples Test								
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper	
Age	Equal variances assumed	20,132	.000	3,997	58	.000	8,903	2,228	4,444	13,362
	Equal variances not assumed			3,895	35,109	.000	8,903	2,286	4,263	13,543
Breeder Expenditures	Equal variances assumed	1,693	.198	-1,232	58	.223	-1736218.465	1409127.626	-4556893.871	1084456.941
	Equal variances not assumed			-1,239	57,396	.220	-1736218.465	1401048.221	-4541350.064	1068913.135
Cost Total	Equal variances assumed	6,337	.015	3,991	58	.000	40281.128	10094.201	20075.390	60486.866
	Equal variances not assumed			3,924	44,363	.000	40281.128	10265.069	19598.024	60964231
Income Per Head Per Year	Equal variances assumed	.804	.374	-1,249	58	.217	-10.78591	8.63244	-28.06563	6.49380
	Equal variances not assumed			-1,243	55,249	.219	-10.78591	8.67828	-28.17581	6.60399

Nevertheless, subsequent testing through the Kolmogorov-Smirnov and Shapiro-Wilk methods revealed that only four aspects (age, expenses, livestock business costs, and breeder income) exhibited significant distinctions between the two regions. The farmer age and the duck farming expenses vary between Sukra and Sindang Districts. Age impacts the farmer's experience, their capacity to access market

information, comprehend government regulations related to egg and feed prices, and adopt technological advancements in livestock management. Older breeders tend to have a greater degree of control over decision-making and the overall management of their livestock operations (Sofyan, 2019). In contrast to the findings of Santoso et al. (2023), who asserted that age did not significantly affect the

sustainability of duck farming, Santoso et al.'s study indicates that the average age of duck breeders stands at 53 years, a productive age conducive to effective training and counseling assimilation. The cost factor is contingent on the types of production inputs employed. Besides age, factors such as the farmer's experience, family responsibilities, proximity to the market, household expenditures, income, and earnings from duck sales exhibited no significant distinctions. As per Pangemanan (2018), feed costs, livestock quantity, and labor inputs influence total expenditures, while overall family income and the number of months dedicated to herding negatively impact production costs.

Although these two regions are not geographically close, a thorough evaluation reveals that the majority of breeder characteristics, income sources, and duck farming income are remarkably similar. This suggests that the labor source, family structure, and maintenance patterns of farmers in both areas are relatively consistent. Additionally, there are production inputs that are underutilized; for instance, breeders have the potential to raise over 1,000 ducks annually, yet due to limited capital, they rear only 430 ducks per breeder each year. Breeders are often hesitant to seek credit from banks to expand their duck populations. In accordance with the research conducted by Sumekar et al. (2013), it is evident that the duck farming production in Brebes Regency has not been optimally efficient. This can be attributed to breeders not utilizing production factors correctly, such as failing to increase the number of ducks and using feed that is either of inadequate quality or quantity.

In their study, Lembong et al. (2015) determined that duck breeders break even when raising around 51 ducks per cycle, indicating that breeders in Kab. Indramayu still maintain a profitable position with positive income. Permatasari's research (2021) revealed that the most efficient number of livestock to be raised by breeders is 500 heads.

The current profitability of livestock kept by farmers in the Indramayu district hinges on the use of cost-effective feed derived from agricultural waste, specifically snails found in paddy fields. However, the challenge with relying on natural resources like this lies in the sustainability of the business, as the availability of competitive feed sources remains uncertain,

potentially impacting the continuity of the business. Subagja et al. (2017) analyzed that duck businesses with total ownership of under 100 heads, between 100 - 500 heads, and above 500 heads are all viable due to the ease of accessing suitable feed. According to the findings of Misnun et al. (2019), breeders are expected to ensure a sufficient supply of feed for an entire egg-laying cycle, as ducks are sensitive to changes in feed, which could disrupt egg production. It is crucial to carefully time the harvest and rice planting periods to prevent disruptions in the ducks' access to food in the rice fields.

In their study, Lembong et al. (2015) discovered that duck farmers achieve a breakeven point when raising around 51 ducks per breeding cycle. This finding indicates that breeders in Kab. Indramayu continue to maintain a profitable position based on their positive income. Permatasari's research (2021) further emphasizes that the most efficient number of livestock to be raised by breeders is 500 heads.

Bakhtian (2018) suggested during a national seminar that duck breeders should enhance the quality and production of duck eggs through effective techniques and management. Furthermore, breeders can collaborate with governmental and other institutions to legitimize their businesses for market development. This recommendation aligns with the guidance of Ismoyowati et al. (2020), which underscores the significance of the institutional aspect in duck farming. According to Presidential Regulation of the Republic of Indonesia Number 98 of 2014, which pertains to Licensing for Micro and Small Enterprises, it is advised to formalize the duck breeding business by obtaining a business license. Legalizing small and micro enterprises, including duck farming, offers numerous benefits, such as facilitating cooperation, ensuring legal compliance, promoting tax awareness, enabling access to capital, protecting business locations, and providing support for SME development. Additionally, reinforcing institutions by establishing legal livestock groups can enhance marketing and distribution channels, as well as grant applications.

As a strategic approach, diversifying the business by creating processed products from ducks and duck eggs is recommended. The Indramayu District's Animal Husbandry

Service has facilitated case studies and study tours to explore effective and efficient duck farming practices in East Java. However, duck farmers face challenges in incorporating additional feed costs to enhance their eggs and meat quality. Some farmers express reluctance when advised to produce and directly sell processed products to consumers, citing limited capital as a primary concern.

CONCLUSIONS

- Farmers exhibit varying characteristics, financing and income levels in their livestock business. Extreme data points are excluded and variables deviate from the normal distribution are removed to facilitate an accurate analysis and ensure the application of the tests in the SPSS application.
- The validation outcomes indicate that only 4 dimensions, namely age, expenses, costs, and income, are normally distributed.
- The final results highlight that only age and total costs of livestock business differed between breeders in Kec. Sukra and District, Sindang District. Indramayu.

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