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ABSTRACT
Livestock is an important sector in supporting the economy in Paminggir District. This study aims to 1) analyze the adoption of swamp buffalo breeders on livestock technology; 2) analyze the relationship of farmer's socio-economic factors to animal husbandry technology; 3) the obstacles faced by farmers in trying to raise swamp buffalo. The results of the study explain that the level of adoption of farmers to the existence of the recommended technology is in the "low" category. The extension intensity had a significant relationship while the age factor, education factor, length of farming, the number of livestock ownership, and the number of dependents of the family were not significantly related to the adoption rate of swamp buffalo farms. Problems faced by farmers in the maintenance of buffaloes include: traditional maintenance patterns, availability of forage is strongly influenced by the season, less than optimal existing institutions, lack of expertise in handling results, lack of capital availability, lack of access to information sources, lack of *leader opinion* in the livestock group, and the mortality of buffalo calves is still high.

KEY WORDS
Swamp buffalo, technology, socio-economic factors.

The agricultural sector is the driving force of the national economy. One sector that contributes greatly and becomes the main driver of economic growth in a region is the agricultural sector. The livestock sub-sector which is part of the agricultural sector also has an important role in the economy in Indonesia, both in the formation of GRDP, employment, realizing food security and providing industrial raw materials. The livestock industry as a business activity has a very broad scope.

Buffalo has its own advantages which are very beneficial for farmers in rural areas. The existence of swamp buffalo has an important role in the socio-economic life of the community as a source of income and savings for the family of the breeder as well as a meat-producing breeder which aims to fulfil and improve community nutrition, especially in meeting protein needs. Hulu Sungai Utara Regency has the largest population of buffaloes throughout 2011-2020, although there have been ups and downs in the population. The area of Hulu Sungai Utara Regency is 915.05 km^2, most of which is swamp forest. These natural conditions are very suitable for the maintenance of buffalo in accordance with the natural nature of the buffalo that likes water.

The development of the buffalo population goes according to the data from the District Agriculture Office. Hulu Sungai Utara that the population of swamp buffalo in 2020 is 9,024 heads spread over 8 (eight) sub-districts and Paminggir District is the center of swamp buffalo farming. The swamp buffalo population in Paminggir District is spread over 7 villages namely: Pal Batu, Bararawa, Ambahai, Sapala, Tampakang, Paminggir and Paminggir Across. Swamp buffalo are mostly cultivated by livestock farmers, especially in Paminggir sub-district because it is supported by the condition of the area surrounded by water and available forage so that it is suitable for raising swamp buffalo.

One of the factors that we should not ignore in the development process, including in the livestock sub-sector, is technological development. Through technology, the workforce in the livestock sector will increase in capacity and ability, so that the productivity of the

workforce in the livestock sector can also increase. Technology also plays an important role in helping to increase *output* per unit of labour.

Adoption is a form of decision making on new knowledge (new innovation). In making a decision, the community will usually first look at the new knowledge offered. Whether there is an advantage in it, whether there is a match or not, how complex the innovation is, whether it can be tried, and observed by others. These five things are the characteristics or nature of innovation.

This study aims to analyze: (1) Analyzing the level of farmer adoption of swamp buffalo farming technology in Paminggir District, Hulu Sungai Utara Regency; (2) Analyzing the relationship of socio-economic factors to the level of adoption of swamp buffalo farming technology in Paminggir District, Hulu Sungai Utara Regency; and (3) Finding out what problems are faced by breeders in the cultivation of swamp buffalo in Paminggir District, Hulu Sungai Utara Regency.

The benefits of this reserch: (1) Government for input in policy making related to buffalo farming business problems. Swamp; and (2) Field instructor for additional knowledge about how big the level of farmer adoption towards swamp buffalo farming.

METHODS OF RESEARCH

The research was carried out from November 2021 to April 2022. The study was conducted in Paminggir District, Hulu Sungai Utara Regency, one of the largest sub-districts that develop buffalo livestock business swamp. Types of data used in this study are *cross section* data and other supporting data.data *Cross section* obtained from interviews with respondents using questionnaires. Meanwhile, other supporting data were obtained from the literature related to the research topic as well as from several related institutions or agencies such as the Ministry of Agriculture of the Republic of Indonesia, the Agriculture Service of South Kalimantan Province, the North Hulu Sungai Agriculture Service, the Central Statistics Agency (BPS) of South Kalimantan Province, the National Bureau of Statistics (BPS), Centre for Statistics (BPS) Hulu Sungai Utara.

Data used in this study were obtained from Swamp Buffalo breeders in Paminggir District, Hulu Sungai Utara Regency. Sampling of villages and farmers was carried out by *purposive sampling method* (deliberately) namely in Tampakang Village and Sapala Village with the consideration that these two villages were the information centre villages for swamp buffalo farming and were quite active in outreach activities.

To find out the level of farmer adoption of animal husbandry technology, it was analyzed using the *Likert*, namely grouping variables by adding up the scores of the values of a set of relevant variables in the form of positive statements and negative statements.

Table 1 – Positive Statements and Negative Statements at the Adoption Level

No	Positive Statements	Negative Statement
1.	Has benefits for farmers	No benefits for farmers
2.	In accordance with social or customary values in the local area	Not in accordance with social or customary values in the local area
3.	Simple and easy	Difficult and complicated
4.	Can be tried on a small scale	Cannot be tried on a small scale
5.	Easy to observe	Not easy to observe

The scoring for each answer choice is given as follows:

For positive statements:	*For Negative statements:*
Strongly agree (SS) = 1	*Strongly agree (SS) = 5*
Agree (S) = 2	*Agree (S) = 4*
Doubtful (RR)= 3	*Uncertain (RR) = 3*
Disagree (TS) = 4	*Disagree (TS) = 2*
Strongly disagree (STS) = 5	*Strongly disagree (STS) = 1*

To measure the *Likert*, the following formula is used:

$$T = 50 + 10\left(\frac{Xi - X}{s}\right)$$ dimana $$S = \sqrt{\frac{n\left(\Sigma Xi^2\right) - \left(\Sigma Xi^2\right)}{n(n-1)}}$$

Where:

T: standard score;
Xi: respondent score;
X: average group score;
S: group standard deviation;
Category score adoption rate if:

- 50 % = low adoption rate;
- 51% - 79 % = moderate adoption rate;
- 80 % = high adoption rate.

To find out the second objective, namely to find out the factors that influence the level of adoption of technological innovations in the research area, the Spearman Rank correlation method is used. Spearman Rank correlation is used to determine the relationship or influence between two ordinal scale variables, namely the independent variable and the dependent variable. The Spearman Rank correlation method can be formulated as follows:

$$\rho = 1 - \frac{6\sum b_i^2}{n(n^2-1)}$$

Where: ρ = Spearman Rank Correlation Coefficient; *bi* = Variable Data Ranking; n = number of respondents.

Table 2 – Categories, Indicators and Units on the Variables Tested

No.	Variable	Indicators	Indicator	Unit
1.	Age	Less productive Productive Not productive	> 55 15 – 54 0-14	Year
2.	Education	High Medium Low	Senior High School Junior High School Primary School	Year
3	Farming experience	Experienced Less experienced Not experienced	> 10 5-10 < 5	Year
4	Family responsibilities	Much Quite a lot A little	5 – 6 3 – 4 1 – 2	People
5	Livestock Ownership	Much Quite a lot A little	> 9 6- 8 1-5	Tail
6	Counseling intensity	Often Quite often Not often	> 3 kali 2 - 3 kali < 2 kali	Quarterly

To assess how much influence the X variable has on Y, the termination coefficient (KD) is used which is a correlation coefficient which is usually expressed as a percentage of %. Here is the formula for the coefficient of determination:

$$KD = r_s \times 100\%$$

Where: KD: Determination Coefficient; r_s = Spearman rank coefficient.

Interpretation of the correlation coefficient using the following guidelines:

- 0,00 – 0,199 : Very low;
- 0,20 – 0,399: Low;
- 0,40 – 0,599: Medium;
- 0,60 – 0,799: Strong;
- 0,80 – 1,00: Very Strong.

RESULTS AND DISCUSSION

The farmers' adoption rate for Livestock technology in Paminggir Subdistrict, Hulu Sungai Utara Regency, was categorized as "low". This is shown by the farmers' answers to the statements given.

Selecting buffalo breeds is guided by individual characteristics, seeds or introduction of livestock types, genealogy and based on external conditions and age of livestock. Several things that must be considered in applying the principles of a good nursery are: the availability of facilities and infrastructure, maintenance management, and the seed production process which includes marriage, recording, selection, replacement of livestock (replacement), and certification.

Table 3 – The Level of Adaption of Sample Breeders to Breeding Technology

No.	Category	Total	Percentage (%)
1	High	0	0
2	Medium	14	14.00
3	Low	86	86.00
Total		100	100

For buffaloes serves as a place to live or shelter from rain, hot sun and other external disturbances. The ideal cage size for buffaloes is largely determined by the age and sex of the cattle themselves. As a guide for the size of the cage for one buffalo, the following are:

a. Adult female buffalo 1.5 m x 2 m^2;
b. Adult male buffalo 1.8 m x 2 m^2;
c. Children's stage buffalo 1.5 m x 1 m^2.

Table 4 – The Level of Adaption of Sample Breeders to Cage Technology

No.	Category	Total	Percentage (%)
1	High	0	0
2	Medium	41	41.00
3	Low	59	59.00
Total		100	100

An important factor in livestock business is the fulfilment of feed needs. In general, buffalo feed consists of forage ingredients (HMT), agricultural waste and reinforcement (concentrate). Feed technology in ruminants is the activity of processing feed ingredients to improve nutritional quality, increase digestibility and extend the shelf life of feed. Feed technology is also carried out to convert agricultural waste that is less useful into valuable products.

Table 5 – The Level of Adaption of Sample Breeders to Feed Technology

No.	Category	Total	Percentage (%)
1	High	0	0
2	Medium	7	7.00
3	Low	93	93.00
Total		100	100

To have good livestock, efforts can be made to provide vitamins or livestock regularly, administer vaccines and medicines.

Table 6 – The Level of Adaption of Sample Breeders to Disease Control Technology

No.	Category	Total	Percentage (%)
1	High	0	0
2	Medium	35	35.00
3	Low	65	65.00
Total		100	100

The livestock marketing system is a unified sequence of various marketing components that perform the marketing function to facilitate the flow of products from initial hands to final producers. The post-harvest products that can be processed and preserved have a long marketing opportunity because of their long shelf life.

Table 7 – The Level of Adaption of Sample Breeders to Marketing and Postharvest Technology

No.	Category	Total	Percentage (%)
1	High	0	0
2	Medium	10	10.00
3	Low	90	90.00
Total		100	100

The variables in this study consist of independent (independent) variables including: Age, Education Level, Livestock Experience, Number of Livestock, Number of Family Dependents, and Intensity of Counseling. Meanwhile, the dependent variable is the Technology Adoption Rate (Y). The results of the calculation of the Spearman correlation analysis can be seen in Table 8.

Table 8 – Recapitulation of Spearman Correlation Analysis Results of the Relationship between Factors and the Level of Adoption of Swamp Buffalo Husbandry Technology in Paminggir District, Kab. Upper North River

Independent Variable	Dependent Variable	Correlation Coefficient	Sig.
Age	Technology adoption rate	0.075	0.456
Education		0.047	0.643
Farming Experience		0.029	0.773
Livestock Ownership		-0.048	0.636
Family Responsibilities		0.058	0.569
Extension Intensity		0.354**	0.000

In Paminggir District, the age range of breeders is quite varied, namely between 26-78 years. There are 70 people (70%) of productive age ranging from 15-55 years old and the rest are unproductive, namely over 55 years of age as many as 30 people (30%).

Test results *Rank Spearman* obtained *sig.* of 0.456 with an alpha of 0.05, then the *p-value* ≥ 0.05 where H0 is accepted and H1 is rejected. This means that there is no significant relationship between age and the level of adoption of breeders on livestock technology in the research area. Based on the average age of farmers in the research area, which are classified as productive age, at that age a person's activity can still be maximized. This is in accordance with Hasyim's (2006) theory where age can be used as a benchmark in seeing a person's work activity if the age condition is still productive, it is possible for someone to work optimally, so that the application of new technology still needs to be considered.

Most of the breeders graduated from elementary school (SD) as many as 89 people (89%), junior high school graduates as many as 8 people (8%), high school graduates as many as 3 people (3%) so that the level of education of farmers in the research area was categorized as low. Test results *Rank Spearman* obtained an *Sig.* of 0.643 with an alpha of 0.05. then the *Sig.* ≥ 0.05 where H0 is accepted and H1 is rejected. This means that there is no significant relationship between the level of education with the level of adoption of farmers to livestock technology. This is partly due to the long distance traveled to the education center. This is in accordance with Hasyim's (2006) theory which says that the level of formal education owned by farmers will show a broad level of knowledge and insight for farmers to apply what they have obtained to improve their farming, so that farmers cannot directly implement an innovation.

Most of the breeders have experience raising between 5-8 years as many as 17 people (16.83%) and experience raising livestock for more than 8 years as many as 84 people (83.17%). Average breeding experience 18.95 years.

Test results *Rank Spearman* obtained *sig.* of 0.773 with an alpha of 0.05, then the value of *sig* ≥ 0.05 where H0 is accepted and H1 is rejected. This means that there is no

significant relationship between livestock business experience and the level of farmer adoption of livestock technology. This is in accordance with Sidauruk's research in Bioperiandi (2016) which says that the length of farming does not guarantee a farmer to adopt a technology.

In the research area, most of the breeders owning a large number of livestock, namely 9-66 tails as many as 69 people (69%), the rest of the farmers who have sufficient livestock, namely 5-8 heads as many as 21 people (21%), a few, namely 2-4 heads as many as 10 people (10 %). Test results *Rank Spearman* obtained *Sig.* of 0.636 with an alpha of 0.05, then the *P-value* ≥ 0.05 where H0 is accepted and H1 is rejected. This means that there is no significant relationship between the number of livestock owned and the level of adoption of livestock technology in the study area. This is in accordance with Lestari W et al (2009) research, that a little or a large number of livestock kept does not significantly affect the level of innovation adoption in a program.

Breeders have moderate family responsibilities, namely 3-4 people as many as 35 people (35%), small family dependents, namely 1-2 people as many as 65 people (65%). The average number of dependents in the family is 2.0 people. Test results *Rank Spearman* obtained *sig.* of 0.569 with an alpha of 0.05, then the *p-value* ≥ 0.05 where H0 is accepted and H1 is rejected. This means that there is no significant relationship between the number of family dependents and the level of adoption of livestock technology in the research area. This is in accordance with Purba's research (2014) which says that the number of dependents in the family does not have a significant relationship with the level of farmer adoption of technological innovation.

From the results of interviews in the field, it was shown that on average, farmers received counseling once per quarter, meaning that the intensity of extension was relatively low. Test results *Rank Spearman* obtained *sig.* of 0.000 with an alpha of 0.05, then the value of *sig* < 0.05 where H1 is accepted and H0 is rejected. That is, there is a significant relationship between the intensity of extension with the level of adoption of farmers to livestock technology. The value of the correlation coefficient is 0.354, meaning that the level of closeness of the relationship between the variable Intensity of extension with the adoption rate is "Low" and the direction of the relationship is positive, which means it has a unidirectional relationship.

In the research area, the intensity of outreach is still lacking, plus buffalo farming business activities are carried out for generations, so that farmers already have their own concept or way of farming, so that breeders tend not to apply directly. According to Jarmie (2000), extension agents can influence targets or breeders in their roles as motivators, educators, dynamists, organizers, communicators as well as advisors.

Problems faced by Swamp Buffalo Breeders in Paminggir Subdistrict, Hulu Sungai Utara Regency:

1. The maintenance pattern is still traditional or semi-intensive;
2. Availability of forage fodder is strongly influenced by the season;
3. Lack of optimal existing institutions;
4. Lack of expertise in handling livestock products;
5. Availability of capital is still lacking;
6. Lack of access to information sources;
7. There is no Opinion Leader in the livestock group;
8. The mortality of buffalo calves is still high.

CONCLUSION

The adoption rate of farmers in Paminggir sub-district for animal husbandry technology is categorized as low, meaning that very few farmers in the study area receive advice from local field extension workers.

The intensity of the extension have a significant relationship, while the age factor, education, length of farming, the number of livestock ownership and the number of family dependents are not significantly related to the adoption rate of swamp buffalo farms.

The problems of breeders in maintaining swamp buffalo in Paminggir District include: traditional maintenance patterns, availability of forage is strongly influenced by the season, less than optimal existing institutions, lack of expertise in handling results, availability of capital that is still lacking, lack of access to information sources, there is no Opinion Leader in the livestock group, and the mortality of buffalo calves is still high.

SUGGESTIONS

For the swamp buffalo maintenance program in Paminggir District, it is necessary to improve the livestock rearing system. This can be done by changing the rearing system from traditional or extensive to semi-intensive rearing systems and even to intensive rearing systems, in order to produce good livestock and there is no inbreeding or inbreeding *process*.

Extension officers to be more intensive in conducting counseling aimed at changing public opinion or views, changing attitudes and behavior so that new knowledge or livestock technology is easy to understand and apply.

It is hoped that further research will be conducted on the relationship and influence of the adoption of animal husbandry technology on the productivity and income of swamp buffalo farmers.

REFERENCES

1. Bioperiandi, R. 2016. Analysis of Farmers' Adoption Rate of Rice Field Cultivation Technology and Its Relationship with Socio-Economic Factors. Faculty of Agriculture. University of Northern Sumatra. Medan.
2. Hasyim, H. 2006. Analysis of the Relationship between the Characteristics of Coffee Farmers and Income. Journal of Research Communication. Research Institute. University of Northern Sumatra. Medan.
3. Jarmie MJ. 2000. Peranan Ilmu Penyuluhan Menuju Pembangunan Pertanian. Jogyakarta.
4. Lestari W, Hadi S, dan Idris N. 2009. Level of Adoption of Breeder Innovation in Raising Broiler Chickens in Bajubang District, Batang Hari Regency. Jurnal Ilmiah Ilmu-Ilmu Peternakan. Vol XII (1): Hal 18.
5. Purba, RC. 2014. Analysis of Farmers' Adoption Rate on Corn Cultivation Technology and Its Relationship with Socio-Economic Factors. Faculty of Agriculture. University of Northern Sumatra. Medan.

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