

Analysis of the Performance of Inseminator Officers in the UPSUS SIWAB Program in Pasuruan District

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Abstract— The purpose of this study was to observe the performance of inseminators based on the Conception rate that affected the incentives received, the inseminator's work experience, and the distance between the inseminator and the farmers' houses. Research activities have been carried out on March 16-26, 2021 in Pasuruan Regency. The total population of respondents was 23 people, which were inseminators in Pasuruan Regency. The research method used was a survey method with a questionnaire as a tool. Data were analyzed using Stepwise regression and further testing using Spearman Correlations. The results of this study indicated that the Conception rate achieved by the inseminator was 71-80%. The relationship between variables that had the strongest closeness was between the Conception rate and the incentives received by the inseminators, about 0.76 ($p=0.000$), which was different between treatments. It was concluded that the conception rate was strongly influenced by the incentive that the inseminator officers received. Thus, affecting their performances.

Keywords— Conception rate, inseminators, incentive.

I. INTRODUCTION

Farmers rely more on the Artificial Insemination (AI) method for mating cattle sires, due to the intensive rearing, where the cattle are continuously placed in pens and tied. Inseminators who work to serve farmers in the AI mating process must have the qualified ability to fulfill their performance, for example measuring the success rate of pregnancy of the cows will show the quality of inseminators. Another indicator was the success of AI, including service/conception (S/C), Conception rate, and Non-Return Rate (repeat breeding) (Supriyanto, 2016). In addition, according to Hastuti (2008), the success rate of AI is also influenced by livestock conditions, lust detection, experienced inseminators, insemination time, insemination dose, and semen composition. There are several stages in the AI process, including heat detection, straw preparation (semen transport and thawing), and AI implementation. Thus, the performance of inseminator officers strongly influences the pregnancy rate.

The Special Efforts to accelerate increasing population of pregnant cattle and buffalo (UPSUS SIWAB) program is a program launched by the Indonesian government for achieving self-sufficiency in beef cattle that will be achieved in 2026. It is listed in the Indonesian Ministry of Agriculture Regulation No 48/Permentan/PK.210/10/2016 (Ministry of Agriculture, 2016). The regulation emphasizes that the role of inseminators in the UPSUS SIWAB program is very important, so professional inseminator performance is required. Pasuruan Regency is one of the areas chosen in this program for

assistance/supervision. Pasuruan has a very large population of beef cattle, was 112,328 in 2017 (BPS, 2018), and a total of 33,353 livestock households (Disnak Kab. Pasuruan, 2019). The number of active inseminators in Pasuruan regency is 23 people divided into five working areas in each district (Grati, Pasrepan, Wonorejo, Pandaan, and Tutur). The types of cattle served by the inseminator are beef cattle and dairy cattle. In the UPSUS SIWAB program, the emphasis is on cattle having to be AI using PO straw or other local cattle to maintain their germplasm. However, it still happens in the field that farmers ask inseminators to use cross-bred cattle straws, both Limousine and Simental.

Inseminators in the UPSUS SIWAB program are also given incentives from the government for their work. These incentives include AI services, pregnancy checks, and births which need to be recorded as one of the indicators of program success, namely the stability of the beef cattle population. According to Suparyadi (2015), incentives are one of the encouragement/motivations for performance achievements. The problem found in the field is the delay in giving or disbursing incentives by the government that must be received by inseminators, this is feared to have an impact on performance in the service of officers such as the target pregnancy rate for cows or the conception rate. The same thing was explained by Husein (2007) that the most important factor in improving performance is compensation, in this case, the incentives are given to inseminators.

In addition to numbers, the conception rate is also influenced by the skills of the inseminator in implementing AI based on work experience. Inseminators in Pasuruan Regency have an average work experience of over 10 years. So that it is expected to have an optimal pregnancy rate. Distance is also an important factor in the success rate of pregnancy rates, the closer the distance to the farmers, the more precise the time of mating will be accurate. The working radius of inseminators in Pasuruan Regency is very diverse, with an average working area of up to 15 km, with a variety of geographical conditions and footpath conditions. So, it can be one of the factors that reduce pregnancy rates.

Based on the problems above, the authors want to see the performance of inseminator officers in the UPSUS SIWAB program, which can be seen from the success rate of pregnancy using the AI method. The purpose of this study was to look at the performance of inseminators based on the Conception rate (CR) on the incentives received, the inseminator's work

experience, and the distance between inseminators and the farmers.

II. RESEARCH MATERIALS AND METHODOLOGY

This research activity was carried out on March 15-26 2021 in the UPSUS SIWAB Program assistance area in Pasuruan Regency, East Java, Indonesia. The selected respondents in this study were all inseminator officers in Pasuruan participating in the UPSUS SIWAB. The sample selection method uses the census method, namely selecting the entire number of respondents involved. The number of respondents involved in this research activity was 23 respondents.

This research used a survey method. Singarimbun (1983) said that the survey method is a method of collecting research data from one population using a questionnaire as a data collection tool. The data were taken from primary data. The primary data used the interview method with the farmers as research subjects and stakeholders involved in UPSUS SIWAB activities with a questionnaire.

The variable used in this study was the measurement of the performance of field workers/inseminators using several parameters including:

- a. Incentives/ Officer Operational Fees (BOP) received by inseminators in the UPSUS SIWAB program, in IDR. Incentives are the amount of money earned by officers for their work in IDR.
- b. Experience as an Inseminator in Pasuruan Regency (years).
- c. The distance traveled by the officer/inseminator to the farmer locations is calculated in units of distance (km).

The data analysis in this study was taken from the performance of field officers/inseminators based on indicators of AI success and was analyzed using the linear regression method followed by the stepwise (Hanum, 2011). The following analysis model was used:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + D_i$$

where:

Y: Conception rate (CR) (% head)

α : intercept

$\beta_1, \beta_2, \beta_3$: Regression coefficients 1 to 3

X1: Incentive (Rp)

X2: Experience as an Inseminator (years)

X3: Distance to acceptor location (km)

D_i : dummy variable

Advanced statistical analysis using the Pairwise Spearman Correlations method, which was measured using the Minitab ver. 20.0

III. RESULTS AND DISCUSSION

Inseminators

In the UPSUS SIWAB program, the role of inseminators is very important in achieving targets (the success of AI, pregnancy, and birth). So, it takes very optimal efforts of all inseminator officers during the program. The results showed that 23 inseminators participating in the UPSUS SIWAB program, had data on their performance achievements, which was CR. The conception rate is the percentage of cows that fall pregnant during the first mating. In addition, other data also support the performance of inseminators, for example,

incentives received, work experience of inseminators, and the distance between inseminator places and the farmers.

According to Prasetyo and Wahyudin (2013), motivation is the main factor in achieving worker performance. This supports the achievement of inseminator targets. Motivation is the process of arousing behavior, maintaining behavior progress, and channeling specific action behaviors (Habbiburahman & Suwantara (2014). All inseminator officers in Pasuruan Regency must have a permit to carry out artificial insemination (SIM-1). In accordance with the regulations of the Directorate General for Livestock and Animal Health Services (DGLAHS) (2012) which explains that all inseminators must have SIM-1. This permit must be obtained by conducting training as an inseminator at National Artificial Insemination Centre in Singosari, East Java as a training center for prospective inseminators for 21 days. After the permit is granted, it is then registered at the District Animal Husbandry Service Pasuruan and is registered with inseminator associations throughout Pasuruan Regency. If the inseminator officer does not have a license (SIM-I), the responsibility for their work goes to the Provincial Animal Husbandry Service where they work (Feradis 2010).

Characteristics of Inseminator Officers

Characteristics of inseminators are a condition of who work in the livestock business and are able to adopt an innovation. According to Sumarwan (2004) the characteristics of inseminators are individuals who influence the responses to the factors from the innovations introduced.

TABLE 1. Characteristics of Inseminator Officer Data

No	Category	Respondent character (years)	Total
1.	Age	20 – 30	2
		31 – 40	7
		41 – 50	4
		51 – 60	6
		61 – 70	3
2.	Education	71 – 80	1
		Junior High School	1
		Senior High School	16
		Diploma	1
3.	Employment status	Bachelor	5
		Swadaya (freelancers)	19
		Government employees	4

Source: Primary Data

Age of Inseminator Officer

Based on the data in Table 1, the average age of inseminator officers is in the productive age, was 30-60 years, accounting for 19 respondents in that age range. A total of 4 respondents were of retirement age (> 61 years old) and were assigned to help with insemination as freelancer inseminators. Prayitno (2018) explains that age can affect their performance at work. The more mature a person is and with their living load may motivated in their work and will try to find alternative businesses or seriously run their business (Haryanti, 2009). So with the data obtained it can be predicted that the level of seriousness of the inseminator officers is very high for the success of the UPSUS SIWAB program.

Inseminator Education

Education is one of the important characteristics in the development of inseminator human resources in order to increase skills capacity. The data (Table 1) showed that the most dominant level of education of inseminators in Pasuruan Regency was high school, with about 16 respondents. In Indonesia, the requirement to be an inseminator is high school/vocational education, especially in animal husbandry. Even now, these requirements have been changed to a diploma in animal husbandry, although in the current experiment, we only had 1 respondent who met that requirement. There were 5 people who had bachelor's degrees. The level of education is greatly influential in the adoption of information, knowledge, and ways of thinking (Kastalani, 2019).

Employment status

Employment status has a very important role in motivating inseminators to carry out their duties. However, this should not interfere with or reduce the inseminator's sense of responsibility in carrying out its duties to the farmers as the users. According to Crossman & Zaki (2003) there is no significant relationship between job satisfaction and employee performance including employment status. Inseminators in Pasuruan Regency are divided into two employment statuses, namely Civil Servants and freelancers. Based on the data in Table 1, the number of inseminators who are civil servants is 4 respondents, while 19 respondents are freelancers.

Service Per Conception (S/C)

Serve per conception (S/C) is a measurement of AI success in this study. The S/C of cows in Pasuruan Regency was at 1.6-2.0 obtained by 16 inseminators (Table 2).

TABLE 2. Service per Conception cows was achieved by Inseminator officers.

	Level of S/C	The number of inseminators
Service per Conception	1.0 – 1.5	7
(S/C) Score	1.6 – 2.0	16

Source. Primary data

This was in accordance with Toelihere (1993) who said that the normal S/C value was 1.60 to 2.00. The S/C value is influenced by the timeliness of insemination, the fertility level of the cows, and the ability/skills of the inseminator. There was a wide variety of working areas for inseminator officers in Pasuruan Regency. They may work in a wide range of areas and can reach up to a radius of 20 km to the farmer locations.

Performance Achievements of Inseminator Officers

The research method described earlier shows that the inseminator's performance was seen from two variables, namely Y is the pregnancy rate at the first AI or Conception rate (CR) and variable X includes incentives received by the inseminator (X1), length of service as an inseminator (X2), and the distance to the farmer location (X3).

1. Conception rate (CR)/(Y)

One of the achievement indicators for the UPSUS SIWAB program is the pregnancy rate at the first AI or the Conception

rate. The CR values that have been achieved by inseminator officers in Pasuruan Regency can be seen in Table 3.

TABLE 3. Performance Achievements based on the Conception rate.

Conception rate (%)	The number of inseminators
50 – 60	4
61 – 70	5
71 – 80	14

Source: Primary Data

The results showed that the highest CR value obtained by inseminator workers was 71-80% which has been achieved for 14 inseminator workers. Meanwhile, the lowest CR performance was 50-60% at 4 insemination officers. This CR value in this study was much higher than the CR reported by Kastalani (2019), who explained that the highest CR was 62%. The results of another study showed that the highest CR was 36.02% in Jati Agung District, South Lampung Regency (Dirgahayu, 2015).

There were several factors that influenced CR, including the fertility of the bulls and cows and insemination techniques (Fanani et al, 2013). Furthermore, Apriem, (2012) said that the CR was influenced by livestock, heat, estrous conditions, and the cow reproductive tract which affected fertility and pregnancy. All of these supporting factors became the responsibility of the stakeholders involved, including the government in this case The national AI center is a public service agency that has the main task to produce and distribute frozen semen and also developing AI, the farmers who own the productive cows, and inseminators as officers in implementing AI. According to Feradis (2010) reproductive efficiency is a measure of the reproductive success of a group of cows in the first mating or AI. This can be used as an evaluation of the success of an AI.

2. Incentive Officer Inseminator/(X1)

One of the motivations for carrying out work is to get incentives (Suparyadi, 2015). The UPSUS SIWAB program provides incentives for inseminators in order to achieve AI, pregnancy, and birth targets. The incentives received by each inseminator vary depending on their performance. The following is the nominal money earned by inseminators.

TABLE 4. Monthly income of inseminator officers.

Income per month (IDR)	The number of inseminator officers
1,000,000 – 5,000,000	7
6,000,000 – 10,000,000	7
11,000,000 – 15,000,000	7
16,000,000 – 20,000,000	2

Source: Primary Data

From the data above, the amount of money earned by inseminators each month was mostly in the range of 1,000,000-15,000,000 IDR for 21 inseminators. However, there were also 2 inseminators who earned up to 20,000,000 IDR per month. Incentives received by inseminators were based on the inseminator's daily performance. In the UPSUS SIWAB program, incentives were given to the inseminators from the Indonesian state budget. Although we could find that farmers also gave money to the inseminators, at about 35,000-50,000 IDR/visit. Even so, inseminators continued to provide AI

services to meet their responsibilities and to work professionally to achieve optimal results.

3. Inseminator Work Experience/(X2)

Experience as an inseminator must be considered, the more experience an inseminator provides the high the pregnancy rate of cows. So, the length of service that the inseminators could be an indicator of the skill level of AI.

TABLE 5. Length of Service as an Inseminator

The length of the working period as an inseminator (years)	The number of inseminators
1 – 10	5
11 – 20	8
20 – 30	8
30 – 40	1
40 – 50	1

Source: Primary Data

Table 5 showed that the average working period as an inseminator was 20 years. There was a perception that the longer working experience of inseminators, they were able to improve their skills and provided optimal results. Extensive inseminator experience requires a long working period, and increasing inseminator work experience will further improve the quality of their performance (Kotur and Anbazhagan, 2014). Ismanto (2003) stated that a high level of inseminator skills affected the success of AI. Most of the inseminator officers in Pasuruan Regency were senior employees having extensive experience in their duty as inseminators. In fact, several employees who had entered retirement were called back to help on the farm to achieve the UPSUS SIWAB program, especially the AI services.

4. Inseminator Distance to Location/(X3)

In addition to timeliness, the distance between the livestock health service and the farmers' houses also greatly influenced the success of an AI. This can be seen in Table 6. The farthest distance in providing services to farmers was 21-30 km which was done by 2 inseminators and the closest distance was 1-10 km done by 13 inseminators. The average inseminator working distance was 11-20 km experienced by 8 inseminators.

TABLE 6. Inseminator Distance to Location

Distance to farmer Locations (km)	The number of inseminators
1-10	13
11-20	8
21-30	2

Source: Primary Data

The farther the distance to the farmers' houses, the more likely affected the success of AI. Access to the location needs attention, because there were damaged and steep roads. The quality of the semen/straws brought should also be maintained, according to Wahyutae et al (2014) the distance traveled by the inseminators to the farmers' houses greatly affected the quality of the semen, this had an impact on AI failure. Besides, the natural conditions in various areas with extreme weather such as heat can also reduce the quality of the semen itself. So, the inseminator could organize the time at which the AI should be done by looking at the previous mating record as well as AI gears and their vehicle condition.

Inseminator Performance Factors on the successful of Pregnancy Rates

There were several performance factors have been analyzed in this study on the success of pregnancy rate. These factors include the CR as a Y factor, while incentives, work experience/length of work, and distance to farmers as factors X1, X2, and X3. All of these factors have been analyzed using the Stepwise method. This method was used as a basis to look at the influence of the independent variables, such as incentives, length of work, and distance to the farmers' houses on the dependent variable, namely the CR. The following is the result of the equation using the Stepwise method:

$$Y = 54.80 + 0.000001^a X1 + 0.133^b X2 + 0.238^b X3$$

Based on the above equation, it showed that the coefficient value of determination R square (R²) is 0.586, which meant that the variables of incentives, work experience, and distance to farmers' location as a whole had an influence of 58.6% on the variable inseminator performance (CR). While the remaining 41.2% were influenced by other factors that were not included in this study.

Partial Statistical Test

In this study, there was further testing that showed the correlation between variables, both between the independent variables and the dependent variable using the Pairwise Spearman Correlation analysis. The value (sig) used in the results of this analysis was smaller than 0.05 or the absolute value at the significant level $\alpha = 5\%$. The results of the analysis that has been carried out showed a significant value relationship between the independent variables, namely incentives (X1), length of service (X2), and distance to farmers (X3) did not have a strong correlation/attachment to one another. The correlation value between the independent variables was the correlation value between X1 and X2 of 0.180 and a P-value of 0.411. The correlation value between X1 and X3 was 0.167 and the P-value was 0.447. Then the correlation value between X2 and X3 was -0.095 and the P-value was 0.667. These results showed that there was no strong relationship between the independent variables because the resulting correlation value was <1.00. Reidy (2004) stated that the value of a strong correlation between variables must be 0.70 to 1.00.

Correlation analysis has also been carried out between the independent variables and the dependent variable, namely the CR, with the notation (Y). The following is the correlation value between variables. The correlation between Y and X1 was 0.758 with a P-value was 0.000, so it could be explained that the correlation between these variables was very close to >0.70. The P-value was significantly different. While the correlation value between the variables Y to X2 and X3 were 0.35 and 0.25 with P-values were 0.104 and 0.24. It could be explained that the correlation between the Y variable and the X2 and X3 variables did not have a strong correlation. Likewise, a P-value greater than 0.05 indicated no significant differences between these variables.

IV. CONCLUSION

Based on the results and discussion above, it can be concluded as follows:

1. The average conception rate for each inseminator was 71-80% for 14 inseminators. Based on other supporting factors, namely incentives, length of work, and distance to the farmers' houses.
2. The correlation value between the independent variables, namely incentives, length of work, and distance to the farmers' houses, did not have a close correlation with one another, indicated by a correlation value of -0.096 to 0.180.
3. The correlation between the dependent variable (CR) and the independent variables which were an incentive, length of work, and distance to the farmers' houses, the correlation between CR and incentive was the only variable had a strong correlation, was 0.758, and was significantly different. Meanwhile, the correlation between CR rate and length of work experience, and distance to the farmers' houses had a low correlation, which was 0.35 and 0.25.
4. The Conception rate was influenced by how much money the inseminators earned so it affected the performance of inseminator officers in the target of achieving high pregnancy rates.

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