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## Identification of Local Chicken Farmers' Behaviour in Adopting Innovation of Technology Intensification

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**Abstract.** This research aimed to identify behavior of adopting technology innovation of local chicken farmers in Banyumas. Qualitative approach was applied to get a further examination on farmers' characteristics and pattern of adopted maintenance system while domain, taxonomy and component analysis were further applied in accordance to innovation as the main goal. Purposive Random Sampling was used to determine 176 respondents from six groups of local chicken farmers in five selected sub districts. Result showed that maintenance systems applied by the farmers were traditional maintenance (39.77%), semi-intensive (52.27%), and intensive (7.96%). Intensification workshop, in conclusion did not always meet the result expectancy since many farmers still applied traditional and semi-intensive system.

**Keywords:** adoption behavior, technology innovation, intensification, local chicken farmers

**Abstrak.** Penelitian ini bertujuan mengidentifikasi perilaku adopsi inovasi teknologi peternak ayam kampung di Banyumas. Pendekatan kualitatif digunakan untuk menguji lebih jauh karakter peternak dan sistem pemeliharaan yang diadopsi, sedangkan analisis domain, taksonomi dan komponen diterapkan berkaitan dengan inovasi sebagai tujuan utama. Purposive Random Sampling digunakan untuk menentukan 176 responden dari 6 kelompok peternak ayam kampung di lima kecamatan terpilih. Hasil penelitian menunjukkan bahwa sistem pemeliharaan yang diterapkan peternak adalah pemeliharaan tradisional (39.77%), semi intensif (52.27%), dan intensif (7.96). Kesimpulannya, penyuluhan mengenai intensifikasi tidak selalu memenuhi hasil yang diharapkan karena banyak peternak yang masih menerapkan sistem tradisional dan semi intensif.

**Kata kunci:** perilaku adopsi, inovasi teknologi, intensifikasi, peternak ayam kampung

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### Introduction

The Local Government of Banyumas especially the Government Official of Livestock Services has made efforts to increase the potential of local chicken farming in villages for a better and faster improvement by establishing farmer group management, providing technology innovation aid kit, physical aid kit and technical mentoring in local chicken farming to develop farmers' behavior so that they no longer applied traditional maintenance system. Instead, they were willing and able to conduct semi-intensive and intensive system (Department of Agriculture, 2007). Research on the potential of local chicken development showed that Rawalo,

Kebasen, Banyumas and Patikraja and Karang Lewas sub districts were potential and basis of local chicken (Dharmawan and Suyono, 2009); therefore, further research on identification of farmers' adopting behavior towards intensification was needed.

The success of adopting intensification of technology innovation was observable from the process and results the farmers gained. The application of technology innovation included three main pillars, namely breeding, feeding and management which could support intensification proposed by the government as a strategic model to increase local chicken productivity in rural area (Subiharta et al., 1994 and Supriyatna, 2010).

Technology supports the rate of local farming development if the process of technology transfer is in accordance with the increasing and more complex need of the society. In fact, the process of technology transfer is often not in line with people's dynamic needs or contrarily, people's need rate is slow in certain sectors including local chicken sub sector (Setiana, 2010).

The ineffectiveness of adopting innovation of local chicken intensification process on the farmers is generally due to the farmers' unsupportive internal and external characteristics, mainly on education, income and over anxiety about avian influenza. This is in line with the research result (Erlina et al., 2004) that there was correlation between internal and external characteristics with the level of technology adoption in which external information tend to have a faster effect on adoption than that of internal community (Dederen et al., 2003).

## Materials and Method

Identification started from observing the farmers' education, profession, social status, behavior in adopting technology innovation in local chicken intensification, and the factors underlying the decision to adopt intensification of technology innovation. If farmers were less serious and not strongly motivated in adopting innovation and merely following the trend, it would be likely that they return to the traditional maintenance pattern. Santoso et al. (2005) reported that technology adoption could survive and continue with a serious management due to the many internal complex factors.

176 local chicken farmers from five sub districts namely Karanglewas, Banyumas, Kebasen, Rawalo and Patikraja were involved in this study. Sample taken by Purposive Random Sampling, in that the farmers were the member of local chicken farmer group with experience

of technology innovation in workshop group. The data collection techniques were semi-structural in-depth interview, selective observation to obtain more detail data, personal and group discussion as well as documentation of farmers' general activities to find out the fact about the characteristics of intensification technology innovation and the characteristics of farmers. Concerning the farmers' behaviour in adopting technology innovation, it was significant to comprehend the focus of the study and information needed in constructing generalisation (Danim, 2004).

Data was analyzed using descriptive qualitative, followed by analysis of domain, taxonomy and componential (Sugiyono, 2009 and Bungin, 2003).

## Results and Discussion

### Local chicken production system

Local chicken maintenance system in the observed area was divided into three, namely Traditional, Semi-intensive and Intensive systems based on the rate of human interference in farming management. The more human interference the more intensive it became. This was in line with Mugiyono et al. (2001) that human interference in breeding, feeding and management made the farming more intensive.

Traditional maintenance system in this study was in which the chicken were left for self-feeding with a little of human intervention. The chicken were not caged properly as needed but only a simple cage to rest in the evening, generally attached nearby the kitchen. Feed was given from food remaining or rice bran and vegetables in the morning before the chicken were released to feed themselves. Vaccination was absent from maintenance process and the chicken were mating naturally without any interference from the farmer. Traditional chicken farming was usually a small scale farm raising 10 to 20 chickens with only one or two

cocks, therefore the productivity rate was also low. As stated by Subiharta et al. (1994) that small scale farm had a high mortality rate due to the absence of vaccination that led to being prone to disease.

A concerning matter observed by the researcher was farmers in traditional management sold their chicken to their own neighbours when it exceeded the keeping ability. As a result, almost every farming house hold in those areas raised chicken, although in small number which made the total number of livestock in the area relatively high.

The description of three local chicken production systems in this study namely intensive, semi intensive and traditional were related to the breeding purpose as seen in Table 1.

The percentage of farmers applying intensive, semi-intensive and traditional breeding systems were mostly at 31-50 years old or 51.14% that belong to productive stage for optimum work. Farmers above 50 years old comprised a relatively higher portion or 42.05% than young farmers below 30 or 6.82%. It showed that local chicken breeding was more appealing to both the productive and elderly age. Age could affect the learning process and decision making on adoption. It was in line with Isbandi (2011) that productive age has a better ability to understand and absorb technology innovation than people above 50.

In relation to education, most farmers or 50.57% graduated from primary school, followed by those of junior high school, senior high school and undergraduate as much as 26.70%, 18.18% and 4.55% respectively. Table 1 shows that most traditional and semi-intensive farmers were primary school and junior high school graduates, while the intensive one comprised mostly on senior high school graduates. It indicated that intensive management system required a higher education level background, as stated by Isbandi (2011) that people with high education

background had a relatively better response in learning process. Farmers or breeders with this education level tended to be more risk-taking and had sufficient fund for investment (Ban and Hawkins, 2003).

Farmers with less than four-year breeding experience were relatively few in intensive systems, and the decision to apply this system took a relatively longer time. Farmers in intensive and semi intensive generally had four to 11 year's experience. For traditional farmers to switch to semi intensive or intensive system required a number of factors to consider and they were less encouraged to adopt technology innovation due to low guidance intensity from the counselor. As stated by Pou et al. (2006) that the role of workshop counselor to provides an intensive guidance and motivation had a significant effect towards the acceptance of technology innovation.

The number of chicken is strongly related to the applied maintenance system. Table 1 shows that the most farming scale was house hold scale with 12-25 heads dominating the whole three maintenance systems. As stated by Mugiyono et al. (1989) that semi intensive and intensive maintenance system needed to consider the ideal minimum farming scale since intensive system was less profitable and efficient for household scale.

In intensive, semi intensive and traditional system, farmers were mostly oriented to raise chicks though some were still yet to do specialization. The highest percentage in intensive system aimed to get chicks and only a few to get the eggs. Farmers' orientation in producing chicks was relatively high; therefore, they needed technology innovation dealing primarily with reproduction which had been applied by farmers with ratio of male and female chicken either in intensive or semi intensive was 1:7. It was in line with Besbes (2009) that sex ratio should be 1:5-10 on condition that the male was qualified.

Tabel 1. Farmers' characteristics with three different management system

No.	Farmers' Characteristic	Intensive		Semi intensive		Traditional		Total	
		N	%	N	%	N	%	N	%
<b>1</b>	<b>Age</b>								
	Low < 30	2	14.29	4	4.35	6	8.57	12	6.82
	Average 31 - 50	7	50.00	46	50.00	37	52.86	90	51.14
	High > 50	5	35.71	42	45.65	27	38.57	74	42.05
	<b>Total</b>	<b>14</b>	<b>100</b>	<b>92</b>	<b>100</b>	<b>70</b>	<b>100</b>	<b>176</b>	<b>100</b>
<b>2</b>	<b>Education</b>								
	Primary school	1	7.14	44	47.83	44	62.86	89	50.57
	Junior high	3	21.43	23	25.00	21	30.00	47	26.70
	Senior high	9	64.29	18	19.57	5	7.14	32	18.18
	Undergraduate	1	0.00	7	7.61	0	0.00	8	4.55
	<b>Total</b>	<b>14</b>	<b>100</b>	<b>92</b>	<b>100</b>	<b>70</b>	<b>100</b>	<b>176</b>	<b>100</b>
<b>3</b>	<b>Experience</b>								
	Low < 4 years	3	21.43	32	34.78	12	17.14	47	26.70
	Average 4 – 11years	6	42.86	43	46.74	20	28.57	69	39.20
	High > 11 years	5	35.71	17	18.48	38	54.29	60	34.09
	<b>Total</b>	<b>14</b>	<b>100</b>	<b>92</b>	<b>100</b>	<b>70</b>	<b>100</b>	<b>176</b>	<b>100</b>
<b>4</b>	<b>Farming Scale</b>								
	12-50 Heads	8	57.14	70	76.09	70	100.00	148	84.09
	51-99 Heads	5	35.71	16	17.39	0	0.00	21	11.93
	> 100 Heads	1	7.14	6	6.52	0	0.00	7	3.98
	<b>Total</b>	<b>14</b>	<b>100</b>	<b>92</b>	<b>100</b>	<b>70</b>	<b>100</b>	<b>176</b>	<b>100</b>
<b>5</b>	<b>Farming Goal</b>								
	Chicks	11	78.57	38	41.30	39	55.71	88	50.00
	Mix	2	14.29	47	51.09	30	42.86	79	44.89
	Egg	1	7.14	7	7.61	1	1.43	9	5.11
	<b>Total</b>	<b>14</b>	<b>100</b>	<b>92</b>	<b>100</b>	<b>70</b>	<b>100</b>	<b>176</b>	<b>100</b>
<b>6</b>	<b>Job</b>								
	Homemaker	4	28.57	29	31.52	1	1.43	34	19.32
	Laborer	0	0.00	11	11.96	30	42.86	41	23.30
	Entrepreneur	4	28.57	21	22.83	27	38.57	52	29.55
	Private business	5	35.71	15	16.30	12	17.14	32	18.18
	Civil servant	0	0.00	11	11.96	0	0.00	11	6.25
	Retiree	1	7.14	5	5.43	0	0.00	6	3.41
	<b>Total</b>	<b>14</b>	<b>100</b>	<b>92</b>	<b>100</b>	<b>70</b>	<b>100</b>	<b>176</b>	<b>100</b>

The occupation of local chicken farmers varied from homemaker, laborer, farmer, entrepreneur, civil servant to retiree. Table 1 shows that most local chicken breeders were farmers, where interestingly farmers with semi-intensive management system were mostly entrepreneur or private businessperson as much as 35,715 but no breeders listed as laborer or civil servant in semi-intensive system. It was likely that socio-economic condition of the laborers did not support the venture of local chicken breeding with intensive

maintenance system due to farmers' lack of time after working hard until afternoon.

The result of domain, taxonomy and component analysis showed that the low productivity of local chicken farming was influenced by several interrelated factors, among which were low input observed from household scale in general, genetic factor or non-selected excellent seed of local chicken and a relatively high traditional management system.

## Conclusions

The behavior of local chicken farmers in Banyumas in adopting innovation of technology intensification varied according to the type of production system. Result showed that most farmers already applied semi intensive system (52.27%), and the rests were of traditional and intensive system as much as 39.77%, and 7.96%, respectively. This condition was strongly related to the observed variables namely age, education, experience, farming scale, farming goal and farmers' job. A sequence of workshop and guidance of intensive system accordingly, could not encourage the farmers to be willing and able to apply it due to many considerations as intensive system had not become their primary goal and a number of constraints towards breeding goal specification were difficult to handle by the farmers themselves.

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**Comment [j1]:** Saran: lokasi (Banyumas dihapus saja)

**Comment [j2]:** Kesimpulan tidak pas dengan judul; jadi bagaimana perilaku peternak dalam mengadopsi teknologi? Kesimpulan harusnya bisa langsung menjawab tujuan penelitian