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# The Role of Communication Media in Increasing Skills and Value-Added Production of Beef Cattle Farming in Minahasa Regency

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***Abstract***— *This study aims to analyze the role of communication media, both conventional and digital media, in increasing the skills and productivity of cattle farmers in Minahasa District, Indonesia. The research was carried out using survey and sampling methods by purposive sampling with the main sample criteria, namely: having a computer or smartphone that uses it as a source of information and innovation in beef cattle farming science and technology. Research problem: conventional media is increasingly being replaced by digital media with computer/smartphone facilities, where cattle farmers obtain information on livestock science and technology at any time and anywhere with an internet communication network. What are the roles of communication media, both conventional media and digital media, in improving the skills and productivties of cattle farmers in Minahasa Regency. To answer the problem, analyzes of the relationship between independent variables were used, namely the role of print media ($X_1$), the role of classic electronic media ($X_2$), and the role of internet electronic media ($X_3$) with the dependent variable namely skills ($Y_1$) in raising beef cattle and value added ($Y_2$) to beef cattle production, and the effect of the cattle raising skill variable ($Y_1$) on the added value variable of cattle production ($Y_2$) using Pearson correlation analysis. The results of the analysis show that improving the skills of raising beef cattle in rural areas can be done by streamlining factors other than counseling/training in the field, also by utilizing digital communication media which are more populous. Beef cattle farming skills affect the added value of cattle farming, so that farmers' skills still need to be improved. The communication media factor, especially digital media, has become the dominant factor for improving cattle farming skills using digital electronic media (computers, tabs and smartphones). The technical skills of cattle farming due to digital communication media facilities affect the added value of both production and the economy of cattle farming, so that the skills of cattle farmers need to be improved through experience of science and technology content of cattle farming on digital communication media. Digital communication media that are often used by cattle farmers, such as social media YouTube, Facebook, blogs and others, which are increasingly being watched by cattle farmers.*

***Keywords***—***Communication Media, YouTube, Facebook, Cattle Farming***

## I. INTRODUCTION

Agricultural communication is a way of conveying understanding and knowledge of agricultural science and technology to the public, especially those working in the agricultural sector regarding information about science and technology in the agricultural sector including the sub-sectors of food crops, plantations, livestock, fisheries and forestry. Agricultural communication in its use for the field of extension is very important to support the

absorption of information from extension workers, but what is happening now is that not all new technologies offered by extension agents are able to be absorbed and adopted by farmers (Anggriyani, 2015), so that farmers take advantage of alternative sources of information through communication media that can be done independently.

Increased knowledge, education, income and communication accessibility make it easier for farmers to find sources of information. The current phenomenon has been a change in the fulfillment of information needs and increasingly commercial farming behavior, which demands a change in the role, system and paradigm of agricultural extension (Puspadi, 2002 and Kissya, 2016). The internet is an alternative that can be used to bridge the information gap. Communication using internet media is technically and physically a new phenomenon in the process of human communication at the end of the 20th century and has become an integral part of society, education, industry and government (Effendi, 2010 and Oktavia, 2019).

Utilization of communication media is currently an important factor in channeling and conveying information and innovation to farmers both through print media, conventional electronic media and internet electronic media. The role of this communication media is expected to be able to add and increase the amount and quality of information relating to livestock farming in rural areas, thereby increasing the skills of farmers in running livestock farming. The role of the mass media, both print and electronic media, in providing information and increasing farmer knowledge, especially information related to technological innovation and livestock farming management.

Digitalization has enormous potential in Indonesia, including in the livestock sub-sector. Digitalization in the livestock sub-sector and the use of the latest technology such as the Internet of Things is believed to be able to significantly increase productivity in the livestock sub-sector from upstream to downstream (Ismail, 2019). The development of information and communication technology, such as computers and communication technology devices, can be used to bridge information and knowledge that is spread between those who master information and those who do not (Mulyandari et al., 2010, Nurmalina, 2012 and Listiana et al., 2019).

The internet telecommunications network and smartphone facilities that are already available support rural farmers to obtain information on livestock science and technology at anytime and anywhere as long as an internet communication network is available. Balitbangkominfo (2021) states that, in Minahasa Regency, the development of information and communication technology is very rapid so that it has affected the pattern of mobility and community development.

Beef cattle farm in Minahasa Regency is generally carried out in a traditional and small scale way, with a semi-commercial system, both breeding farms and feedlot farms. Sources of information on livestock science and technology come from government extension workers as well as conventional communication media and the increasingly popular digital media (computers/smartphones). The significantly factors effected farmers' income from cattle farming in Minahasa Regency were number of cattle, family labor, inseminator cost, cost of natural mating, value added of cattle and land size (Wantase and Paputungan, 2017). Regarding the process of the cattle marketing by cattle farmers in rural areas who want to sell their cattle, contact cattle traders to market their cattle in the cattle market, Kawangkoan, Minahasa Regency (Osak, et al. 2021).

The urgency of research, the role of communication media, both print media, classic electronic media (conventional) and internet electronic media (digital) in improving the farmer skills and value added in cattle production in Minahasa Regency. This study aims to analyze the role of communication media, from classical media (conventional) to current digital media, in improving the skills and the value added production of cattle farmers in Minahasa Regency.

## II. RESEARCH METHODS

This research was carried out in Minahasa Regency, North Sulawesi Province, where 5 sub-districts with the largest population of cattle were selected according to BPS Minahasa (2021), namely Langowan Barat sub-district, Tompaso sub-district, Tompaso Barat sub-district, Kawangkoan sub-district and Kawangkoan Barat sub-district.

The data collection technique for this study used a survey method according to the instructions for collecting data (Sugiono, 2010). The primary data obtained follows from direct observation in the field, interviews and filling out of inquiry forms (questionnaires). The research was carried out using survey and sampling methods by purposive sampling with the main sample criteria, namely: having a computer or smartphone that uses it as a source of information and innovation in beef cattle farming science and technology. Variables and measurements:

(1) The role of print media communication media ($X_1$) in improving the skills of farmers, was measured using

a Likert rating scale through variable indicators in the questionnaire, namely Strongly disagree (score=1), Disagree (score=2), Undecided ( score=3), Agree (score=4) and Strongly agree (score=5).

(2) The role of classical or conventional electronic media ($X_2$) in improving the skills of farmers, was measured using a Likert rating scale through the variable indicators in the questionnaire, namely Strongly disagree (score=1), Disagree (score=2), Undecided (score=3), Agree (score=4) and Strongly agree (score=5).

(3) The role of internet or digital electronic media ($X_3$) in improving the skills of farmers is measured using a Likert rating scale through variable indicators in the questionnaire, namely Strongly disagree (score=1), Disagree (score=2), Undecided (score=3), Agree (score=4) and Strongly agree (score=5).

(4) Cattle raising skills ($Y_1$), namely the skills of farmers to raise cattle after using communication media, be it print media, classic electronic media or internet electronic media, were measured using the Likert rating scale through variable indicators in the questionnaire, namely very low (score=1), Low (score=2), Same (score=3), High (score=4) and Very High (score=5).

(5) The added value of cattle production ($Y_2$), namely the additional production value after the use of communication media, be it print media, classic electronic media or internet electronic media, was measured using the Likert rating scale through the variable indicators in the questionnaire, namely very little (score=1), Slightly (score=2), Equal (score=3), Large (score=4) and Very Large (score=5).

The analysis will be used to measure the relationship between the independent variables of the role of the communication media, be it print media ($X_1$), the role of classical electronic media ($X_2$), and the role of internet electronic media ($X_3$) with the dependent variable Value added cattle production ($Y_1$), and the effect of the cattle raising skill variable ($Y_1$) on the added value variable of cattle production ($Y_2$) using Pearson correlation analysis according to the formula (Riduwan, 2003), as follows:

$$r = \frac{N.\ \sum XY - (\sum X).(\sum Y)}{\sqrt{\{N.\sum X^2 - (\sum X)^2\}.\{N.\sum Y^2 - (\sum Y)^2\}}}$$

The level or category of the closeness of the relationship between variables can be seen in Table 1. To test the significance of Pearson correlation (r), the t-test is used with the formula:

$$t = \frac{r\sqrt{N-1}}{\sqrt{1-r^2}}$$

For this research:

$r$ = correlation coefficient between $X_i$ and $Y_j$ variables

$t$ = significance coefficient value

$N$ = number of observations

$X_i$ = the role of communication media networks, both print media ($X_1$), the role of classical electronic media ($X_2$), and the role of internet electronic media ($X_3$)

$Y_1$ = farmer skills in cattle production

$Y_2$ = added value of cattle production

Table 1. Interpretation of the Correlation Coefficient

| Coefficient Intervals | Relationship Level |
|---|---|
| 0.800 – 1.000 | Hight |
| 0.600 – 0.800 | Strong |
| 0.400 – 0.600 | Enough |
| 0.200 – 0.400 | Low |
| 0.000 – 0.100 | Very low |

*Source:* Riduwan, 2003

## III. RESULTS AND DISCUSSION

Minahasa Regency has superior livestock, namely beef cattle, most of which are spread over several sub-districts, namely Langowan Barat, Tompaso, Tompaso Barat, Kawangkoan and Kawangkoan Barat sub-districts. The development of the cattle business in the five sub-districts above is very fluctuating, due to the existence of the blantic cattle market in Kawangkoan, where the five sub-districts above are located or relatively close to the cattle market. In the cattle market there are quite a lot of intermediary traders (blantic), where the intermediary determines the price of cattle according to body weight which the cattle farmer does not know (Elly, 2010), and barter, non-barter and trade-in transactions of cattle occur (Kimbal, 2012). The blantic cattle market can have a positive impact on economic development, the cattle business can increase farmer households' income, provide animal food, provide raw materials for various industries and create jobs for the community, especially in Minahasa Regency and generally in North Sulawesi Province. Minahasa Regency is one of the areas that has the largest number of cattle population in North Sulawesi.

**Characteristics of Respondents**

The results showed that the characteristics of respondents based on gender as a whole were male as many as 36 farmers with a percentage of 90% and interestingly there were women as many as 4 farmer or 10% as cattle farmers either helping their husbands or assisted by sons. This shows that even though the cattle farming requires more manpower and generally the men are stronger at work, there are women as cattle farmers. This is in line with research from Ervina, et al (2019) that the majority of livestock farming actors are male because this work requires more physical strength, but does not rule out the possibility that this work is carried out by women.

Characteristics of respondents based on age showed that most of the age of the farmers, namely at the age of 46-60 years, amounted to 22 farmers with a percentage of 55%, while the smallest age range was at the age of 15-30 years, amounting to 3 farmers or 7.50%. Putri, et al (2019) stated that livestock farming actors aged 15-60 years are called working age or productive age, ages 0-14 are called young or not productive age, and those over 60 years are called old age.

The results showed that the characteristics of respondents based on the level of education of cattle farmers were high school graduates or the equivalent of 22 people or 55% of the total sample, while the least at the education level of elementary and tertiary education were 3 people each with a percentage of 7.50%. There are 12 cow farmers who have junior high school education with a percentage of 30%. The level of education is an important factor that influences the mindset and performance of farmers in conducting cattle farming. This is in line with Waris, et al (2019) stating that the education level of cattle farmers, both formal and non-formal, will affect the way of thinking and performance in the farming being carried out.

Livestock farming experience is an important capital in the success of cattle farming, because the level of work experience will affect the mindset in implementing innovation. In general, all respondents had good experience in raising cattle, where most of them had experience of 21-30 years (22.50%) and 31-40 years (52.50%). Otoluwa, et al (2016) that the longer farmers cultivate beef cattle, it allows them to learn more from their experience, so that they can easily accept technological innovations related to the farming being carried out.

**Analysis of the role of communication media in improving livestock farmers' skills and value added production of cattle farmers**

Agricultural communication in the field of extension is very important to support the absorption of information from extension workers to farmers, so that messages conveyed by agricultural extension workers can be received and implemented properly and correctly. However, what happened was that not all of the new technologies offered by extension workers were able to be absorbed or adopted by farmers (Anggriyani, 2015). For the effectiveness of the communication process for the absorption of information from extension agents to farmers, a delivery medium called communication media is needed. Communication media has an important role in the extension communication process. Extension communication media as a set of tools used by extension agents in communicating with target breeders. The tools used are known as media, while communication is a way of delivery. The role of communication media, both print media (such as newspapers, magazines, leaflets/brochures and so on), conventional/classical electronic media (radio and television) and internet electronic media (computers and smartphones) is so important in improving the skills of livestock farmers and added value production of cattle farms.

Statistical analysis used Pearson correlation analysis to measure the role of independent variables (influence), namely print media ($X_1$), classic electronic media ($X_2$), and digital electronic media ($X_3$) on the dependent variable, namely skills ($Y_1$) and added value ($Y_2$) of cattle farming, also the effect of skills ($Y_1$) on the added value ($Y_2$) of cattle farming.

*Table 2 Results of Pearson Correlation Analysis*

| Correlations | | | | | | |
|---|---|---|---|---|---|---|
| | | $X_1$ | $X_2$ | $X_3$ | $Y_1$ | $Y_2$ |
| $X_1$ | Pearson Correlation | 1 | .107 | -.207 | -.241 | -.293 |
| | Sig. (2-tailed) | | .511 | .201 | .134 | .067 |
| | N | 40 | 40 | 40 | 40 | 40 |
| $X_2$ | Pearson Correlation | .107 | 1 | -.346* | -.571** | -.667** |
| | Sig. (2-tailed) | .511 | | .029 | .000 | .000 |
| | N | 40 | 40 | 40 | 40 | 40 |
| $X_3$ | Pearson Correlation | -.207 | -.346* | 1 | .775** | .828** |
| | Sig. (2-tailed) | .201 | .029 | | .000 | .000 |
| | N | 40 | 40 | 40 | 40 | 40 |
| $Y_1$ | Pearson Correlation | -.241 | -.571** | .775** | 1 | .903** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Sig. (2-tailed) | .134 | .000 | .000 | | .000 |
| | N | 40 | 40 | 40 | 40 | 40 |
| $Y_2$ | Pearson Correlation | -.293 | -.667** | .828** | .903** | 1 |
| | Sig. (2-tailed) | .067 | .000 | .000 | .000 | |
| | N | 40 | 40 | 40 | 40 | 40 |

*. Correlation is significant at the 0.05 level.

**. Correlation is significant at the 0.01 level.

The results of the analysis can be seen in Table 2 showing the results of the correlation analysis or variable relationship. It can be seen that the correlation value of the variable role of print media ($X_1$) with the cattle farming skill variable ($Y_1$) is -0.241, negatively correlated means it can reduce skills even though it is classified as a low correlation with a significance level of 0.134 ($p$>0.05), which means that the role of print media no longer plays a role in increasing the skills of cattle farmers.

Likewise, the correlation of the role of print media ($X_1$) on the added value of cattle production ($Y_2$) of -0.293 is low and negative, even with a significance level of 0.067 ($p$ <0.05) indicating that there is a significant effect on the added value of cattle production.. This can be due to print media such as newspapers, magazines, leaflets being read over and over again to try to increase the economic value of cattle, for example in terms of cattle marketing. Ruyadi et al (2017) reported that the highest frequency of the use of communication media by agricultural extension officers in the form of brochures and leaflets by agricultural extension officers was not too high, where brochures and leaflets served as supporting media for agricultural extension activities. The reason for using brochures and leaflets is because the information contained in brochures and leaflets is in accordance with the needs in supporting agricultural extension activities, with the aim of increasing knowledge in supporting agricultural extension activities.

The results of the correlation analysis or relationship between the role variable of classical electronic media ($X_2$) and the variable cattle farming skills ($Y_1$) are -0.571 with a negative correlation, but it has a significance level of 0.000 ($p$<0.01), which means that the role of classical electronic media can reduce the increase in cattle farming skills. Likewise, the correlation of the role of the print media ($X_1$) on the added value of cattle production ($Y_2$) is -0.667 with a negative correlation, with a significance level of 0.000 ($p$<0.01) indicating a strong effect on reducing the increase in the added value of cattle farming. This could be due to the fact that classic electronic media such as television and radio are being watched less by farmers for agricultural science and technology broadcast programs.

The results of the correlation analysis of the relationship between the variable role of digital electronic media ($X_3$) and the cattle raising skill variable ($Y_1$) of 0.775 are classified as very strong correlation and have a very real significance level of 0.000 ($p$<0.01), which means the role of digital internet electronic media plays an important role in improving the skills of raising cattle farming. Likewise, the correlation of the role of digital internet electronic media ($X_1$) on the added value of cattle production ($Y_2$) of 0.828 is classified as very strong or high, with a very significance level of 0.000 ($p$<0.01) indicating that there is a very significant influence. This is because internet electronic media such as YouTube, Facebook, Instagram, blogs and others are increasingly being watched by the public and farmer, which can be watched directly or the recordings can be watched online at any time. In addition, those social media have posted various appropriate and practical sciences and technologies that can improve the skills of farmers both technically and economically which lead to increased productivity, especially the added value of cattle production.

The results of the correlation analysis of the relationship between the variable cattle farming skills ($Y_1$) and the variable added value of cattle production ($Y_2$) of 0.903 are classified as high or very strong correlations and have a very real significance level of 0.000 ($p$<0.01), which means the role of cattle raising skills variable plays a very important role in increasing the added value of cattle production. These results indicated that increasing the skills of cattle farmers, will further increase the economic added value of cattle farming.

The strategy that can be implemented is to develop agricultural production practices using appropriate techniques and non-agricultural businesses that are environmentally friendly and in accordance with the principles of sustainable development (Sondakh, et al., 2016). The production of cattle farming is mainly to increase the added value of cattle farming economically in increasing the household income of livestock farmers. The results of the analysis have shown that the working skills of cattle farmers affect the added value of cattle farming, so that the skills of cattle farmers need to be improved. To improve the skills of farmers, like it or not, it has to be done by making the dominant factors more effective according to the latest developments in digital communication media.

## IV. CONCLUSION

The communication media factor, especially digital media, has become the dominant factor for improving cattle farming skills using digital electronic media (computers, tabs and smartphones). The technical skills of cattle farming due to digital communication media facilities affect the added value of both production and the economy of cattle farming, so that the skills of cattle farmers need to be improved through experience of science and technology content of cattle farming on digital communication media. Digital communication media that are often used by cattle farmers, such as social media YouTube, Facebook, blogs and others, which are increasingly being watched by cattle farmers.

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