



Science

## **THE ROLE OF CYBER EXTENSION AS MEDIA INFORMATION OF PLANTATION GENETIC RESOURCES IN THE INSURANCE OF COCOA RESULTS IN SOUTH MANOKWARI REGENCY WEST PAPUA**

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### **Abstract**

This study aims to determine the benefits of cyber extension as a source of information on plant genetic resources in the availability of cocoa yields and the level of information adoption for farmers. The method used in this research is descriptive analysis method. Determination of research location by purposive sampling that is expansion areas that yield cocoa fruit. Census data retrieval method, using face to face technique. Extension Implementation in using cyber extension media especially on the utilization of mobile phone and Internet media in obtaining information. It also provides positive benefits in the development of extension competence, especially in utilizing cyber extension, in seeking agricultural information through Cyber extension to find information on agricultural cultivation concerning the availability of cocoa beans at the farm level. The results showed that the extent of the extension implementer in utilizing cyber extension in the category was 82% and 18% in the high category. Ownership of media information for the average trainer has a mobile phone (100%) and Media Laptop (59.09%), long became extension 5-10 years (77.27%), extension workers have the education level of SMK/SPMA (72.73%) and internet usage per day for extension workers 1-2 hours.

**Keywords:** Implementation; Extension; THL-TBPP; Cyber Extension; Availability of Agricultural Information and Cacao.

**Cite This Article:** Latarus Fangohoi, Sugiyanto, Keppi Sukesi, and Edi Dwi Cahyono. (2017). "THE ROLE OF CYBER EXTENSION AS MEDIA INFORMATION OF PLANTATION GENETIC RESOURCES IN THE INSURANCE OF COCOA RESULTS IN SOUTH MANOKWARI REGENCY WEST PAPUA." *International Journal of Research - Granthaalayah*, 5(11), 343-350. <https://doi.org/10.5281/zenodo.1117179>.

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### **1. Introduction**

Along with the development of information technology (IT) agricultural extension activities conducted extension workers in West Papua today is not only done by using conventional communication media, namely using radio, television, mass media and lectures and direct visits to farmers communities in the availability of cocoa beans, but extension workers and farmers are

already utilizing Cyber Extension / web as a medium of information through computers and smartphones which is an information system using the internet media. The synergization of agricultural innovations that are needed by extension workers and farmers to support the development of sustainable innovation in the future without having to meet directly with extension workers and farmers and buyers in buying and selling agricultural commodity. In the developing world there is often an imbalance of information in the communication system caused by the centralization of information through modern mass media in big cities while the rural community is the agricultural sector as a central sector supported by the spread of the vast majority of the population living and living in rural areas with livelihoods as farmers and still rely on face-to-face personal communication as their communication system. Statement (Sugiyanto, 2001 in Amin 2013) the process of communication is a process of delivering information both to himself and to others verbally, motion mimic, physical and written to change one's behavior both knowledge and skills to an innovation. Information technology has been maximally utilized to communicate information effectively into the development of work activities. This phenomenon is not limited only to urban areas but also to the influence of rural areas, where with the help of communications technology, the entire government program launched to bring rural areas within the scope of advanced development (Bhavan, 2016). Physically present the internet in the community, the extension workers continue to monitor the development of agricultural information as well as the behavior of farmers in obtaining information, communicate with each other to maintain mutual trust towards the characteristics of information users, and rewards to influence their behavior in obtaining agricultural information (Bangalore *et al.*, 2016). Based on the theoretical framework of Wilbur Schramm's study of communication for development, the role of media in agricultural development through the use of Cyber extensions in informing, instructing and enabling farmer participation for development globally (Bhavan, 2016). Environmental phenomena and biological resources in West Papua province indicate that West Papua is rich in plant genetic resources. A genetic resource (SDG) is a direct or indirect biological foundation that can sustain the welfare of the people of West Papua in the land of Papua. The availability of genetic resources is a very fundamental factor to mix some of the varieties that will become the core of the plantation seed industry, especially in cocoa plants. Most of the genetic resources of economic value include cocoa that is managed in the form of dried cocoa beans, which become the dominant crops and cultivated sustainably and become a source of income for local communities.

The government helps provide information in the development of community motivation to utilize information resources to develop cocoa commodities. Therefore, the government specifically instructs people who depend on agriculture to absorb knowledge and awareness and provide trainings to extension workers and farmers in using information technology through Internet media and smartphones (mobile phones) to obtain agricultural information. Thus, it helps in improving their skills by educating them and building community participation in community development (Vagdevi *et al.*, 2016). Cyber extension is one of the channels of communication today that synergize the application of information technology with a variety of communication systems via the Internet. One of the utilization of Cyber extension is through the use of mobile phones and computer media connected to the internet network to obtain agricultural information. Several other plantation crops such as coconut, oil palm, sago, cloves, cocoa and sugar palm are also potential to strengthen the competitiveness of plantation-based industries. The narrow base of genetic resources in plantation crops needs extra attention, both in

the enrichment of genetic resource commodities, conservation and sustainable use, so that the plantation industry can be enhanced in its competitiveness. Continuity of stakeholders, enhancement of human resource capacity, and clear regional and regulatory policies are critical factors in the successful utilization of plantation genetic resources in a sustainable manner (Wahid, 2002). Not much information about the diversity of plantation resources in West Papua so that management is an important factor in the preservation of natural resources. Access to find information on the existence of genetic resources of plantation crops is necessary so that the original plant of West Papua can be known and utilized properly. Based on the above reasons, a study on the existence and distribution of plantation resources in West Papua Province and potential crops for the local community / indigenous peoples, especially farmers in rural areas. The purpose of this study was to assess the diversity of plant genetic resources potential for agricultural enterprises in West Papua Province. The use of mobile phones and computers in search of agricultural information for extension workers has become a major necessity in daily work. Smartphones (mobile phones) and computers are used to communicate with other extensionists and search for required information.

## **2. Materials and Methods**

In this research method, researchers describe the research design, data collection techniques, informant's determination techniques, and data analysis techniques related to research conducted. The study was conducted in 2 districts in South Manokwari Regency of West Papua Province. The Purposive Sampling location chosen by the consideration of the two districts is the center of cocoa production, has the largest harvest area (Agriculture Agency 2016) and has obtained the cyber extension data processing equipment from the Agricultural Service of South Manokwari Regency. The study was conducted from November 2016 to February 2017.

### **2.1. Research Design**

In this research design, researchers conducted research with qualitative approach, where to know and observe all things scientifically, and collecting data in a natural situation by using face to face method, and conducted by researcher. Through this qualitative approach, it is expected to produce a deep description of the observed behavior of the respondents in a certain condition. This study aims to obtain a general understanding of the social reality from the perspective of participation with the presence of Cyber extension as a medium of agricultural information and to analyze the social reality that became the focus of research.

### **2.2. Respondents**

Respondents are Extension Officers in South Manokwari Regency in West Papua Province. Respondents are extension workers of PNS and THL-TBPP in South Manokwari Regency. Respondents were taken with the Census (Sugiyono, 2014). Samples were taken as many as 22 people. The data used are primary data and secondary data. Primary data was obtained directly from the respondents through structured interviews using questionnaires. Primary data includes all research variables collected through (1) interviews using questionnaires, (2) indepthinterview, (3) Focus Group Discussion (FGD), and (4) observation (Riduwan and Akdon, 2007). Secondary data is collected by means of information documentation.

### 2.3. Data Analysis

Data were analyzed descriptively; the data obtained was tabulated then processed by qualitative analysis. To find out the level of respondent implementation in utilizing Cyber extension as information media, conducted assessment to the respondent by giving score / value on respondents ranged from 1 to 4. Value is summed and then calculated the value of average to determine the level of respondent implementation in utilizing Cyber extension as information media. Respondents with above-average scores showed a high level of implementation, whereas respondents with values below the mean indicate low implementation level in utilizing Cyber extension as information medium.

### 3. Results and Discussion

Based on survey results, the diversity of plant genetic resources (SDG) of plantation crops in the yard area in South Manokwari Regency varied considerably. It found a large number of family and plantation plant species scattered almost in all study areas. This shows that the diversity of plantation crops in South Manokwari Regency of West Papua Province is varied, good and good ecosystem stability, high productivity and environmental ecology. Cocoa crop is a plantation crop and most of cocoa farmers in Papua grow cocoa species Kerafat, the type of cocoa was indeed brought by the Dutch government in 1959 when they still control the land of Papua. There are four types of cacao planted by Papuan farmers in general, namely Criollo, Forastera, Kerafat and Hybrids. These four types of cocoa flourish in two regency of Manokwari and Jayapura. In 2006, the government promoted the National Movement (Gernas) Cocoa Program. Jayapura Regency Government also gave hybrid cocoa beans from Indonesian Cocoa and Coffee Research Center based in Jember, East Java. According to cocoa farmers, cocoa Jember is more vulnerable to disease than the Dutch cocoa. In addition to the fruit in each tree is less, the tree is more vulnerable to disease. "Jember cocoa beans are also smaller". Comparison of hybrid cocoa beans 15 cocoa beans to 1 kg, however, the Dutch cocoa fruit only needs 8-10 seeds. "If the Dutch cocoa, just thrown away the seeds can grow well but the cocoa beans from Jember should be treated from small,". Based on visual observations such as seed size, seed weight, and number of seeds, there is a difference between the quality of Dutch cocoa and Jember cocoa. First, the size of dry beans of Dutch cocoa larger to 3 cm, while cocoa Jember 2 cm. Second, the weight per dry seed of Dutch cocoa is more than 1 gram, while cocoa Jember is below 0.5 gram. Third, the number of seeds per cob of Dutch cocoa averaged more than 50 seeds. The cocoa of Jember is less than 40 seeds. Four, the size of the cob is higher than the cocoa Jember. Average size of Dutch cob tuna is more than 23 cm, while cocoa Jember is smaller 15 cm. According to Original Beans research, the Dutch cocoa beans have advantages such as the weight of one hundred seeds of Dutch cocoa is 122.50 grams according to world quality standards that does not exceed 130 grams. In addition, the acidity level of the Dutch cocoa beans is 5.15 - 6.10 percent. This figure is still in the standard pH of cocoa that is 6 - 7 percent. The best basic clones or stem are DR 1, DR 2 G 8, DR 38, and GC 8 clones. Because these clones have stems and roots that meet the basic requirements of grafting. Make a cocoa nursery using clone DR 38 or DR 1 and make seedlings in polybag, then treated for 12 months. The high diversity of crop species is influenced by various factors, other than humans, the high value of diversity for high adaptation of plant species living in Papua. In order to preserve the diversity of cocoa crops there is a need for information that can sustain the species / species of cocoa that are superior in Papua. Media

information that is currently being developed such as the Internet media need to be widely disseminated to the community, especially on cocoa farmers in cultivating cocoa plants to the marketing process and in obtaining competitive cocoa selling price. Currently, the extension workers in searching for information have gone to the internet media, which further facilitated the presence of Android-based smartphones that easily access the information and can be under everywhere such information. For this some characteristics of respondents who have media information and long became extension workers can be seen in table 1 below.

Table 1: Respondent Characteristics

Characteristics	Criteria	Amount	percentage
<b>Age</b>	30-39	7	31.82
	40-48	13	<b>59.09</b>
	49-57	2	9.09
<b>Education</b>	High School	16	<b>72.73</b>
	3-year diploma	2	9.09
	Diploma 4	1	4.55
	Bachelor degree	3	13.64
<b>Long Become An Extensionist</b>	5 - 10 yrs	17	<b>77.27</b>
	11 - 15 yrs	4	18.18
	16 - 20 yrs	0	0.00
	> 20 yrs	1	4.55
<b>Implementation of Cyber Extension</b>	High	4	18.00
	Medium	18	<b>82.00</b>
	Low	0	22.73
<b>Owned Media Information</b>	Smartphone	22	<b>100.00</b>
	Laptop	13	37.14
<b>Total</b>		22	100

From the table above shows that the average age of agricultural extension workers in South Manokwari Regency is classified as productive age 40-48 years old (59.09%), education level is still dominated by vocational senior high school and longtime extension of 5-10 years (72, 73%) and overall extension agents already have information media, especially smartphones (100%). This suggests that the counselor of this diera has been utilizing information technology, as well as utilizing the internet becomes a necessity to work. Figure 1 shows respondents' responses in using information media smartphone or laptop as a medium in finding information, especially in terms of cultivation of cocoa. Accessing information in cocoa cultivation, material information downloaded harvested and postharvest material is 13 times a month followed by cacao pruning material 10 times a month as well as pest control and cocoa plant diseases. The current condition of cocoa plants in South Manokwari Regency is cocoa plant that has been produced so that the need for pruning maintenance and control of pests of disease and handling of harvest and post-harvest and marketing both the level of the collector and the middlemen. Intensity and quality of extension using communication media can influence the achievement of information needs fulfillment. The higher the communication behavior of extension workers to ICT-based information sources, the greater the need for information through the internet is increasing. Their desire to use the internet every day and get proper training on the use of internet facilities,

smartphones through government agencies. The Internet is a rich source of information, where the fastest way to exchange information in a short time, this should be utilized by extension workers, farmers for their progress (Chauhan, 2010).

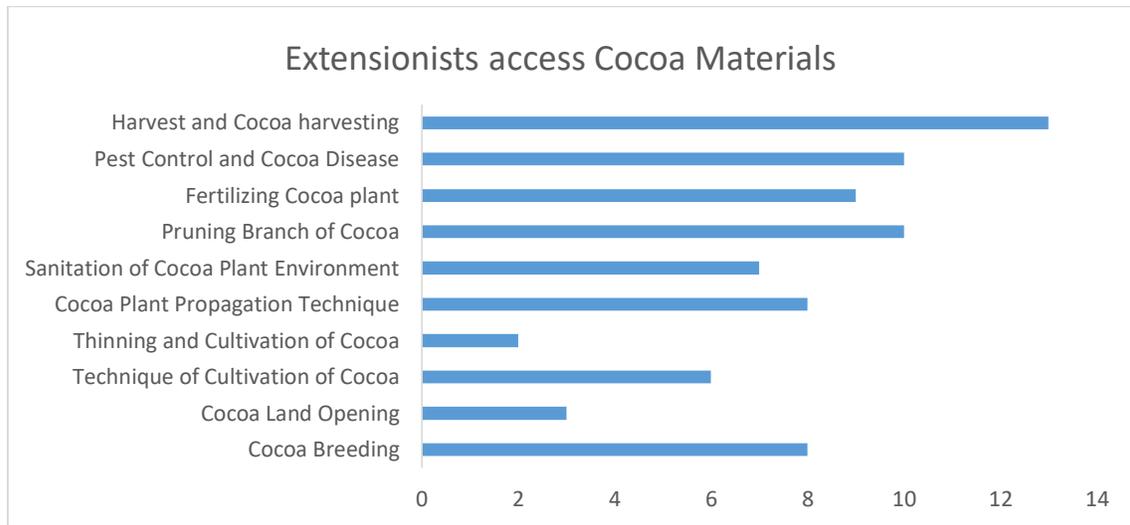


Figure 1: How much access to cocoa material

The presence of Cyber extension on the internet is a medium of information prepared by the Ministry of Agriculture in providing information in the form of materials that will be made as a material for the material of farmers in the field.

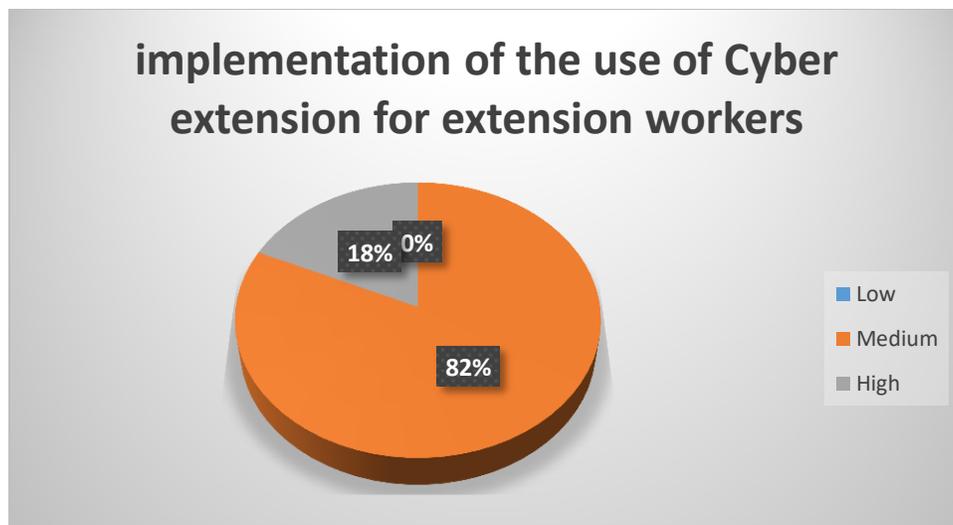


Figure 2: Pie Diagram Implementation of extension agent to Cyberextension

Implementation of respondents to needs has a positive (82%) moderate category and 18% high category with attitude tendencies utilizing laptops, smartphones for surfing. The needs of respondents in improving the experience of internet experience tend to discuss with fellow extension workers are usually done by using a mobile phone. Very little use of the computer is used to meet the needs because it is more comfortable using a mobile phone / smartphone. The type of training that extension trainers have is small, as a whole the instructor learns autodidally

in uploading or downloading the material. Respondents who often follow the training have an advantage in knowing information especially in internet usage. Positive respondent motivation on attitude tendency in utilizing laptop and mobile phone (smartphone) to obtain information. Motivation is the motivation of respondents to communicate and meet the information needs. Respondents have the motivation to communicate with other respondents in utilizing mobile phones to obtain information or exchange information. With a high motivation, the desire to meet the need for information is increasing so that has the innovation to gain knowledge of Cyber extension through the internet.

#### 4. Conclusion

The characteristics of respondents through their implementation are related to respondents' behavior in utilizing Cyber extension, especially laptop and mobile phone (smartphone) in informing the genetic resources of Dutch cocoa plantation which have some advantages such as cocoa beans bigger than hybrid cocoa beans. Extension workers have utilized Smartphones and laptops as information-seeking medium has a positive (82%) intermediate category, while extension workers look for information related to cocoa cultivation more related to postharvest materials and cocoa pest and disease control. The superior clones of Dutch cocoa are genetic resources and become an important potential for the availability of plant material (entres) for the development of cocoa in Papua. The Dutch cocoa beans from Papua also became the target of chocolate producers from Switzerland, Original Beans, the Dutch cocoa beans have advantages such as the weight of one hundred seeds of Dutch cocoa is 122.50 grams according to world quality standards that do not exceed 130 grams. The level of acidity of Dutch cocoa beans is 5.15 - 6.10 percent; the figure is still included in the standard pH of cocoa that is 6 - 7 percent. The benefits of mobile phones in accessing respondent information are as a means of communication and accessing information on cocoa prices.

#### Acknowledgments

The authors would like to thank the College of Agricultural Extension of Malang which can give permission to study, as well as assist in giving aid of this research fund.

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