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Disclosing Strategy in Communicating Uncertainty: Case of Climatology Station Climate Information Dissemination in Lombok Island

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ABSTRACT

Certainty of climate information is essential for farmers in developing farming decisions but, climate forecasts produced by Climatology Station contain 30 per cent uncertainty. The fact that climatology station has carried out climate information dissemination to farmers in Lombok. However, many farmers experienced harvesting and planting failure due to climatic uncertainty. The objectives of this research are to describe the communication strategy implemented by the Kediri Climatology Station in communicating climate information to farmers on Lombok Island and to identify obstacles experienced in disseminating climate information. This research was conducted at the Kediri Climatology Station and on the island of Lombok using a descriptive method. Data were collected through in-depth interviews. The collected data were analyzed using descriptive qualitative analysis. The results show that the strategies implemented by the Kediri Climatology Station were strategies to increase the station's credibility through the improvement of data collection technique and analysis to minimize uncertainty, compiling and packaging messages so that farmers easily understand them, conducting direct dissemination through climate field school (SLI) and indirect using media, trying to understand the social and economic conditions of the communicants as well as utilization of feedback. However, there are obstacles faced by the Kediri Climatology Station in providing climate information namely: many extension agents are reluctant to convey climate information to farmers, climate change that affects forecast accuracy, difficulty convincing the public, and lack of funds to conduct Climate Field School, limited personnel, and language barriers.

INTRODUCTION

Climatic factors greatly determine agricultural production in addition to other resources such as land, water, fertilizers, medicines, and technology (Apriyana et al., 2016). The fact is that photosynthesis and respiration as well as plant metabolic processes are determined by the

availability of sunlight, water, CO2, temperature, and humidity in addition to plant genetic characteristics (Wirjohamidjojo & Swarinoto, 2007; Indrawan et al., 2017). Physically, the process of plant transpiration is largely determined by the availability of groundwater, solar radiation, relative humidity, and wind as climate elements (Sabaruddin, 2012). Therefore, risks to agricultural production are influenced by climate factors (Hidayati & Suryanto, 2015). Therefore, according to Sabaruddin (2012), and Singh et al. (2018), farmers need fast, precise, and accurate climate information to be used as consideration in farming decision-making.

Based on the above statement, for the optimization and efficiency of agricultural resource usage, prescriptive farming is needed. Prescriptive farming is an efficient agricultural production system following the potential of existing resources including aggro-climate (Makarim et al., 1999; Sumarni, 2000). In fact, climatic factors are very difficult to manipulate and difficult to predict but greatly determine crop productivity. Therefore, climate information is very strategic and is needed at the early stage to be used as a consideration in farming decision-making (Singh et al., 2018). The actual climatic conditions (weather) at a certain period in a certain place greatly determine cropping patterns, types of commodities planted, farming technology usage, growth of crops, crop production, as well as pest and disease spread in the area. A greater effect will occur in the farming system on the dry land area if farmers received an accurate weather forecast (Apriyana et al., 2016).

In addition, the Directorate of Horticultural Crop Protection (2007) claimed the effectiveness and efficiency of the use of pesticides and herbicides to control pests, diseases and weeds are also largely determined by climate factors. Integrated pest control (IPM) using natural enemies is possible if farmers have adequate basic knowledge of climate and weather (Munif, 2008). The problem is that farmers' knowledge of weather and climate to increase agricultural production is limited (Bolden et al., 2018). In fact, agricultural activities require more accurate weather/climate forecasts in daily, weekly, monthly or seasonal periods.

The Meteorology, Climatology, and Geophysics Agency (BMKG) provides climate and weather information services to support the agricultural sector. BMKG continuously works to generate innovation in technology and services to support the development of the agricultural sector. In carrying out the tasks, the BMKG is in charge to provide data and information services in the fields of meteorology, climatology, and geophysics, delivery of information to related agencies and parties as well as farming communities regarding climate and climate change (BMKG, 2021).

According to (BMKG, 2021) global climate change is "real" and has an impact on increasing the frequency and intensity of extreme events, either in the form of extreme weather or rain events, extreme climates, or global climate anomalies such as La Nina and El Nino (Harmoko & Ningrum, 2021). For this reason, BMKG developed an effort to provide fast, precise, and accurate climate information to the farmers and community in general. This is following BMKG's duties contained in Law no. 31 of 2009 concerning Meteorology, Climatology, and Geophysics. BMKG seeks to collect, process, and present data and information quickly and automatically from and for 179 stations and 42 BMKG weather radars (BMKG, 2021).

BMKG (2021) claimed that the basic services such as monthly, annual, and seasonal climate information were issued by the BMKG and has reached 3500 sub-districts in 34 provinces.

Meanwhile, to improve farmers' knowledge and skills in utilizing climate information to anticipate the impact of extreme climate phenomena, BMKG in collaboration with the Agriculture Service held a Climate Field School (SLI.). According to Rogers (1983), if the dissemination of information had been done, the farmer should aware and knew information or innovation delivered by BMKG. The problem is that there is a gap in understanding climate information conveyed by BMKG to the public, including farmers. Suadnya et al. (2013) found that farmers do not know and do not understand climate change and the terms used in delivering climate information. Farmers deciding their farming activities are based more on habitual or past experiences and following other farmers. In addition, data released by the Department of Agriculture and Plantation of the Province of West Nusa Tenggara shows that there are rice fields with crop failure exist which reached 24 thousand hectares and more than 1,500 hectares experienced harvest failure due to drought (NTB Agriculture and Plantation Service, 2020). This proves that farmers have not been able to use the information or have not received climate information properly. If the BMKG's climate information including forecasts of the rainy and dry seasons is accurate and well-accepted by farmers, the risk of crop failure above will be minimized.

Climate information services such as forecasts for the start of the rainy, and dry seasons and other climate information have been carried out by the Kediri Climatology Station in West Lombok. This climate information is published in the form of bulletins, websites, vlogs, Facebook, and so on, based on the adoption theory of Rogers (1983), dissemination of information through socialisation and extension should make farmers aware and know new information. However, statistical data shows that there are still many farmers experiencing crop failure due to the lack of climate information they received. The problem was the climate information that is very important and needed by farmers in making decisions to determine their farming activities does not reach the farmers who need it quickly, precisely, and accurately. This might be due to the communication strategy implemented by the Kediri Climatology Station in carrying out climate information services to farmers is currently inaccurate.

This study aims to (1) analyze the communication strategy used by the Kediri Climatology Station in the dissemination of climate information services and (2) analyze the obstacles faced by the Kediri Climatology Station in implementing the designed communication strategy.

METHODS

This research was conducted at the Kediri Climatology Station, West Lombok Regency, and the Lombok Island region in 2021. This location was chosen because the subjects and objects of research are in this location. The Kediri Climatology Station has implemented climate information services and has communicated with various stakeholders including farmers on the island of Lombok.

This study uses a descriptive method to present a complete picture of the social setting or is intended for the exploration and clarification of a phenomenon or social reality (Creswell, 2018). In this case, the researcher will describe the communication strategy that has been carried out by the Kediri Climatology Station, West Lombok Regency in the dissemination of climate information to farmers and the obstacles faced. In this study, the research subjects or key informants were the head of the Kediri Climatology Station and 2 staff who handled the field of

data processing and information services, the head of the Provincial Agriculture Service and/or officers who served climate information, the Head of the Regency Agriculture Service or staff who served climate information. , Head of Extension office in sub-district level (BPP) or extension agents (PPL) Coordinator, Head of BPTPH or officer serving climate information, Head of BPTP or officer serving climate information. The objects studied in this study include the communication strategy carried out by the Climatology Kediri station in disseminating climate information and the obstacles faced.

Data on communication strategies in this study were collected through in-depth interviews using a list of questions containing key questions. Selected respondents were contacted by telephone and visited for face-to-face in-depth interviews. Before data analysis, the credibility of the data was checked using the source triangulation method. The source of information such as the head of Climatology statement was cross-checked with their staff. The availability of climate information stated by the head of the Station and his staff was also checked through the internet. Data that has been checked for credibility is then analyzed using descriptive qualitative analysis. The data is then presented in the form of narratives and is accompanied by explanations.

RESULTS AND DISCUSSION

The communication strategy is aimed at increasing the effectiveness of communication carried out by the Climatology Station of Kediri. The effectiveness of communication according to Devito (1997) is largely determined by the credibility of the source (communicator), the accuracy of the message or information conveyed, the accuracy of the selection of the channel or media used, and the readiness of the recipient, as well as feedback. Kediri Climatology Station in disseminating climate information has developed a strategy as described below.

Strategy to Increase Credibility of Communicator

Institutionally, the Kediri Climatology Station acts as a communicator in the dissemination of climate information to stakeholders consisting of the Agriculture, Plantation, Fisheries, and Marine services at the provincial and district levels, Agriculture Research Station, Agriculture, and Pest Control Station, Agricultural Extension Office. As a communicator, this institution must have high credibility, so that the information it conveys can be trusted and accepted by its audiences (stakeholders).

The results of an in-depth interview with the head of the Kediri Climatology Station indicate that efforts have been made to increase the station's credibility as a communicator in the dissemination of climate information. This is aligned with Umeogu's (2012) claim that the source must be credible so that the message can be received by the communicant. Efforts to increase the credibility of the Kediri Climatology Station began with the preparation and maintenance of measuring tools or instruments that are routinely carried out. Routine measurement and periodic reporting, careful data collection and processing, periodic presentation, and dissemination of data were carried out. The station head's statement was strengthened by the information given by the head of the observation section who stated that checking measuring instruments was carried out regularly every 3 months and made repairs quickly if there is a report of equipment damage from officers at observation posts scattered on the islands of Lombok and Sumbawa. According to the Station Head, these efforts were made to improve the accuracy and completeness, and continuity

of the data. The accuracy and completeness of the data will increase the accuracy of the prediction (Lu, 2017).

In addition, the observation officer at the observation post is given incentives and was equipped with an easy data reporting method. This convenience is in the form of using an application that is directly connected to the server at the Climatology Station of Kediri. With these incentives and conveniences, it is hoped that the observed data can be more accurate and be reported periodically. This was confirmed by the head of the observation section who stated that since the implementation of the policy of providing incentives and making it easier to report data, climate information data has become more valid and reported periodically. According to the head of the station, the continuity and completeness of the observation data will determine the accuracy of the result of the weather forecast. This statement was in line with Lu (2017). This effort was aimed to increase the credibility of the Station as a communicator of climate information.

In addition, to improve the quality and quantity of observational data, the Climatology Station also seeks to improve the quality and increase the capacity of data processing so that more accurate climate and weather forecasts can be produced. The data processing section works as much as possible to produce climate and weather forecasts based on the data supplied by the observation section. With its modelling techniques and data processing applications, the data processing and information service section can produce more accurate climate and weather forecasts. This is intended to increase stakeholder trust in the station or in other words to increase the credibility of communicators. According to Eisend (2006), the credibility of the communicator is a determining factor for the effectiveness of communication.

According to the head of the Kediri Climatology Station, the accuracy of climate and weather forecasts produced and disseminated to the public reaches 70%. Furthermore, it was said that the 70% accuracy rate was already high, but the Kediri Climatology Station would continue to strive to improve the accuracy of the climate and weather forecasts produced so that public confidence in the station's performance could increase. The Head of the Observation Section and the Head of the Data and Information Processing Section also stated that the station head always reminded and ordered that the accuracy of measurement and data collection be improved, and the processing was carried out more thoroughly and carefully so that the aim of increasing the accuracy of climate and weather forecasts could be even higher.

Those are the efforts made by the Kediri Climatology Station to increase the credibility and attractiveness of the institution. This is in line with the opinion of Sahputra (2020) who states that the credibility and attractiveness of the institution can be increased by improving the quality and management of internal information.

Strategy to Increase Understanding of the Message

The message in this study referred to climate information presented by the Climatology Station of Kediri. The message must be convincing so that it can be understood and received by the communicants. Convincing messages must be structured and planned in such a way that they are attractive, easy to understand and provide accurate information. Accurate information can be presented if it is planned properly and correctly (O'Keefe, 2002).

According to the head of the Kediri Climatology Station, the message was well prepared to achieve a message accuracy rate higher than 70%. Efforts have been made as described previously, but the natural conditions cannot be ascertained. Recent climate change also adds to the difficulty of predicting climate variability (Butler et al., 2015). There are often extreme and sudden changes in the weather. Conditions like this are difficult to predict.

According to the head of the data and information processing and service section, with the forecast model used and with the support of data obtained with a high degree of caution, the accuracy rate has only reached 70%. Natural factors that are influenced by climate change are strongly suspected of causing forecasts that have been made to be wrong. That's why we use the terms weather forecast and not certain information. In nature, everything can change, and nothing is certain.

To ensure climate information or weather and climate forecasts produced by the Climatology Station of Kediri are accepted and understood as well as adopted by farmers, the information is packaged in the form of a bulletin which is published regularly every month and message packaged in the form of basic weather messages published every ten days. Both message packages attempted to use language that can be understood by farmers. Because according to Tafesse and Wien (2017) the formulation of the messages must be following the characteristics of the communicant so that it will be able to increase the acceptability of the message. However, the Head of Kediri Climatology Station claims that it is still difficult to find synonyms of the words that can be understood by farmers to replace scientific terms used in climate information messages.

Strategy to Extent Coverage

By its main duties and functions, the Kediri Climatology Station must provide climate information services to people in its area. This task is stated in the regulation of the BMKG Number 10 in the year 2014 concerning the job description of the Kediri Climatology Station which has the main task of carrying out observations, data processing, and climate services in West Nusa Tenggara. For this reason, the Head of Kediri Climatology Station stated that climate information services were carried out through several channels, namely direct and indirect channels or using the media.

The direct channel chosen by the Kediri Climatology Station for dissemination and climate information service is implementing climate field school (SLI). The objective of a climate field school for farmers is to increase their knowledge of climate information and its impact on the agricultural sector. Through the Climate Field School (SLI), farmers make effective use of climate/seasonal information and forecasts in their agricultural activities. According to Ramadhani et al. (2018), SLI is a field study where extension workers, pests, and disease observers, as well as farmers, were given opportunities to learn together about the climate in the field.

According to the head of the Kediri Climatology Station, farmers need to know how to deal with climate variability that affects their crop productivity. Climate information is still difficult to understand for farmers who have experienced the direct influence of weather conditions in their farming activities. The main objective of the BMKG Climate Field School is to translate technical climate information into a practical language for farmers, with agricultural extension workers as

facilitators. In this regard, the Climate Field School (SLI) includes three main objectives as follows:

1. Increase farmers' climate knowledge and their ability to anticipate certain climate phenomena in their farming activities.
2. Assist farmers in observing climate parameters and using applications in their farming activities.
3. Helping farmers to translate and understand climate information and forecasts to support agricultural activities, especially to make a decision to start farming activities and crop management strategies.

According to Ramadhani et al. (2018) understanding weather and climate conditions, combined with new farming techniques will allow farmers to grow different crops at different times of the year. This will lead to an increase in crop production. It was understood plants are best suited to certain weather of the area in a certain period. If farmers were able to predict this weather, it may lead to an increase in the productivity of the crops and income of the farmers (Butler et al., 2015).

According to the head of the Climatology Station, through this direct (SLI) channel, communication goes very well, and the transfer of knowledge and technology is effective. Teaching climate information to farmers through SLI is very effective because farmers can directly learn and practice what they learn in SLI activities. This statement is in line with the findings by Tarmana & Ulfah 2021). They claim that the understanding of climate information of melon farmers increased through Through this activity, climate information services produced by Kediri Climatology Station were also delivered so that farmers and extension workers were able to access information services presented through the Kediri Climatology Station page. Farmers and PPLs are invited to join the WhatsApp Group (WAG).

The Head of Kediri Climatology Station also explained that in terms of the effectiveness of services through this channel, it was very effective but in terms of costs and budget it was quite expensive. This activity needs to be budgeted through the Station budget and the amount of budget allocated is very minimal. Therefore, the Kediri Climatology Station disseminates climate information through the SLI channel limited every year. This obstacle was understood by the research team which suggested the head of the Station carry out collaborative activities or make an MOU with the University of Mataram so that SLI activities could be carried out through student community service activities of the University. The research team has tried to connect the station with the Institute for Research and Community Service (LPPM) at the University of Mataram to collaborate and agree on an MOU.

In addition to direct communication channels, the Kediri Climatology Station also provides climate information services through social media. The social media chosen to serve and disseminate climate information are WA Groups, Facebook, and Instagram. These three social media were chosen because the users of these three social media are very large. According to data released by Napoleon Cat (2020), Instagram users in Indonesia reached 69,270,000 people, Facebook reached 140 million people and WA groups reached 171 million people. Based on this fact, these three channels were chosen.

The Instagram followers of Kediri Climatology Station reached 1744 people. With this number of followers, the station strives to continue to provide the best service by regularly uploading the latest climate information, especially basic weather information. This is done so that followers on Instagram are always up to date and can take advantage of weather information appropriately. In addition to basic information, the latest news on weather and climate is also presented, especially as an early warning. According to Ulfa (2018), Instagram is effective to disseminate ecological information.

The members of the WhatsApp group are still relatively few because those who are members of the WhatsApp group are only limited to those who attend the Climate Field School. Members of this WA group are still limited to SLI alumni. So, the number is still very limited because the number of SLI implementations is also very limited every year. However, periodically every year this number will continue to increase. This increase in the number of members must continue to be accompanied by an increase in the quantity and quality of services. According to the head of the data and information service section, the service through the WhatsApp group is always done well. Updating the latest data and information also continues to be done similar to what has been done on Instagram. The admin WhatsApp group which is an employee in the services and climate information section always keeps up-to-date information, especially those related to early warnings and extreme weather warnings.

Services on Facebook are also carried out well, it was carried out by updating information periodically for basic weather information and bulletins, but also updating if there are early warnings and notifications of extreme weather. Services on social media are also carried out by staff in the information and data service section. They update regularly because this is part of the main tasks and functions they have to carry out.

In addition to using social media, the Kediri Climatology Station also provides information and climate data services by periodically publishing the bulletin. This bulletin is prepared in two versions, namely an online version and a print version. According to the head of the Kediri Climatology Station, this bulletin was sent both in print and online to stakeholders who need it, such as the Department of Agriculture, Plantation, Fisheries and Forestry, Center for the Study of such as Agricultural Technology (BPTP), BPTPH, Regional Government, Agricultural Extension Center and PT Bentul which has collaborated with the Kediri Climatology Station.

Through the internet, the community can also access climate information on the Kediri Climatology Station internet page. This page displays the climate information needed by the community so that they can easily find out. However, the number of visitors to this page is still limited. This, according to the station head, may be due to their ignorance or maybe they are not interested in climate information.

The head of the station acknowledged that the use of this media has not been effective considering that there are still many stakeholders who have not been reached or accessed social media where climate information is presented to them. There are several reasons why they have not accessed climate information, including many who do not have the necessary tools, many do not know that on social media and the internet there are free climate information services provided to them, and some are not yet joined in the social network built by the station.

Strategy to Increase Acceptability of the Message

In planning interpersonal communication, the communicator first must know who the communicant is, both in terms of knowledge, needs, and socio-economic conditions, so that the communicator can design messages and information to be conveyed accordingly (Mulyana, 2017). In this case, the head of the Climatology Station already understands the condition of the communicant who needs climate information, because he has long served in this area and often interacts with farmers on the island of Lombok. However, the Head of Kediri Climatology Station still tries to understand further the needs of the community and the condition of the target community through interviews conducted during SLI.

According to the Head of Kediri Climatology Station, until recently there has been no specific research or survey conducted to analyze the audience or communicant. This happened due to budget constraints, so the activity was carried out simultaneously with SLI in several areas on the island of Lombok and when the station head and staff visited the field. Based on the results of interviews and discussions with farmers participating in SLI as well as agricultural extension workers, information and descriptions of the condition or level of knowledge, socio-economic conditions, and communicant needs in this case farmers and PPLs can be obtained. According to Mulyana (2017), a limited understanding of the audience in communication may hamper the dissemination of information.

According to the head of the Climatology Station of Kediri, the climate information needed by farmers and PPLs is accurate forecasting of the rainy and dry seasons. This is motivated by the need for farmers to be able to determine the right time to start plant cultivation on their land. The need for accurate forecasts is urgent as explained by one farmer who stated that: “we need accurate rainy season forecasts so that we can prepare ourselves to plant rice or plant other crops according to the given forecast”.

Strategy to Improve Connectivity with Farmers

Feedback is needed by communicators in the interpersonal communication process (Devito, 2007). This feedback can be used as input in compiling the next message to be conveyed by the communicator to the communicant. The results show that the Head of Kediri Climatology Station was very open to any suggestions and comments addressed to him. The Station Head stated that any input given, whether related to forecasts, services, ways of communicating, and others, was very openly accepted. He explained that criticism and suggestions were needed for service improvement and to do a better and more professional job.

The Climatology Station provides a channel for submitting criticism and suggestions as well as criticism through the internet and social media and is even ready to receive direct feedback. The feedback channel to provide input, suggestions, and criticism on services, performance, and other things can be through Facebook, Instagram, and WhatsApp which is always open and always monitored by officers specifically assigned to monitor feedback from the public. The results of this officer's monitoring are then discussed and if there is something that must be followed up, it will be followed up following applicable regulations. If there is a request for certain weather information, it will be answered, and the desired service will be provided through the available media following applicable regulations. According to Devito (2007), effective usage of feedback will sustain communication with communicants.

Based on the description above, it is known that the Kediri Climatology Station has implemented a communication strategy in providing services to the community and especially farmers. The strategy used is the strategy of planning, implementing, and evaluating communicators, messages, channels, communicants, and feedback.

Constraints Faced by Kediri Climatology Station in Disseminating Climate Information

In carrying out its service to the community, especially in providing climate information to farmers, the Kediri Class I Climatology Station has strived to provide the best service. The service is delivered either directly or indirectly to farmers. The Kediri Climatology Station directly provides climate information services through SLI and indirectly through the internet and social media such as Facebook, Instagram, and WhatsApp groups. This information is submitted periodically or regularly to convey basic, monthly, and quarterly information to the public. Besides that, there is also information that is conveyed directly through SLI activities, but this activity is carried out very rarely with limited targets.

Continuously, the Climatology Station of Kediri also conveys climate information to farmers by submitting climate information to the Department of Agriculture, Plantation, Forestry, and Fisheries and animal husbandry, as well as to BPTH and BPTP. Then through the activities of the Office, it is hoped that this climate information can be conveyed to farmers. The station also periodically conveys this climate information to the Agricultural Extension Center (BPP). Submission of climate information to BPP is also intended so that extension activities carried out by PPL at the BPP level can convey this climate information periodically to farmers.

Although various efforts have been made to improve climate information services by the Kediri Climatology Station, there are still many obstacles to be faced so this climate information has not been able to be received entirely and correctly on time by farmers. The following are some of the obstacles faced by Class I Kediri Climatology Station in disseminating climate information to farmers.

1. There are many officers and field agricultural extension workers (PPL) who do not dare to convey climate information straightforwardly to farmers, this happens because officers and PPLs are afraid of being blamed by farmers because the forecasts submitted are inaccurate. This is in line with Suadnya et.al (2016) findings that PPL was afraid to communicate climate information that contains uncertainty.
2. With the phenomenon of climate change, climatic and weather conditions often change quickly and suddenly, making it difficult to predict, as a result, forecasts that have been made need to be revised due to sudden conditions and changes. This can lead to a decline in public trust. According to Tanny and Al-Hosienie (2019) trust is needed in public services to create a linkage with the farmers. Therefore, BMKG should produce accurate climate information.
3. Difficulty in explaining and convincing the public that climate information is predictive in nature even though it contains good enough accuracy so that it can be used as a guideline in running farming activities.
4. There are still obstacles in translating technical and scientific terms of climatology into a language that is easily understood by the farming community. According to Devito (2007), simple and clear language will increase communication effectiveness.

5. There is a limited budget for direct dissemination such as SLI so that direct two-way interactive communication can be carried out so that messages or climate information can be explained systematically, in detail, and in a language that can be understood by farmers.
6. Due to limited personnel, dissemination efforts must be carried out in stages, because the number of people who need services is quite large and is spread over two islands, namely Lombok and Sumbawa.
7. There are still many people who do not know and have not accessed the information presented through the internet and social media that has been provided by the Climatology Kediri station. This was due to some farmers did not have mobile phones.
8. There is still a lack of socialization and SLI activities are carried out to reach a large number of people.

The obstacles mentioned above are being assessed and worked out to overcome them. According to the Station head, the management and staff are trying to improve services to the community, including providing outreach services and implementing more SLI.

CONCLUSION

Based on the results and discussion, it can be concluded that the strategies applied by the Kediri Climatology Station are: (1) strategy to increase the station's credibility through proper data collection and analysis to increase climate forecast precision so it can be trusted; (2) improving message attractiveness through improving message packaging thus its meet communicants need; (3) strategy to extend coverage by using two communication channels namely direct communication through climate field school and indirect channel using the internet and social media; (4) strategy to improve message acceptance by knowing and understanding the needs and socio-economic conditions of the communicant and; (5) strategy to sustain the relationship by intensifying feedback management, accepting criticism and suggestions openly and use them as an input for future service improvement.

Some of the obstacles faced by the Kediri Climatology Station in providing climate information services namely extension agents are reluctant to convey climate information to the farmer as they are afraid to be blamed if the farmer experience crops failure, climate change affects forecast accuracy, difficulty convincing the public, lack of funds for direct socialization and dissemination, limited personnel and technical language barriers.

RECOMMENDATIONS

Based on the constraints faced by the Climatology Station some recommendations are raised, including.

1. Conduct education and training for extension agents so that they have more understanding of climate information.
2. Collaborating with Mataram University to carry out training and education for farmers and extension agents.

3. Looking for translation of the climate technical terms into a language that farmers can easily understand.
4. Disseminate climate information services to the public through collaboration with local and national radio and TV as well as local art performances such as Puppet (*Wayang Kulit*).

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