



Articles

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Formulate and Apply Plant Growth Promotion Rhizobacteria (PGPR) as Biofertilizer and Bioprotectant on Shallot Plantations

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Abstract. UPT Bulupontu Jaya is the one of many shallots or red onions and other vegetables production center in Sigi Regency. The farmers rely heavily on pesticide and chemical fertilizer in their business. Even, the residual pesticide on the plant is beyond permitted standard. The main factor is the lack of awareness and skills of the farmers towards environment-based cultivations and pest control. Our community service with regional featured product schematics, aim to spread the information about the technology of formulation and application of Plant Growth Promoting Rhizobacteria (PGPR) as biofertilizer and bioprotectant on red onion plantations. The methods that were going to be implemented, there are training, demonstration plot of technology application, and assistances. The result of our community service, shows that participants are really into this daily program in the moment, shown by the activeness of participants at various stages of activity. This program of our community service increases the farmers skill points to create own PGPR. For the clearest, about 70% participants increased their knowledge and skill to create PGPR and about 60% participants have had interest to develop and apply PGPR as biofertilizer. As doing so, we expect independent of the farmers from being rely on chemical inputs on red onion plantations.

Keywords: Red Onions, Biofertilizer, Bioprotectant, PGPR, Shallots

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INTRODUCTION

Unit Permukiman Transmigrasi (UPT) Bulupountu Jaya District of Sigi Biromaru is the one of many red onion and other vegetables production centre in Sigi Regency, which also supplied the vegetables stocks for the people of Palu City. UPT Bulupountu Jaya located on the South of Palu City, which populated by 1,650 residents (BPS Kabupaten Sigi Dalam Angka, 2018). Majority working as a farmer with superior commodities in the form of red onions or shallots of the Palu Valley variety. This local shallot is the base ingredient for Palu fried shallots with several advantages, namely: crunchy or crispy with a distinctive aromatic taste and can be stored for a relatively long time. These UPT Bulu Pountu Jaya area of shallot plantations at about 83 hectares wide.

The cultivation of shallots is repeatedly constrained by the lack of production facilities, especially inorganic fertilizers and the presence of pests and diseases. One type of disease that infect shallot plantations in the Palu Valley is fusarium wilt disease caused by *Fusarium oxysporum* f.sp. *cepae*. This disease causes the plants to wilt rapidly, the roots become rotten, the plants to droop as if it were going to collapse, and at the base of the tuber there are visible white fungal colonies (Hadiwiyono et al., 2015). To overcome this, other efforts need to be made in the form of providing production facilities that are cheap, easy to obtain, and environmentally friendly.

Plant Growth Promoting Rhizobacteria (PGPR) is a root bacterium that stimulate plant growth. These bacteria live surrounding the roots, both on the surface of the roots and the soil that is still affected by the activity of plant roots, by utilizing the exudate released by the plant. Bacterium were not going to damage nor disrupt life, and on the contrary provide a secretion for plants to grow better (mutualistic symbiosis). PGPR has 3 roles in plant growth, namely as: bio-fertilizer, bio-stimulant and bio-protectant (Widodo, 2016).

PGPR functionality as a bio-fertilizer because of its ability to transform nutrient sources that exist in nature or applied synthetic fertilizers to become easily available and absorbed by plant roots through enzymes or other compounds produced by these bacteria. Some of the capabilities of PGPR as a biological fertilizer include fixating N and dissolving phosphate (P) so that it is available to plants (Majeed et al., 2015). PGPR functionality as bio-stimulant because it is able to produce siderophore compounds that can bind iron elements (Fe^{3+}) when it's limited (i.e. caused by $pH > 7$) and transferred to plants (Souza et al., 2015) and as a bio-protectant because it is able to protect plants from

infestation by plant pest organisms (OPT), or pests, or infection by plant pathogens (Jadoon et al., 2019). The mechanism of protection can be direct, namely by producing anti-microbial compounds (antibiotics) or lytic enzymes that destroy pathogenic cells, or indirectly by activating plants to produce immunity induction (Prihatiningsih et al., 2017).

Several studies have shown that the application of PGPR as a biological fertilizer could suppress the usage of inorganic fertilizers on horticultural crops (Parlakova Karagöz & Dursun, 2019; Utami et al., 2017), increase plant growth and its yield (Jumiati & Rosmini, 2021; Mohamed et al., 2019), increase leaf chlorophyll content (Rosida & Nugroho, 2017), reduce farming production costs and create healthy agriculture and its products that are safe for consumption (Susanti et al., 2020).

This community service program for the regional superior product schematics is going to train and assist farmers and the community in formulating PGPR and applying it to the shallot plantation area to make it easier for farmers to adopt for its usability on their farms to supporting the development of shallots as a leading commodity in the Central Sulawesi region.

PROBLEMS

The main problems faced by the farmers based on priority scale are as follows:

1. Lack of production facilities, especially organic fertilizers that support the growth of shallots.
2. The presence of pests and diseases that often attack shallot plants.
3. The shallot bulb products produced by the farmers are often rejected by the industry of fried onion because of its small diameter.
4. The farmers have found difficulty to obtain farmer inputs.

METHOD OF IMPLEMENTATION

To support the realization of the community service program for this regional superior product schematic, several approaches are carried out, namely: counselling and training; introduction and application of technology as well as coaching, mentoring and empowering the community.

RESULTS AND DISCUSSION

1. Counselling and Training for Formulating PGPR

The counselling and training were carried out in one of the farmer-partnering-group's meeting rooms (Figure 1). In this community service program, the farmer group is

"Tunas Sejahtera" Farmer Group became our partner and it had 20 members. Also, there are a presence at the counselling and training program who were Mr. Head of UPT Bulupountu Jaya and Mrs. PPL Coordinator of Sigi Biromaru District.



Figure 1. Atmospheric candid photos during counseling program

The speakers in the counselling and training program, besides the presence of the executive teammates, there are also presented Mr. and Mrs. Lecturers from the Faculty of Agriculture, which same as our department who have expertise in the field of PGPR Technology. They were Mr. Dr. Irwan Lakani, Mrs. Dr. Hasriyanti, and Prof. Dr. Mohammad Yunus. The counselling was given by the lecturing methodology while the training is given in the form of a technology demonstration. The presenter first showed how to formulate PGPR, starting from the materials and tools needed, how to manufacture and formulating PGPR, also how to apply it. Furthermore, the participants tried to make the PGPR accompanied by the executive team and the presented expert team (Figure 2). There are the steps PGPR (from various resources).

1. First, the thing that must be prepared is the PGPR starter. The starter of PGPR is obtained by soaking 250g of cut bamboo roots in 1 liter of cold boiled water for 3-6 days. After 3-6 days, the root bath is filtered and then set aside.
2. After the starter of PGPR is finished, boil all the substances there are 1 kg of granulated sugar, 0,5 kg of shrimp paste, 0,5 kg of bran, 1 tablespoon of lime betel and 20 liters of water and awaits until completely boiled, in about 20 minutes over low

heat. Then let it cold in a room temperature (25°C). This solution is the nourishment for the PGPR starter.

3. After it was cold, filter the solution from the waste then mix with PGPR starter from first step. Then fermented it in a tightly closed jerrycan or barrel.
4. During the process, let air circulation flows freely towards fermentation container.
5. Fermentation was carried out for 15 to 21 days.
6. At last, the PGPR is finished. The sign of the finished PGPR is the appearance of thick yellowish white foam on top of the fermented PGPR solution with a strong smell of ammonia (NH₃).



Figure 2. Materials and the process of making PGPR

2. Application of PGPR on Shallot Plantations

The PGPR application was carried out to determine the effectiveness of PGPR as a biofertilizer and bioprotectant agent. To apply PGPR, first made a demonstration plot application in the shallot plantation area. The beds for planting shallots are 10 m long and 90 cm wide. The application of PGPR starts from soaking the seeds, watering the PGPR solution on young plantings, and the plants that were well developed (see Figure 3). Observations on the growth of shallots were including plant height, number of leaves, and number of tillers. As a comparison, there were also shallots that are not applied with PGPR (Jumiati & Rosmini, 2021).

The results of the application demonstration plot showed that shallot plants were given PGPR showed better growth than those that were not given. PGPR given to the soil 2 weeks before the planting and those shallot bulb seedlings that were first dipped in PGPR solution for 10 minutes also showing the growth, showed that plant height at the age of 28 days was reaching 17.75 cm with its 4 tillers. Meanwhile, on land without the application of Trichoderma, plant height was only reaching 13.25 cm with its 3 tillers. The results are in accordance with (Novatriana & Hariyono, 2020) the research reported that soaking

PGPR for 30 minutes at a dose of 30 ml was able to increase plant height, number of leaves, leaf span, both fresh weight and dry weight, number of tubers, and tuber diameter.



Figure 3. The series of demonstration plot activities for the PGPR

The increase in the growth parameters and the yields of the shallots plant since PGPR was able to modify natural sources of nutrients to be easily available for the plants, through enzymes or other compounds produced by bacteria. These bacteria are nitrogen-fixing bacteria such as the genera *Azospirillum*, *Rhizobium*, *Azotobacter* and phosphate solubilizing bacteria such as the genera *Bacillus*, *Pseudomonas*, *Arthrobacter*, *Bacterium*, and *Mycobacterium* (Biswas et al., 2000).

3. Evaluations and The Follow-ups

At the end of the activity, an evaluation was carried out in the form of a questionnaire to found out the response and enthusiasm of the participants. Post-test results indicates (see Table 1) that 70% of participants increase their knowledge and skills in making PGPR and 60% of participants intend to develop and apply PGPR as a biofertilizer.

Table 1. Program Participants Post-Test Results

No.	Questions	Answers	Quantity (%)
1	Before joining the training, did you know the function of PGPR?	a. Yes	0
		b. No	100
2	Before joining the training, did you know how to make PGPR?	a. Yes	100
		b. No	0
3	After attend the training, do you know the function and how to make PGPR?	a. Yes	80
		b. No	20
4	After attend the training, do you know how to make PGPR?	a. Yes	70
		b. No	30
5	After attend the training, are you intended to create and develop PGPR?	a. Yes	60
		b. No	25
		c. Not sure	15
6	After attend the training, are you interested in applying PGPR on your farm?	a. Yes	60
		b. No	20
		c. Not sure	20

The community service program for the regional superior product schematics has succeeded in informing about the formulation technology and application of Plant Growth Promotion Rhizobacteria (PGPR) as a biofertilizer and bioprotectant as well as motivating farmers to develop and apply PGPR. With the application of PGPR as a biofertilizer, it is expected to suppress the usage of inorganic fertilizers in order to reduce farm production costs and create healthy agriculture and its products that are safe for consumption.

CONCLUSION

The results of the program of community service showed that participants were very enthusiastic about participating in the activity stages, so that it had an impact on increasing knowledge and skills in making PGPR. There were as many as 70% of participants increasing their knowledge and skills in making PGPR and as many as 60% of participants intending to develop and apply PGPR as a biofertilizer and bioprotectant. Thus, the results of community service are expected to be able to independent for being rely on chemical inputs on onion plantations.

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Original Title:

Perakitan dan Aplikasi *Plant Growth Promotion Rhizobacteria* (PGPR) Sebagai *Biofertilizer* dan *Bioprotectant* Pada Pertanaman Bawang Merah

Abstrak. UPT Bulupountu Jaya merupakan salah satu sentra produksi bawang merah dan sayuran lainnya di Kabupaten Sigi. Para petani sangat mengandalkan penggunaan pestisida dan pupuk kimia dalam kegiatan usahatannya. Bahkan residu pestisida pada umbi bawang yang mereka hasilkan sudah melebihi ambang yang dapat ditoleransi. Perilaku para petani tersebut tidak terlepas dari kurangnya pengetahuan dan keterampilan dalam budidaya dan pengendalian hama yang ramah lingkungan. Kegiatan pengabdian kepada masyarakat skema produk unggulan daerah bertujuan untuk menyebarluaskan informasi teknologi perakitan dan aplikasi *Plant Growth Promoting Rhizobacteria* (PGPR) sebagai *biofertilizer* dan *bioprotectant* pada pertanaman bawang merah. Metode yang diterapkan adalah pelatihan, demplot aplikasi teknologi, dan pendampingan. Hasil pelaksanaan pengabdian kepada masyarakat menunjukkan bahwa peserta sangat antusias mengikuti setiap materi kegiatan yang ditunjukkan oleh keaktifan peserta pada berbagai tahapan kegiatan. Kegiatan pengabdian kepada masyarakat ini berdampak pada peningkatan keterampilan petani bawang merah untuk membuat PGPR. Terdapat sebanyak 70% peserta meningkat pengetahuan dan ketrampilannya dalam membuat PGPR dan sebanyak 60% peserta berniat untuk mengembangkan dan mengaplikasikan PGPR sebagai biofertilizer. Dengan demikian hasil pengabdian tersebut diharapkan dapat melepaskan ketergantungan terhadap input bahan kimia pada lahan tanaman bawang.

Kata kunci: Bawang merah, *Biofertilizer*, *bioprotectant*, *PGPR*

Community Assistance in Preparing Local Resources-Based Organic Agricultural Production Facilities

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Abstract. The decreased soil carrying capacity is due to reduced soil organic matter content, caused by disproportionately larger use of inorganic fertilizers and synthetic chemical pesticides in farming activities than organic fertilizers and environmentally friendly weeds, disease, and insect pests control materials. Reducing the use of inorganic fertilizers and synthetic chemical pesticides could be done by using production facilities of organic agriculture in the form of organic fertilizers and synthetic non-chemical pesticides on a larger scale, which base materials are available in nature. The problem faced by farmers in using these inputs is the lack of awareness and skills in producing organic inputs. This community service program with competitive schematics aims to assist the community in preparing local resource-based organic production inputs in Uwe Nuni Village, Palolo District. Specifically, to increase the awareness and skills of farmers in producing organic inputs based on local resources. The method used for counselling and training is Focus Group Discussion (FGD) approach, as well as practice and demonstration plots, which also provide technical guidance on making compost and botanical pesticides, and organic-based plant cultivation techniques. The results of the community service program show that the implementation of counselling and training increases the community's awareness, skills, and attitudes by 38%, 56% and 54%, respectively. The compost made during the technology training was made from cow and goat manure, while the botanical insecticides were made from quickstick (*Gliricidia sepium*) plant leaves, papaya leaves, and soursop leaves. These plants are potential resources in Uwe Nuni Village, Palolo District.

Keywords: botanic pesticide, compost, organic production facilities

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INTRODUCTION

The intensive use of inorganic fertilizers and chemical pesticides by farmers causes a decrease in land quality which is characterized by reduced soil organic matter and the presence of chemical residues. The presence of soil organic matter is very influential in maintaining sustainability, productivity, and quality of its soil. The lower the organic matter content, the lower the soil productivity (Kusumarini et al., 2020). Efforts to restore the health and fertility of paddy fields can be done by utilizing organic fertilizers and biological fertilizers (biofertilizers) that are adaptive to the ecosystem of agricultural land.

Palolo District is one of the centres of rice production in The Sigi Regency. In 2017, paddy rice production reached 422,869 tons with a harvested area of 9,473 hectares. Uwe Nuni Village, which has the largest populated area in Palolo District, lived by 2,765 people, 1,445 men and 1,320 women to be precise and most of them are farmers. The area of irrigated paddy fields in Uwe Nuni Village reaches 146 ha, and rainfed rice fields reach 340 ha with an average rice production of 4.5 tons/ha. Uwe Nuni village also has 15 ha of yards, 73 ha of fields, and 67 ha of gardens. The community also has cattle and goats (Badan Pusat Statistik, 2018).

The farmer group "Sinar Uenuni IV" in Uwe Nuni Village, Palolo District, consisting of 15 people, is one of the active farmer groups that were into rice farming activities with an area plantation of 20 ha. These farmer group members generally last graduated from high school, with precisely 10 males and 5 females. The farmer group members are still carrying out farming activities conventionally, namely by using inorganic fertilizers that are discordant with the recommendations, which doses tend to be high. The use of chemical fertilizers in high concentrations and doses for a long time causes a nutrient imbalance and a decrease in beneficial soil organic matter content. This event causes certain nutrient depletion which both Zn and Cu deficiency occurred. Nutrient imbalances and the decline in soil organic matter will lead to the degradation of soil fertility which going to threaten the sustainability of farming (Hasibuan, 2015).

The problems felt by farmers who are members of the "Sinar Uenuni IV" farmer group also were into rice cultivation, currently there is a decline in the productivity of the farming business and higher production costs, especially for the purchase of inorganic fertilizers and chemical pesticides. This problem illustrates that early steps must be taken to improve and increase productivity by restoring soil health and quality by eliminating the source that causes declining soil health. Without addressing soil health problems, even the

provision of large-scale inputs cannot produce good results but worsens because of accelerating the decline in soil productivity.

After discussion with members of the problematic farmer group, concluded that there is still potential to increase paddy yields in Uwe Nuni Village, by preparing *organic production inputs* made from locally available materials. One of the yields of rice cultivation is capable to produce organic fertilizer base material (organic matter) in the form of straw. For each hectare produced about 8-12 tons of straw (about 1.2 – 1.5 x grain yield) per season could be used as fertilizer to substitute inorganic fertilizer (Wiada, 2021). The potential of organic matter in Uwe Nuni Village is classified as very abundant in the forms of rice straw, husks, and bran also cow and goat manure, but these materials have not been utilized optimally by farmers to be used as organic fertilizer. Many materials could be made into compost and potentially a lot for formulating (to produce) botanical pesticides.

PROBLEMS

A. Farming Productivity Problems

1. The productivity of rice produced has decreased compared to the expected potential yield because the carrying capacity of the land is decreasing.
2. Organic fertilizers are not available in the local market, so farmers still use inorganic fertilizers for plant cultivation.
3. Pests and diseases that often hit the rice crop.
4. Farmer groups still found it difficult to produce bioinsecticides/bio-fungicides that are effective in controlling pests, that often hit on the vegetable plantation.
5. Farmer groups still have difficulty obtaining very quality seeds.

B. Managerial problems

The administration and marketing management of farmer groups are still conventional and less progressive.

METHOD OF IMPLEMENTATION

The methods applied in the community service program in the competitive schematic are.

- a. **Counselling and training;** as an effort to increase awareness, skill, and attitude for the target group, it is carried out with an adult learning approach.

- b. **Technology introduction;** carried out with demonstration plots and technology assemblies.
- c. **Empowerment of the designated group;** carried out by the mentoring approach.

RESULTS AND DISCUSSION

1. Counselling and Training

Counselling is an educational process that aims to improve the awareness, attitudes, and skills in this case it was of the farming community. The subject of agricultural counselling is all community members. Agricultural counselling also teaches people to collect their ideas and how to achieve them. The method applied in agricultural counselling is learning by practising so they could believe what they saw. While the communication pattern approaches were two-way communications, mutual respect, and mutual trust in the form of cooperation to improve the welfare of the community. This is an application by the research of (Amanah, 2007) and (Riadi, 2020) which counselling is an effort to convey information or technology to participants so that they know, are willing, and able to use the conveyed technological innovations.

The subjects that were presented at the counselling activity consisted of several, namely: sustainable agriculture, fertilization, pest control, and the use of the local potential for the preparation of organic production inputs (Table 1).

Table 1. Counselling Subjects

No.	Subjects	Main Topics
1.	Sustainable Agriculture	Definition
2.	Fertilization	<ul style="list-style-type: none"> a) Physical, chemical, and biological fertility. b) Organic fertilizer: manure (organic) and biological fertilizer c) Inorganic fertilizer: Urea, TSP, KCl (Potassium Chloride) d) Benefits of macro and micronutrients e) Fertilization method
3.	Plant Pest Organisms (disease, pest, and weed) control	Organic (Botanic) Pesticide
4.	Use of available (local) resources for the preparation of organic inputs	Organic fertilizer, use of Local Microorganisms, organic pesticides, cropping pattern or habit.

After the delivery of the counselling material, it was followed by training for preparation techniques of organic inputs, especially techniques for making organic fertilizers (compost) and techniques for providing biorational pesticides (Figure 1).



Figure 1. Atmospheric Photos of Counselling Program

2. Application of organic fertilizers and biorational pesticides

a. Formulation of compost

The organic fertilizer that was made is compost which uses organic waste and livestock manure, this is because livestock manure is one of the locally available resources that is quite found at the location considering that almost all members of farmer groups have cattle or goats. Composting is done by taking cow or goat manure and then mixing it with organic waste, then adding decomposer microbes (EM-4) after that, dousing it with water which already had been added with molasses. The addition of the decomposer microbes (EM-4) plays a role in accelerating the formation of compost (Indrayani et al., 2021). The mixture is then stirred until evenly distributed and stacked with a height of no more than 30 cm and left for 7 days. On the third day onwards, turned over the pile until the composting process is successful (Figure 2).

To find out if the composting process were successful, check the temperature every day on the compost mixture, which is a maximum of 35°C. If the temperature was high, it is necessary to sprinkle the water and the process of re-harrowing so that the temperature is maintained at 35°C (Widiyaningrum and Lisdiana, 2015). A rake is an agricultural tool, shaped like a comb that functions to flatten ploughed land; rake. This is intended so that microbial activity can take place properly, which also means

that the composting process was also going well (Sasaki et al., 2016; Zhou et al., 2015). Compost was going to be formed after 2 weeks which is marked by changes in colour and aroma. With farmers' capability for creating compost, the need for relying on using inorganic fertilizers can be met by substituting organic fertilizers.



Figure 2. Process of Creating Organic Fertilizer

b. Formulation of bio-rational insecticides

The biorational insecticides that were made are botanical insecticides which it made from pesticide plants that grow at the location of the community service program, so the community could further aware and capable to utilize the potential of locally available resources. The plants that are known to have pesticides characteristic were collected and then do simple extraction using water as a solvent. The utilization of plant extracts as botanical insecticides is based on the effects of toxicity and insecticidal activity towards insect pests which can be in any form, there are antifeedant, repellency, preventing oviposition, and growth agents against the insect pest. The advantages of plant extracts as botanical pesticides for pest management are that they are cheap and easy to make, relatively safe for the environment, do not cause poison to plants, and produce healthy agricultural products because they were free of any chemical pesticide residues (Rioba & Stevenson, 2020). Thus, the use of botanical pesticides in pest and disease control is environmentally friendly (Joseph & Sujatha, 2012; Lengai et al., 2020).

In the community service program, plant extracts made as botanical insecticides are quickstick (*Gliricidia sepium*) leaves, papaya leaves, and soursop leaves. This is because the three types of plants are abundant and potentially available resources in Uwe Nuni village, Palolo district. After completing the extraction process, the process of distillation, storage and packaging of the product is carried out.

Extraction was made by taking plant leaves and then blending them until they were smooth and adding distilled water in a ratio of 1:2 and then squeezing them out. The juice is then accommodated in a basin container and fermented for 24 hours. Furthermore, the fermentation product was contained in a jerrycan and stored for use as a botanical insecticide (Figure 3).



Figure 3. Organic (Botanic) Insecticide Formulating Process

c. Demonstration plot of the use of organic inputs

Production facilities obtained in training activities are applied to areas that have been prepared as demonstration plots and pilots. The demonstration plot is made on a plot of rice fields that have been processed. The application of compost was carried out before planting paddy, and the application of botanical pesticides was carried out when the plants show indications of pest attack.

The dose of compost applied was 10 tons/ha by scattering the compost evenly on the rice fields 2 weeks before the planting. Furthermore, rice planting is carried out by the recommendations of the local government. Plant maintenance is done by removing grown weeds. The growth development of rice plants that have been applied with organic fertilizers is shown in Figure 4.



Figure 4. Rice Cultivation of Demonstration Plot

The application of organic fertilizer in the experimental demonstration plot was seen to increase the vegetative growth of rice plants in contrast to land that was not given any organic fertilizer. This is supported by research (Lasmini et al., 2021), (Lasmini et al., 2022) and (Idham et al., 2021) that the application of organic fertilizers both solid and liquid can increase the vegetative growth of plants. In addition, organic fertilizers also play a role in providing nutrients to the soil and making efficient use of fertilizers and substituting inorganic fertilizers (Yang et al., 2020).

3. Empowerment by guidance and assistance

Community guidance and assistance are intended to aid the community became capable to develop so that what was expected is achieved (Suharto, 2005). In this community service, the community guidance and assistance activities carried out are those related to the preparation of organic inputs so the community can break away from being dependent on inorganic fertilizers and chemical insecticides. To find out how the success of this community service program, an evaluation was carried out in the form of distributing questionnaires to participants, both given before the activity and after the activity (Table 2).

Table 2. Assessment of Community Service Program Before and After Execution

Assessments	Statements	5	4	3	2	1
Awareness	Awareness of organic fertilizer.	20 (10)	0 (4)	0 (5)	0 (1)	0 (0)
	Awareness of the Local Microorganisms.	10 (0)	5 (0)	5 (10)	0 (5)	0 (5)
	Awareness of biopesticides.	12 (0)	3 (3)	5 (5)	0 (4)	0 (8)
	Awareness of cropping patterns.	8 (0)	8 (0)	4 (4)	0 (5)	0 (11)

Table 2. (Cont.) Assessment of Community Service Program Before and After Execution

Skill	How to use organic fertilizer.	20	0	0	0	0
		(0)	(0)	(4)	(5)	(11)
	Making various uses of Local Microorganisms.	12	4	4	0	0
		(0)	(0)	(0)	(5)	(15)
	Making a variety of organic pesticides with available (local) resources.	10	5	5	0	0
		(0)	(3)	(5)	(4)	(8)
Attitude	Set the type of plants in the plantation according to the cropping pattern.	8	8	4	0	0
		(0)	(0)	(4)	(5)	(11)
	Willingness and interest in the utilization of organic fertilizers.	15	3	2	0	0
		(7)	(4)	(5)	(1)	(3)
	Willingness and Interest in the utilization of various local microorganisms.	12	4	4	0	0
		(2)	(3)	(7)	(5)	(3)
	Willing and motivated in the utilization of organic pesticides	10	5	5	0	0
		(0)	(3)	(7)	(6)	(4)
	Willing and motivated in setting cropping pattern	8	8	4	0	0
		(00)	(2)	(4)	(5)	(9)

(5: Know Best, 4: Know, 3: Don't Know, 2: Not Know, 1: Completely Don't Know). Numbers in parentheses indicate after execution of the program

The results show that the awareness, skills, and attitudes of participants have increased after they were participating in the community service program. Attitudes increased by 54%, skills by 56%, and awareness by 38% (Figure 5).

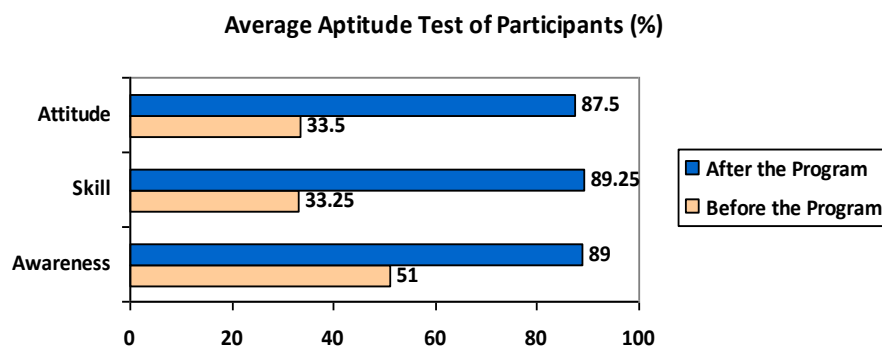


Figure 5. Aptitude Test Diagram of Assessment Points; Awareness, Skill, and Attitude of Participants of the Community Service Program

By providing production facilities made from local potential in a community service program, besides being able to increase the economic value of local resources, it can also minimize production costs for farmers during managing their businesses.

CONCLUSION

The results of the program community service show that counselling, training, and technology demonstration plots increase the awareness, skills, and attitudes of its participants in providing organic production facilities made from local resources, which are 38%, 56% and 54% respectively. The compost (manure) is made from cow and goat dung waste, while the botanic insecticides are made from quickstick leaves, papaya leaves, and soursop leaves. These plants include potential resources in Uwe Nuni Village, Palolo District.

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Original Title:

Pendampingan Masyarakat Dalam Penyiapan Sarana Produksi Pertanian Organik Berbasis Sumberdaya Lokal

Abstrak. Penggunaan pupuk anorganik dan pestisida kimia sintetik dalam aktivitas usaha tani tanpa diimbangi dengan pupuk organik dan bahan pengendali Organisme Pengganggu Tanaman (OPT) yang ramah lingkungan menyebabkan semakin menurunnya daya dukung lahan akibat berkurangnya kandungan bahan organik tanah. Untuk mengurangi penggunaan pupuk anorganik dan pestisida kimia sintetik dapat dilakukan dengan penggunaan sarana produksi (saprodi) pertanian organik berupa pupuk organik dan pestisida non kimia sintetis yang bahan bakunya tersedia di alam. Permasalahan yang dihadapi petani dalam penggunaan saprodi tersebut adalah minimnya pengetahuan dan ketrampilan dalam memproduksi saprodi organik. Program pengabdian kepada masyarakat skema kompetitif ini bertujuan untuk mendampingi masyarakat dalam penyiapan saprodi organik berbasis sumberdaya lokal di Desa Uwe Nuni Kecamatan Palolo. Target khusus yang ingin dicapai adalah peningkatan pengetahuan dan ketrampilan petani dalam memproduksi saprodi organik berbasis sumberdaya lokal. Metode yang digunakan yaitu penyuluhan dan pelatihan dengan pendekatan Focus Group Discussion (FGD), serta praktek dan demplot percontohan serta bimbingan teknis pembuatan pupuk kompos dan pestisida botani serta teknik budidaya tanaman berbasis organik. Hasil pelaksanaan pengabdian kepada masyarakat memperlihatkan bahwa pelaksanaan penyuluhan dan pelatihan meningkatkan pengetahuan, ketrampilan dan sikap masyarakat yakni masing-masing sebesar 38%, 56% dan 54%. Pupuk kompos yang dibuat pada pelatihan teknologi yaitu berbahan baku limbah kotoran sapi dan kambing, sedangkan insektisida botani berbahan baku daun tumbuhan gamal, daun pepaya, dan daun sirsak. Tumbuh-tumbuhan tersebut termasuk sumberdaya yang potensial di Desa Uwe Nuni Kecamatan Palolo.

Kata kunci: Pestisida botani, pupuk kompos, saprodi organik

Digital Payment (QRIS) System Training and Mentoring for MSMEs in Prayungan Village, East Java

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Abstract. Post pandemic of COVID-19 has opened some opportunities and challenges for everyone to be able to optimize digital activities. The digitalization concept that has been implemented by entrepreneurs who can stand despite the global pandemic outbreak can be an option even with the very potential for entrepreneurs to maximize profits. The practice of using QRIS in Indonesia is still only felt for large markets in urban areas, so it has not been maximally penetrated by markets in rural areas and border areas. As is the case with micro, small and medium enterprises (MSMEs) with home-based models that exist in rural areas and only have small capital. As for MSME actors in Prayungan Village, Sawoo District, Ponorogo Regency, the QRIS payment system has the potential to be implemented. This service activity is carried out by Darussalam Gontor University using training and mentoring methods regarding the benefits of the QRIS digital payment system for MSMEs. The purpose of this service is to provide education to MSME actors and be able to transform in the digital era. The results of this service were the realization of making QRIS for MSMEs and the survey results reached 80% who were very satisfied with the implementation of training and assistance for the QRIS payment system for MSMEs.

Key Words: Payments, QRIS, MSME.

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INTRODUCTION

The development of this day makes fast advances in technology, such as trading systems, payments, and so on. The existence of facilities and infrastructure in various regions has been able to take advantage of the sophistication of technology that has been created. The development of technology in Indonesia has been felt by the community and more than 64% of the total population, and they can enjoy access to cyberspace. This is an increase compared to 2019 only in the range of 17% or 25 million people. (*Badan Pusat Statistik*, n.d.)

The COVID-19 pandemic that started in 2019 opened some opportunities and challenges for everyone to be able to optimize all their limited activities, but they can carry out their activities as they should. Digital technology plays a very good role in helping people carry out their limited activities. This is explained in the results of a survey from Bank Indonesia, that during the COVID-19 pandemic. There were 2970 MSMEs under his guidance, which were able to survive the pandemic, with details of 370 MSMEs that did not impact by the pandemic or 72.4% who had a stable turnover. While 27% received increased turnover from the unimpacted MSMEs, and made sales with an online system, both in the marketing, sales, and payment systems profits (Pracoyo et al., 2022). The concept of digitalization that has been applied by entrepreneurs who can stand up despite the global pandemic outbreak can be an option and even have the potential for entrepreneurs to maximize.

The use of digital technology in trading and payment systems that are easily accessible to all of society, which also an opportunity for public sell and purchase transactions that provide convenience to the non-cash payment system so that it has the potential to become the community's favourite choice (Retnowati et al., 2022, p. 17). Today's society demands all aspects of buying and selling transactions, such as in the context of payments with a cashless society system that is mushrooming amid society. A cashless society is a financial transaction that does not use cash but is in the form of a card issued by a financial institution or a QR Code (Kurniawati et al., 2021, p. 24).

This idea can also possibly be carried out during the post pandemic period which is the beginning of the awakening from the economic downturn. Even though there are still at least MSMEs that utilize the digital economy and still use the manual method (face-to-face). Various government efforts by issuing policies to support MSMEs such as digital

literacy education can support success in the Quick Response Code Indonesian Standard (QRIS) policy which is a policy in unifying various QR Codes from various Payment System Service providers (PJSP) (Yuliati & Handayani, 2021). QRIS itself began to be developed on a joint payment system with Bank Indonesia so that the transaction process with the QR Code can be easier, more secure and faster. All these PJSPs that will issue a QR Code on their payment system must implement QRIS. QR code itself is a code or matrix code that can be read by a reader where the QR has a marker of three-square patterns in the lower left, upper left, and upper right corners, and has a black module in the form of a square of dots or pixels that can store data (Pracoyo et al., 2022).

PROBLEM

This digital-based payment model through QRIS is currently very well supported by the level of needs of the Indonesian people with the use of smartphones. Smartphones themselves have become an important need for the community proven by the results of the data that in 2020 the Indonesian people have smartphones as many as 338.2 million, while the total population of Indonesia is only 272.1 people, This shows that everyone in Indonesia can have a smartphone, more than one. This is one of the potentials for the community to have digital access to all activities, especially in the practice of buying and selling, online payments, and other needs (Utami et al., 2021).

The determination of QRIS was according to the National Payment Gateway (GNP) order, which leads to the implementation of an efficient, reliable, safe, and smooth payment system that prioritizes expanding access and consumer protection or with various transactions related to digital payments (Tobing et al., 2021, p. 492).

The practice of using QRIS in Indonesia is still only felt for large markets in urban areas, so it has not been maximally penetrated by markets in rural areas and border areas. As is the case with MSMEs with home-based models that exist in rural areas and only have little capital.

METHOD OF IMPLEMENTATION

The methods in this training and mentoring, the participants who took part are MSME business actors in Prayungan village. This training and mentoring were carried out for 1 day for training and assistance in making QRIS, 7 days of waiting for account verification, and 1 day after the verified account makes payments through QRIS. In the last

stage, the service team opened the time on the eighth day after the practice of non-cash payments with QRIS. This implementation was carried out at the Prayungan village hall, Sawoo sub-district, Ponorogo regency. The stages carried out include:

1. Implementation of Forum Group Discussions

This activity was carried out as an evaluation of the needs of MSMEs in Prayungan Village, Ponorogo Regency, to increase production results by optimizing marketing and digital payments to facilitate easy, cheap, and fast for both buying and selling transactions. Previously, training on e-commerce was carried out by the team service and then continued with a non-cash payment system, which was ultimately determined by the QRIS payment system supported by government policies to improve digital-based payment systems. At this stage, the service team determines the needs of the Prayungan Village MSMEs with education about the non-cash payment system so that they can increase innovation and can answer the challenges of the business world, that is currently developing. After the topic of the needs of the Prayungan Village SMEs is determined, the next step is the introduction and education of QRIS to SMEs in Prayungan Village. This activity was carried out at the Prayungan Village Hall, which was attended by the village head, PKK (family welfare empowerment) for women and MSME actors in the Prayungan Village. The instructors for the introductory information on the implementation of QRIS as well as FGD are the team of community service.

2. Training and Mentoring

As explained before, this activity was only carried out for 1 day but for monitoring and evaluation the team opened the time on the eighth day or after the verification status. So, the first preparation made by the service team is to prepare with the village head of Prayungan to be able to support physically, namely in encouraging MSME actors in Prayungan Village and the implementation of this activity is still being carried out at Prayungan Village Hall, with MSME actors in Prayungan Village. In this training and mentoring, the service teams educate about the efficiency of using QRIS and understanding the systematics of making QRIS, starting from visiting the official website, account registration, selecting payment activities, account registration notifications, uploading document files, and notification of completion of files.

3. Monitoring and Evaluations

This monitoring is carried out by the community service team as a solution for MSMEs who will propose several problems related to registration and the use of non-cash payment methods through QRIS. The success of the activity can be justified by the level of understanding of the participants after participating in this activity, for that to be able to determine the level of understanding of the participants after participating in this activity, a satisfaction survey was conducted on the second and third days on a special form containing the satisfaction clause and understanding of the participants. implementation of the manufacture and application of payment systems through QRIS.

RESULT AND DISCUSSION

The implementation of this community service activity is a form of collaboration between the academic community of the University of Darussalam Gontor (The Law of Islamic Economics Department) and the Prayungan village community, Sawoo District, Ponorogo Regency, East Java as training and assistance for digital payment systems so that they can move the MSME economic sector to be more advanced. The implementation of this activity was carried out on April 5-13, 2022, at the Prayungan Village Hall, Sawoo District, Ponorogo Regency. In the initial session of this service activity, participants consisting of MSME actors in Prayungan Village were given a briefing and education about the concept of digital payments through QRIS, the benefits and the efficiency of QRIS. Currently, the growth of the digital economy is increasing greatly, so MSME players are also asked to gradually switch to marketing their products through e-commerce, as well as payment by e-wallet because it is in line with the recovery of the Indonesian economy in the first quarter of 2021 by 0.74%. It is hoped that the purchasing power of the community will increase, followed by the increasing number of MSME actors. The use of QRIS is a non-cash payment solution only with smartphones so that the transaction is more practical, easier, and faster.



Figure 1. FGD at Prayungan Village Hall

In implementing this digital payment system mentoring and training, first, business actors were required to have a bank account operating in Indonesia. In this implementation, not all MSMEs in Prayungan Village have had bank accounts, because their MSMEs were mostly grouped MSMEs or also because they had not opened accounts for business groups. As for individuals, only a few MSMEs could continue, namely, Mbak Pipiet's Spice Duck Restaurant owned by Ms Pipiet, MSME cookies and MSME woven bags belonging to several business actors. At this stage, the service team accompanies from:

First, visit the official website, through the following link <https://qris.id/homepage/>. At this stage, participants can access it with smartphones or laptops that are already connected to the internet. The service team visited each participant's seat and checked the level of understanding and access to the website. This assistance and training patiently accompany and direct the participants in registering payments with the QRIS system. Second, the participants registered with their formal and legal data, such as ID cards, active cell phone numbers, and emails. The things that need to be considered in user data include the example of photographs of all documents, photos must be original, legible, and focused. (The ID card like as original E-KTP, is still valid, clear, and without editing also keep the still images of the ID card was free of reflections and glare. Incomplete or unclear documents or dark or blurry photos will not be accepted. (Merchant Registration QRIS InterActive, n.d.) To prevent the misuse of QRIS, we will carry out several verification attempts. Uploading documents or photos other than the original ID could resulting the rejection of the registration process and suspension of the account. The images or photos

taken from the e-KTP must be clear as usual, there should be no light reflection, blur, or image defects.

Second, the selection of payment activities, namely the selection of MSME participants to choose which payment method from the three options, namely through QRIS, Virtual Account (, or e-wallet (Dana, OVO, GoPay, etc.) each financial institution. The MSMEs that are ready to practice QRIS are Duck Spice Mbak Pipiet Restaurant is also supported by the readiness they already have, such as having an account in a bank owned by a shop owner or restaurant as the form of the individual business, then MSME Duck Spice Mbak Pipiet restaurant immediately opened her virtual account and paid for registration through her virtual account. As for the provisions, if you have made a payment, then you pay, you will receive a notification or reply about the next step. Payment for this QRIS barcode is only valid for 14 working days. Then, if you haven't made a payment yet. within the specified time, notifications cannot be received for k next stage. As for if you have made a payment, you will get a username *and password to go to the dashboard page which is sent via email or WhatsApp*.

Third, the next step is to enter the page or dashboard to log in and complete administrative fixed documents by uploading data independently. This application will be processed to obtain an NMID (National Merchant ID) starting from the time the data is received in full and if there were a problem with uploading, then within 1x24 hours it will be informed again so that it can be corrected immediately.

Fourth, get a notification of the results of the completeness of the file that has been uploaded. Within a maximum of 7 days, the merchant/store will receive a notification via email or WhatsApp if the requirements are complete and can print QRIS independently. The notification received by Mbak Pipiet's Spice Duck restaurant is 7 days from registration.



Figure 2. Barcode QRIS Spice duck Mbak Pipiet Restaurant

At the monitoring and evaluation stage or this final stage, the service team distributed questionnaires to MSME actors which aimed to evaluate and evaluate the satisfaction level of participants with training and assistance in making QRIS as an effort to improve and progress MSMEs in Prayungan Village. The results of the questionnaire are as follows:



Figure 3. Satisfaction Level

From the data above, it can be identified that there are 80% of MSME participants have been very satisfied with this training and mentoring, while the remaining 15% are satisfied, 5% are normal, and 0% are not satisfied, which means that all MSME actors in Prayungan Village feel the benefits of this training and mentoring activity.

CONCLUSION

Training and assistance in making a non-cash payment system with the QRIS system is an activity needed for MSME actors in Prayungan village, Sawoo sub-district, Ponorogo district so that they can increase and develop potential and innovation for MSME actors. For the implementation of training activities and assistance in making the QRIS payment system can be carried out as determined. This is also shown from the results of monitoring and evaluation of the satisfaction level of the UMKM in Prayungan village which shows 80% are very satisfied. The obstacles to the implementation of this activity are that most of them are in the form of groups but not business entities, so they have limitations in joint accounts, so this practice has not been fully absorbed by all MSMEs in Prayungans village.

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MSME Entrepreneurial Assistance in Sumbersekar Village using E-commerce and Marketplace Applications

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Abstract. The strategic issue faced by the Sumbersekar Village government located in the Dau sub-district, Malang Regency in 2020 is the lack of community welfare development, despite the availability of superior human resources so which caused the stunting among rural communities. One of those lacks was community economic infrastructure development. The purpose of the MSME (Micro, Small and Medium Enterprises) Entrepreneurial Assistance activity in Sumbersekar Village is to provide IT infrastructure and its briefing to support MSME entrepreneurial economic activities amid the COVID-19 pandemic. The application in this activity expects to be solution (infrastructure). The activity was carried out through 6 stages: Expert judgment; Evaluation and revision of infrastructure; Developing curriculum and modules; Socialization and recruiting participants; Training and mentoring; and Evaluation of activities. The results of the overall evaluation are: The training is limited to participants and with a strict process because it is still in the *PPKM* (Indonesian abbreviation version of Implementation of Restrictions on Social Activities) period, the training facilities in the village are less than optimal so they are not comfortable for participants, the material deliverances is less than optimal due to meeting restrictions and limited absorption capacity of participants. The conclusion of the activity is: There is an increase in the expertise of the MSME entrepreneurship in Sumbersekar Village, MSMEs have a new way of doing entrepreneurship digitally using e-commerce and social media. The implementation of IT briefing for MSME entrepreneurs so that they can maintain their business amid this pandemic by migrating to e-commerce and marketplaces.

Keywords: Entrepreneur, MSME, E-commerce Application, Marketplace

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INTRODUCTION

Geographically, Sumbersekar Village is located at position 07°49.113" South Latitude and 112°33'56.285 East Longitude. Meanwhile, administratively, Sumbersekar Village is in the Dau District, Malang Regency, which is bounded by the neighbouring villages, that is, to the north borders Dadaprejo Village, Junrejo District, Batu City, to the west it borders Tlekung Village, Junrejo District, Batu City, to the south the borders Village Gadingkulon, Dau District, while on the east side it is bordered by Mulyoagung Village, Dau District. The distance from Sumbersekar Village to the District Capital is 3 km away, which can be reached within 5 minutes. Meanwhile, the distance to the Regency Capital is 30 km, which can be reached within an hour. Also, the distance from Ma Chung University, which is 9.5 km away or 25 minutes the minimum time required to arrive. The area of Sumbersekar Village is 435.70 Ha. The existing land area is divided into several designations which can be grouped as public facilities, settlements, agriculture, plantations, economic activities, and others. The implementation of rural development is going to work well if there were continuity between the aims of the village government and its community (Eko, 2015). This is the core of development in rural areas, following law number 6 of 2014 concerning villages. The strategic issue facing the village government in 2020 is the lack of community welfare development, despite the availability of superior human resources that caused the stunting among villagers. Such as the development of community economic infrastructures such as animal markets and tourism markets (Halim, 2020).

The purpose of the Sumbersekar Village MSME entrepreneurial assistance using the e-commerce and marketplace application is to provide IT provision to support MSME entrepreneurial economic activities amid the COVID-19 pandemic in form of assistance using the e-commerce application and marketplace as an effort to increase the village competitiveness. The benefits of assisting in the use of e-commerce and marketplace applications are:

1. As the village effort to support the growth and development of MSMEs for villagers,
2. A form of transforming MSMEs for villagers from conventional transactions to digital,

3. Presenting new ways for entrepreneurs and consumers to be able to buy and sell (Ernawati, 2019),
4. Expanding the reach of MSMEs and helping them develop their business, and
5. Acceleration by using available technology, especially e-commerce to keep the wheels of the MSME economy go around.

PROBLEM

According to the discussion above and the support of field observations and interviews with Village Officials, several problems can be formulated, namely:

- a. How to improve the economy of the communities of Sumbersekar Village in general and MSME entrepreneurs in particular amid the COVID19 Pandemic?
- b. How to provide IT provisions for MSME entrepreneurs so that they can maintain their business amid this pandemic by migrating to e-commerce and marketplaces?

METHOD OF IMPLEMENTATION

This service activity is carried out through 6 stages, namely. First, expert judgment; Second, evaluation and revision of infrastructure; Third, creating curriculums and modules; Forth, outreach and capturing participants; Fifth, training and mentoring; Last, evaluation of assistance program. First, expert judgment is the initial stage to bring together the proposing team and village officials who will coordinate this program. In detail, expert judgment activities include coordination and consultation with partners, which are Sumber Sekar Village MSME entrepreneurs to determine partner PICs and activity schedules; Compose an implementation schedule with PIC partners; Discuss training needs related to infrastructure.

During the evaluation and revision stage of the village infrastructure, the proposal team will survey to evaluate the available infrastructure in Sumber Sekar Village, especially the hardware that will be used by MSME entrepreneurs in training and mentoring. This was done to adjust to the technology version that will be distributed so compatibly to the hardware and operating system. The details of this activity are the evaluation of the place and room that will be used for training; The evaluation of supportive training hardware; The evaluation of hardware for the software minimum requirement.

The next stage is to develop training modules and curricula. Training and mentoring will be complemented by modules that will be provided by the team. Those modules are collected from search results on websites or their creation for special topics that are not available on the internet (Kendall, 2012). At the socialization and obtaining participants stage, the proposal team is aware that the new program needs to be socialized so that it can be beneficial to the villagers. Therefore this stage is going to do several things related to these efforts, namely: Prepare socialization material, at this stage the proposing team prepares a material plan for MSME mentoring and training activities that will be socialized to villagers; Implementation of socialization, at this stage the proposing team carries out explanation and socialization activities to the villagers about e-commerce for MSMEs; and last, registers the participants, in this activity the proposing team conducts registration of villagers whose are interested as the participants in MSME mentoring and training activities.

Next is the stage of implementing the training and mentoring itself. The following steps are: Make notifications related to the implementation of mentoring, at this stage the proposing team makes announcements on posters and banners regarding the schedule, the place, and material for implementing mentoring activities; Carries out training and mentoring activities, at this stage the proposing team is following the schedule those which have been determined before, to carry out E-Commerce mentoring and training activities for MSMEs and villagers; Provide materials and certificates to participants and tutors, at this stage the proposing team are going to provide materials and certificates to participants and involved tutors in this mentoring activity; Also, make a training report, at this stage after those mentoring activity, the proposing team are going to make a report and evaluate this activity. For the sustainability of this service program, it is necessary to carry out an evaluation stage. Therefore, the proposing team are going to make questionnaires at the beginning and end of the training to obtain data on whether this training has succeeded in providing benefits to all participants.

RESULT AND DISCUSSION

The results of implementing the activities in each stage are: The initial step is the team coordinating with partners by visiting them several times. Initial coordination was also done online using WhatsApp and email. Coordination with partners is carried out to reach an agreement regarding the training plan and details of the topics to be conveyed.

After that, the preparation of a training module consisting of 3 modules, namely: First, the e-commerce module with topics of discussion on how to register to become a seller, how to set up a store, how to add products, how to process products, send orders, converse with buyers, how to add accounts and withdraw balance; Second, WhatsApp for business (Wb) module with topics searching for Wb Applications, selecting accounts for Wb, transferring chat history, transferring data, completing profiles, filling tool schedules, creating catalogues, messages outside working hours, sentences of greetings, linking Wb accounts with Facebook; and Last, Ig or Instagram for business modules with topics tutorial on registering an Instagram Account, tutorial on creating an Ig Profile and Content (Along with Feeds, Captions and Stories, Marketing Strategies on Ig Feeds, Live, Story, Ads and Live Ig. After that, carrying out socialization activities and recruiting participants were carried out in 3 stages, namely: First, coordination with the appointed chairman of the MSME entrepreneur in Sumbersekar Village Partners to assist during a training session; Second, making invitation posters to facilitate socialization; Last, registering participants and creating participant only WA (WhatsApp) groups to facilitate communication and follow up. The activities can be seen in Figure 1.



Figure 1 Undergoing program activities

The results of the evaluation of community service activities are first, training is carried out with restrictions on participants and with strict health protocols because it is

still in the PPKM period; Second, training facilities in the village are not optimal so those are less comfortable for participants; Last, material delivery is not optimal due to meeting restrictions and limited participant absorption capabilities.

The impact of the training and mentoring activities on the use of the E-commerce and Marketplace Applications for the villagers turns out that it can improve the economy of the communities of Sumbersekar Village in general and MSME entrepreneurs in particular, which can be seen from the benefits of the activity, namely First, potentially to support the growth and development of MSMEs for villagers; Second, Forms of transformation of MSME villagers from conventional to digital transactions; Third, capable to presenting new ways for entrepreneurs and consumers to able to buy and sell; Forth, capability to expand the reach of MSMEs and help MSMEs develop their business.

Apart from that, training and mentoring activities for using E-commerce and Marketplace Applications for these villagers can provide IT provision for MSME entrepreneurs so that they can maintain their businesses amid this pandemic by migrating to e-commerce and marketplaces, where the impacts and benefits of accelerating the use of technology especially e-commerce in keeping the wheels of the MSME economy go around (Technology EIKON, 2021).

CONCLUSION

Training and mentoring activities on the use of e-commerce and marketplace applications for the villagers can improve the economy of the residents of Sumbersekar Village in general and MSME entrepreneurs in specific. Also, that could provide IT provisions for MSME entrepreneurs so they can maintain their businesses amid this pandemic. From the evaluation of the activities, it was also obtained that: First, mentoring and training were carried out with limited participants and strict health protocols because they were still in the Covid Pandemic; Second, the training infrastructure in the village is less than optimal, making it less comfortable for participants; Finally, the delivery of material is less than optimal due to meeting restrictions and limited participants' absorption abilities.

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Original Title:

Pendampingan Wirausaha UMKM Desa Sumbersekar menggunakan Aplikasi Ecommerce dan Marketplace

Abstrak. Isu strategis permasalahan yang dihadapi oleh pemerintah Desa Sumbersekar yang terletak di kecamatan Dau, Kabupaten Malang di tahun 2020 adalah membangun masyarakat yang sehat dengan SDM yang unggul sebagai upaya pencegahan Stunting di masyarakat desa, serta pengembangan Sarana Prasarana Ekonomi masyarakat. Tujuan kegiatan Pendampingan Wirausaha UMKM Desa Sumbersekar adalah memberikan pembekalan IT demi menunjang kegiatan ekonomi wirausaha UMKM ditengah pandemi COVID-19 dengan menggunakan Aplikasi Ecommerce dan Marketplace sebagai upaya peningkatan daya saing Desa. Kegiatan dilaksanakan melalui 6 tahap yaitu: Expert judgment, evaluasi dan revisi sarana prasarana, menyusun kurikulum dan modul, sosialisasi dan menjanging peserta, pelatihan dan pendampingan, serta evaluasi kegiatan. Hasil evaluasi secara menyeluruh yaitu: Pelatihan dilakukan pembatasan peserta dan dengan prokes yang ketat karena masih dalam masa PPKM, sarana prasarana pelatihan di desa kurang optimal sehingga kurang nyaman bagi peserta, penyampaian materi kurang optimal karena pembatasan pertemuan dan kemampuan penyerapan peserta terbatas. Kesimpulan kegiatan adalah adanya peningkatan keahlian pelaku UMKM warga Desa Sumbersekar, UMKM memiliki cara baru dalam berwirausaha secara digital menggunakan ecommerce dan sosial media. Terlaksananya pembekalan IT bagi wirausaha UMKM agar tetap dapat mempertahankan usahanya ditengah pandemi ini dengan migrasi ke ecommerce dan marketplace.

Kata kunci: Wirausaha, UMKM, Aplikasi Ecommerce, *Marketplace*

Digital Marketing Training and Visual Identity Design as a Strategy for Economic Recovery of the People of Kucur Village in Malang Regency from the Impact of the COVID-19 Pandemic

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Abstract. The Medium-Term Development Plan (RPJM) of Kucur Village from 2019 to 2025 focuses on the community's economic recovery due to the COVID-19 pandemic. This Community Service activity is a form of support for the planning document for 6 (six) years. In addition, it is an elaboration of the vision and mission of the Village (RPJM). The problem faced by the people of Kucur village that has been identified is that Kucur village has significant tourism potential but has not been fully managed optimally.

On the other hand, the Kucur village tourism activist team does not fully understand digital marketing, which is now a trend and an effective way during the COVID-19 pandemic. In addition, practical solutions are needed to restore the community's economy immediately. Departing from these problems, an increase in the competence of the Kucur village tourism activist team, especially the Gunung Sari Valley, in the field of marketing; in the form of *copywriting* training and its implementation on social media; 2) optimization of smartphones and applications for digital marketing activities such as simple design applications and video editing, and 3) Design of the visual identity of the Gunung Sari Valley (LGS) and its implementation to various media. As a result of this activity, there is an increase in public understanding to optimize LG S Nature Tourism through digital marketing. Furthermore, the visual identity developed by the Community Services team received a positive response from the LGS management team. It aroused the manager's interest in producing *merchandise* and developing other facilities for monetization.

Kata kunci: COVID-19, Lembah Gunung Sari, Kucur, *Copywriting*, Design

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INTRODUCTION

Geographically, Kucur Village is located at a position of 7°57'.44.59" South Latitude and 112°33'.06.77" East Longitude. The topography of the height of this village is in the form of high land, about 2494 m above sea level. Administratively, Kucur Village is located in the Dau District, Malang Regency. Kucur Village has strategic potential with an area of 717.00 ha divided into seven (7) hamlets: Sumberbendo Hamlet, Krajan Hamlet, Klampok Hamlet, Turi Hamlet, Klaseman Hamlet, Godehan Hamlet, and Ketohan Hamlet.

Kucur Village has agricultural products that are the mainstay of the community, namely Corn, Red Pepper, Peanuts, Sugarcane, small chilies, and cassava. Then also about 182 Ha of agricultural land is planted with oranges, and 17 Ha is planted with wood such as *sengon* and *jabon*. Most of the people of Kucur Village work as farmers, be they vegetable, orange, and coffee farmers. The coffee varieties in Kucur Village are robusta, arabica, and liberica (Rollando *et al.*, 2022). Seeing the condition of the land in Kucur Village, which does not fully have fertile land, the people of Kucur Village are almost 60% independent of the agricultural sector and choose to work in urban areas and industries/factories. The problem faced by farmers in Kucur Village, especially small-scale farmers, until now concerns the lack of capital. In addition, farmers in Kucur Village predominantly partner with bosses, especially bosses from outside Kucur Village, rather than accessing capital assistance from banks or other financial institutions (Yulianjaya & Hidayat, 2016). Chili production in Kucur Village has also gradually decreased due to the impact of climate change (Naura & Riana, 2018). According to the Village Head, to increase income, people raise livestock such as cows and goats as additional income.

Based on observations, the typical traditions of the Javanese people are still very much felt in Kucur Village regarding Islamic religious activities. For example, Javanese cultural and social aspects strongly influence the atmosphere. This is illustrated in the Javanese - Islamic calendar, still *nyadran*, *slametan*, *tahlilan*, *mithoni*, and others, all of which reflect the inculturation sides of Islamic and Javanese culture. In addition, crops such as corn, cassava, and peanuts are abundant as local wisdom in Kucur Village. However, there is no use of local *wisdom* by the local community for nutritious foodstuffs that children demand (Anggraheni & Lismanda, 2021).

Despite this, the economy in Kucur Village is running smoothly and quite well; the number of unemployed is low and almost non-existent. To improve the community's



economy, the Kucur Village Government, together with the Regency Government through the social service office, always tries to assist in the form of livestock (goats and cows) as well as the community is given loans through KUR, and business capital loans with shallow interest (Prasetyo et al., 2019). As a result, it is proven yearly that the number of poor rice beneficiaries is decreasing. Furthermore, to improve the community's economy, the Kucur Village Government prioritizes the construction of facilities and infrastructure to support the community's economy.

In terms of the development of tourist villages, Kucur village also has quite potential; 2 tourist destinations were initially developed to support the economic wheels of the Kucur village community. The tourist destinations are citrus village tourism and Gunung Sari Valley (LGS) natural tourism. This tourism potential is also supported by its strategic location, excellent natural conditions, and beautiful scenery. However, this potential must receive the support of the surrounding community so that Kucur Village tourism can compete with existing tourism both in Malang regency itself and other regions (Yulianjaya & Hidayat, 2016).

However, despite having good potential as a tourist village, the COVID-19 pandemic has paralyzed the villagers' economy and frozen various efforts to realize this potential. Abdul Karim, to Kucur village, revealed that the Kucur Village Medium-Term Development Plan (RPJM) for 2019 to 2025 focuses on the community's economic recovery due to the COVID-19 pandemic. Therefore, in the tourism village sector, an appropriate and effective strategy is needed to become a quick and practical solution for the community so that the potential of this tourism village can be re-developed and attract tourists from Malang regency and other areas in the *new normal* era (post-pandemic).

PROBLEMS

Based on observations and discussions facilitated by LPPM Ma Chung University with the Kucur village apparatus, it can be concluded that there are several fundamental problems, as follows based on the priority scale:

- 1) Kucur Village has the potential for superior tourist villages, including citrus villages and Gunung Sari Valley, but has not been optimally managed.
- 2) Tourism village managers do not fully understand digital marketing, which is now a *trend* as well as an effective way during the COVID-19 pandemic.

- 3) Kucur Village is one of the affected parts of the COVID-19 pandemic outbreak, which needs a lot of support and practical solutions to restore the community's economy immediately.

Based on the identification of problems with partners, the solutions offered are:

- 1) Provides partner assistance to optimize the potential of tourism villages through a disciplined approach to Visual Communication Design.
- 2) Provides practical and simple training/workshops on promotion strategies in the digital era to support the promotion of kucur tourism villages.
- 3) Provides effective and attractive visual communication media design services for the superior tourism of Kucur village to be a relatively fast solution to the impact of the COVID-19 pandemic, namely Natural Tourism and Gunung Sari Valley Springs.

The output targets that will be produced from the community service program by the Service Team based on aspects of problems and solutions are; 1) Increasing understanding and skills of the community for optimization of tourism villages through attractive promotional strategies in the digital era; 2) Have an engaging, effective and practical visual communication medium to increase the potential of the kucur tourism village; 3) Publication of activities through national journals with ISBNs or ISSN.

Table 1. Problem Identification and Solutions

No.	Problems	Solutions and Outcome Targets	Approach Methods
1	Kucur Village has the potential to be a superior tourist village, including citrus villages and Gunung Sari Valley, and others. However, ironically it has not been fully managed optimally.	Solution: Provide partner assistance to optimize the potential of tourism villages through a disciplined approach to Visual Communication Design. Output: Increased public understanding of tourism village optimization through attractive promotional strategies in the digital era.	Scheduled assistance for science and technology transfers for partner villages.
2	The people of Kucur Village do not know how to promote tourism villages to be known by tourists in the digital era.	Solution: Provide practical and simple training/workshops on digital promotion strategies to support the promotion of kucur tourism villages. Output: Increasing community skills for optimization of tourist villages through attractive promotional strategies in the digital era.	Practical training/workshops on digital promotion through social media.
3	Kucur Tourism Village is one of the affected parts due	Solution: Providing practical and attractive visual communication media	Development of Gunung Sari Valley

No.	Problems	Solutions and Outcome Targets	Approach Methods
	to the COVID-19 pandemic, which needs a lot of support and practical solutions to restore the community's economy immediately.	design services for Gunung Sari Valley tourism to become a means for improving the community's economy due to the COVID-19 pandemic. Outcomes: Brand identity, <i>merchandise</i> , and organic social media.	brand identity along with <i>Social Media Organics</i> .

METHOD OF IMPLEMENTATION

Based on the solutions offered from the problems faced by partners and the external targets to be achieved, the following are the steps that will be taken in service activities to Kucur Village Partners.

From the stages of activities in Table 1, the service team will go directly to the Kucur village and coordinate with the Kucur Village apparatus for planning the Science and Technology program for Partner Villages (IbDM). From these activities, it is hoped that the output targets of each problem can be achieved. The first phase is to organize discussions and presentations on tourism village optimization strategies followed by representatives of Kucur Village officials or potential tourism village managers to ensure that representatives of Kucur Village understand tourism village optimization through attractive promotional strategies in the digital era.

The second phase is to carry out training/*workshops* on digital promotion strategies to support the promotion of Kucur tourism villages, followed by representatives appointed by Kucur Village to ensure that Kucur Village representatives have the skills to optimize tourism villages through attractive promotion strategies in the digital era. The third phase is for the service team to offer visual communication media design services in the form of brand identity, *merchandise*, and organic social media that are effective and attractive for kucur tourism village to become a quick means for improving the community's economy due to the COVID-19 pandemic.

The evaluation method for implementing the partner village service program is carried out at the end of the mentoring. The service team and partners will review whether all IbDM programs are running well and follow up if they encounter obstacles while implementing IbDM activities. Meanwhile, the sustainability after IbDM is implemented can be seen from the partners' independence in optimizing the potential of Kucur village.

RESULTS AND DISCUSSION

A. Partner Problem Identification

It was decided that the community service activity focuses on optimizing the natural tourism potential of the Gunung Sari Valley (LGS). This activity aims to make LGS a tourism destination, especially during the COVID-19 pandemic. Therefore, the Community Services team conducted an in-depth discussion about what LGS managers face problems in developing LGS's natural tourism potential. On this occasion, we met LGS's public relations officer, Ms. Lika Bomantara. She provided an overview of LGS and some fundamental problems related to promotions that have been carried out so far. From this exposure, it was found that the promotional activities carried out so far using WhatsApp communication media and posting content on Facebook social media in an unstructured manner and as is.

Then LGS also realized that the methods used in promoting so far have not been effective and have not adequately communicated the advantages of LGS's natural tourism. At this stage of preliminary data mining, it was concluded that LGS managers do not have sufficient provisions regarding how to promote LGS with a broader projection. The visitors are dominated by local tourists only. Then after the community services team discussed this more deeply related to this problem, the community services team finally decided to provide a transfer of knowledge about promotion. We give the name of our project is the LGS branding strategy for tourism village optimization. The community services team is trying to help to dig deeper into the assembled LGS profile. This profile will be used to create a visual concept intended to create LGS identities. This visual identity can later be a supporting medium for LGS's natural tourism branding.

At this stage, the community services team got sufficient data on what references should be considered in the visual design of LGS identity. Detailed descriptions of the reference include distinctive color identities: green and blue. Furthermore, visually it can convey the message that LGS is a natural tourist destination that is beautiful and charming.

B. Tourism Promotion Strategy Training

The promotional training lasts for two weeks with a 2-day face-to-face system / offline training with strict protocols. The rest is assistance in completing tasks through

coordinating group classes on the WhatsApp platform. The following is an overview of its activities:

1) Copywriting

According to Sugarman (2012), copywriting is writing marketing and promotional materials to persuade and motivate people to perform actions, such as making a purchase, clicking on a link, asking, or influencing people to contact sales (Albrighton, 2010). Furthermore, copywriting can also be said to be a mental process whose successful implementation reflects the total amount of all experience, specialized knowledge, and the ability to mentally process information and transfer it into a piece of writing to sell a product or service. Therefore, *copywriting* skills are practical abilities that must constantly be honed and depend on the extent of a writer's experience.

The content of the material presented by the team in this first training is how the strategy can be done in writing a script/*script* on promotion to achieve the expected final goal. The scriptwriting methods are *Attention, Interest, Desire, and Action (AIDA)* (Sellas, 2016). After the delivery of the material by the training resource persons, it was followed by the assignment to measure the participants' understanding of the material presented.

2) Social Media Digital Marketing

Social media is a means of communication, information sharing, and a medium of self-actualization and collaboration in cyberspace (Elbanna et al., 2019). Social media marketing or *Social Media Marketing (QMS)*, in an academic context, can be understood as a dialogue triggered by consumers/viewers or business/product/service that occurs around the parties involved to disclose or communicate information related to promotions, or to learn from the experience of using each other (consumers), which ultimately benefits one or all of the parties involved (Dwivedi et al., 2015). In a more recent sense, QMS is defined as the formation of meaning and the relationship between brands and customers, by offering private channels along with currency for a user-centered network (platform) and social interaction (Ibrahim, 2022). SMM is one of the channels in digital marketing (*Digital Marketing*). In addition, many other types of marketing channels can be done on the internet.

In addition to *copywriting*, material about promotion through social media was also delivered. This training begins with introducing the advantages of mobile devices brought by each participant as a device or tool that can be maximized to create promotional content. The team said tool limitations are often the main reason for creating promotional content. This is due to the public's perception that it is too high for a tool that can be used as a promotional content creator, namely professional equipment, even though it is far from using a tool that is very close to the community, namely mobile phones with multimedia features that can be empowered and maximized for designing promotional content.

Furthermore, after the participants received training on how to maximize their respective mobile devices as a promotional content designer tool, the introduction of the public on the Tiktok social media platform by Mr. Sultan, this platform can be an effective medium to use as a promotional medium today considering the number of users and the intensity of using the *platform* this has the potential to be able to introduce LGS natural tourism more broadly. There are so many benefits that can be obtained from this *platform*, one of which can be used as an easy-to-use video editing *software/app*. The final results of video editing can be directly shared with the broader community. Then on this *platform*, there are also a lot of tips and tricks about promotion and others that can be used as a reference in designing promotional content.

The material presented in this training is designed to be easy to understand. Therefore, it can help the participants later in doing tasks during the mentoring period. This community services training activity went smoothly and received a positive response from the participants who attended can be seen from the enthusiasm in participating in this training program from beginning to end.



Figure 1. The process of discussing and identifying partner issues by the community services team.



Figure 2. Copywriting training for the Gunung Sari Valley team.



Figure 3. Training on the use of smartphones in designing marketing materials.



Figure 4. Training on the use of graphics processing applications on smartphones.



Figure 5. Community services team with LGS team.



Figure 6. Swimming pool and some facilities in Gunung Sari Valley Nature and Spring (LGS).

3) Visual Identity Design of Gunung Sari Valley

Visual identity is all imagery and information that expresses the brand's identity and what sets it apart. In essence, visual identity is everything that can be seen by the audience physically, from the logo to the packaging of a brand's product (Cunha et al., 2021). Visual identity is also often referred to as corporate identity (*Corporate identity*). *Corporate identity* is often associated with what is more appropriately called visual identity, which are the elements that make an organization/company different. *Corporate identity* or visual identity refers to the question, "what organization/company is this?" (Baker & Balmer, 1997).

The design of the visual identity of the Gunung Sari Valley produces a visual identity in the form of a logo and its activation in various promotional media. Gunung Sari Valley, abbreviated as LGS, is one of the Village-Owned Enterprises (BUMDes) owned by Kucur Village, Dau District, Malang Regency, East Java. As rural tourism, LGS emphasizes natural tourism or ecotourism because the tourist attractions are springs, forests, and plantations/vegetable and fruit fields. The LGS managers develop three main tourist products: swimming pools, hiking-jogging tracks, and *camping grounds*. Other facilities, such as meeting room and cultural-culinary arts centers, were also developed.

After being abandoned, LGS became a tourist attraction in 2019. Before that, this LGS area by the residents of Kucur village was only referred to as "Gunung Sari," with residents using spring water for various purposes such as bathing, washing, and fetching water. This area is also considered an "old" area, given that springs and holy places are located on hilltops not far from the springs. Around the area, several bathing, washing, and latrine facilities and water reservoirs were also built by the village government. However, since 2007 the facility has ceased to be used due to severe damage, such as falling trees or deformation due to age, so it seems haunted. Finally, in early 2019, with the initiative of the village head and supported by all residents from all hamlets in Kucur village, we agreed that the Gunung Sari area should be rebuilt as a tourist attraction under the name Gunung Sari Valley (LGS).

Starting from such *profiling* above, we designed the visual identity of Natural Tourism and Gunung Sari Valley Springs. The design includes logos, illustrative images, *merchandise*, *T-shirts*, and also the implementation on social media. Furthermore, a Corporate Identity System was created to facilitate documentation and replication.



Figure 7. Gunung Sari Valley Nature Tourism logo



Figure 8. Corporate identity system front page

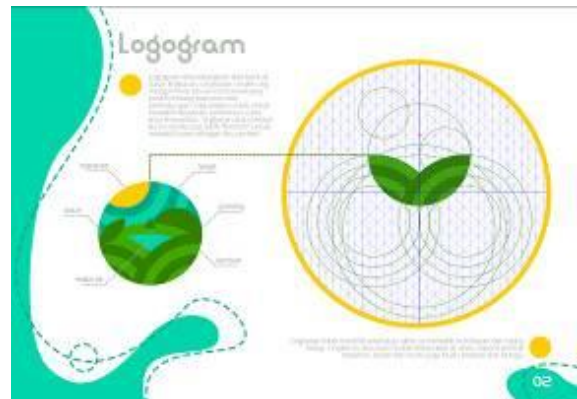


Figure 9. Logogram page



Figure 10. Logotype page



Figure 11. Colors on the logo



Figure 12. Logo in positive and negative mode.



Figure 13. Instructions for logo usage.



Figure 14. Logo placement instructions.



Figure 15. Instructions of illustrative images on logos usage.



Figure 16. Instructions of three illustrative images on the logo usage.



Figure 17. LGS T-Shirt design.



Figure 18. Totebag design



Figure 19. Merch design



Figure 20. The layout of Instagram posts with the topic of environmental awareness.



Figure 21. The layout of Instagram posts with the topic of environmental awareness.



Figure 22. The template set is made to be managed independently by the LGS marketing team.

CONCLUSION

Started with three problems faced by partners (Kucur village), namely; 1) Where Kucur village has superior tourism potential but has not been fully managed optimally; 2) On the one hand, the Kucur village tourism activist team has not fully understood digital marketing, which is now a trend as well as an effective way during the COVID-19 pandemic; 3) Kucur Village is one of the affected parts due to the COVID-19 pandemic outbreak which needs a lot of support and practical solutions to restore the community's economy immediately. From these problems, it was decided to conduct training to improve the competence of the Kucur village tourism activist team, especially the Gunung Sari Valley. The field that should be improved is marketing: 1) copywriting training and its implementation on social media; 2) optimization of smartphones and applications for digital marketing activities such as simple design applications and video editing, and 3) Design of the visual identity of the Gunung Sari Valley (LGS) and its implementation to various media, including Instagram feeds. The target of activity outcome, such as improving public understanding in optimizing Gunung Sari Valley Natural Tourism (LGS) through digital marketing is achieved. They have made several posts on Instagram post-training with enough content relevant to nature tourism. In addition, the team appointed by LGS management to participate in copywriting training and digital media design has been able to manage the media needed independently. The activity includes copywriting, scheduled upload plans, photography, photo editing, video editing, and simple graphic design. Another activity is also shown by Instagram Posting consistently and having relevant content. Another activity is understanding digital marketing strategies; skills in using smartphones and applications of the LGS team have also increased.

Similarly, the target of generating a visual identity attractive to Gunung Sari Valley Nature Tourism received a positive response from the LGS management team. This community service activity has successfully raised the interest of the LGS manager to produce merchandise and develop other facilities for monetization. So far, the implementation of this activity has not encountered significant obstacles. The existing obstacles are minor, such as coordination with village officials who have busy activities, so it is necessary to adjust the schedule well in advance to meet the rest. However, all the activities finally went well and worked as the timeline.

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Original Title:

Pelatihan Pemasaran Digital dan Perancangan Identitas Visual sebagai Strategi Pemulihan Ekonomi Masyarakat Desa Kucur, Kabupaten Malang dari Dampak Pandemi COVID-19

Abstrak. Rencana Pembangunan Jangka Menengah (RPJM) Desa Kucur tahun 2019 s/d 2025 adalah fokus pada pemulihan perekonomian masyarakat akibat pandemi COVID 19. Kegiatan Pengabdian Kepada Masyarakat ini merupakan salah satu bentuk dukungan terhadap RPJM tersebut. Permasalahan yang dihadapi oleh masyarakat desa Kucur yang berhasil diidentifikasi ialah desa Kucur memiliki potensi wisata yang unggul, namun belum sepenuhnya dikelola dengan optimal; di sisi lain, tim penggiat wisata desa Kucur belum sepenuhnya memahami pemasaran digital (digital marketing), yang kini menjadi trend sekaligus cara yang efektif di tengah pandemi COVID 19; di samping itu, dibutuhkan solusi praktis untuk segera memulihkan perekonomian masyarakat. Berangkat dari permasalahan tersebut, maka dilakukan peningkatan kompetensi tim penggiat wisata desa Kucur, khususnya Lembah Gunung Sari dalam bidang pemasaran; berupa pelatihan *copywriting* beserta implementasinya di media sosial; 2) optimalisasi smartphone beserta aplikasi untuk kegiatan pemasaran digital seperti aplikasi desain sederhana dan video editing, serta 3) Perancangan identitas visual Lembah Gunung Sari (LGS) beserta implementasinya ke beragam media. Hasil dari kegiatan ini, meningkatnya pemahaman masyarakat untuk mengoptimasi Wisata Alam Lembah Gunung Sari (LGS) melalui digital marketing. Adapun identitas visual yang dikembangkan oleh tim Abdimas mendapatkan respon positif dari tim pengelola LGS, dan membangkitkan minat pengelola untuk memproduksi *merchandise* dan mengembangkan fasilitas-fasilitas lainnya untuk dilakukan monetisasi.

Kata kunci: COVID-19, Lembah Gunung Sari, Kucur, copywriting, desain



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