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Cassava Farming Based On Rural Agribusiness Development

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#21546 Review

SUMMARY REVIEW EDITING

Submission

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Round 1

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Cassava Farming Based on Rural Agribusiness Development

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Abstract

Agriculture products need market value increases through the development of rural agribusiness. The success of the program needs to be supported by the community to create the expansion of marketing access, the sustainability of the agribusiness and strengthening of capital so as to create savings. Community as a regional unit (natural and social), where its members (farmers and non farmers) carry out various daily activities, which are social capital to play an important role in a development process. This research had the following objectives: a) determining the synergy of participation of each element (farmer and non farmer) in the development of rural agribusiness, b) finding solutions to the participation constraints of each agribusiness chain, and c) finding sub models of community facilities. The research was conducted in Central Java Province as a cassava-producing region and tapioca center, namely in the districts of Pati and. Meanwhile, the objects of the research included : facilitation actions for community empowerment on the job training, agriculture product processing and independent of the rural agribusiness development, community potential, and the establishment of agribusiness microfinance institutions. There were two populations of this study, they were: area of cassava land and center of agribusiness, and community members consisting of farmers element (cassava farmers), non farmer (owner of agribusiness and workforces of agribusiness), and off farmers (owner of transport, transport drivers). Sampling technique used in this study was cluster sampling technique to find out agribusiness data and accuracy test of the accuracy of image interpretation in determining the number of samples using the guidelines of BIG (Geographic Information Institution in Indonesia), as well as simple random sampling technique for agribusiness center. Data analysis technique used was multiple linear regression for participatory synergistic analysis and synthesizing information to be used in formulating alternatives and policy preferences are expressed comparatively, predicted in quantitative and qualitative languages as the basis for decision making for poverty reduction analysis. Based on the research data, the results of simple linear regression analysis result in a regression equation $Y = 5.26 + 18.26X$, this shows a positive influence of each variable where X represents the amount of daily cassava production and Y variable represents the number daily income, meaning that there will be an increase in participation synergy if each of these variables is increased in quantity or quantity. Meanwhile, in testing hypotheses between the two variables produces t count of 0.871, where the t table is 0.374 which means t count > t table so that the conclusions obtained are the influence between variables on the magnitude of the synergy of participation from PUAP. According to the calculation of correlation analysis, the results of the calculation of simple linear regression analysis produce a correlation coefficient of 0.801 and a determination coefficient of 0.642, which means that when linked to the interpretation table the correlation coefficient for correlation between variables is in the "very strong" interval level classification (0,80 - 1.00). The results of the study were to increase the synergy of the participation of members of rural communities, accelerate networking between citizens or communities through social planned change known as social engineering and labor intensive agricultural processing.

Keywords: agribusiness, development, product, rural.

I. INTRODUCTION

Agricultural products need to increase sales value through Rural Agribusiness Development (PUAP). The success of the program needs to be supported by the community to realize the expansion of access to marketing, the sustainability of agribusiness and strengthening of capital in order to form savings. Community as a regional unit (natural and social) where its members (farmers and non-farmers) carry out various activities of daily life, constituting social capital plays an important role in a development process. Networking between citizens has been formed. Community elements need to be empowered so that agribusiness businesses can process agricultural products before trading. In the food supply chain, cassava farmers as producers leave the problem of the inability to determine market prices because of the severely damaged or declining quality of the crop. The period of planting cassava until harvest is around 10 months ending with a short decision with a low selling price determined by the middleman / buyer. Processing of agricultural products by community members indicates increasing selling value. This scheme brings rural agriculture created employment, increases people's purchasing power, strengthens entrepreneurship, which has the potential to form financial institutions as partners of farmers and non-farmers in accessing capital. Linkages in one community need to be linked to the existence of the Agribusiness Microfinance Institution (LKMA).

This study has the following objectives: a) determine the synergy of participation of each element (farmers and non-farmers) in the development of rural agribusiness (PUAP), b) find solutions to constraints on participation of each agribusiness business chain, and c) find sub community facilitation model. The study was conducted in Provision of Central Java Indonesia as a cassava-producing region and tapioca center, namely in Pati Regency, while the object of research included: facilitation measures for community empowerment on agricultural product processing and PUAP Mandiri training, community potential, cassava farming land, and centers cassava processing industry.

II. LITERATURE REVIEW

Rural Agribusiness Development (PUAP) is the first agriculture ministry program for farmers launched in 2008. The PUAP program regulated in Minister of Agriculture Regulation Number: 16 / Permentan / OT.140 / 2/2008 aims to improve quality of life, independence, and welfare by providing facilitation of business capital assistance for farmers, sharecroppers, farm workers and farm households. PUAP is part of the implementation of the National Program for Community Empowerment (PNPMMandiri) through business capital assistance in developing agribusiness enterprises in accordance with the agricultural potential of the target villages. PNPMMandiri is aimed at reducing poverty and increasing employment opportunities. One of the goals of PUAP is to provide access to financing for farmers in Gapoktan members while at the same time reducing development disparities between the central and regional regions and the disparity between sub-sectors. Weak supervision is thought to be at the root of the problem of the PUAP program, continued to stop the distribution of funds (Pangestika, et al., 2014; Novaly, in Kompasiana, 2016).

Rural communities as a regional (natural and social) entity in which members (farmers and non-farmers) have similar interests or values in carrying out daily life activities that care for each other. Community is social capital playing an important role in a development process. Networking between community members or community groups is formed by the support of independent rural financial institutions, the development of agricultural resource bases (Elizabeth, 2007; Hermawan, 2008). Rural as a community is a resource that needs acceleration to be realized through empowerment. The community empowerment context is in line with Jamal's (2009) writings on rural Indonesian development. The rural community is distinctive and specific, but currently in moving the development has not received intensive attention from the government. The village is seen as something homogeneous and needs to be facilitated by the government to the fullest. The third thought tries to balance the power of rural communities and the state in determining the direction and purpose of social change that occurs in rural communities. Tamin's Thought (2011) indicates that achieving prosperity is possible in agrarian villages that are full of agrarian stages through social planned change known as social engineering (Banowati et al., 2017) in resource management and resource competency human.

Agroindustry is an industry that uses agricultural products as raw material as a means or input in agricultural business. Agroindustry activities include industrial processing of agricultural products, industries that produce equipment and agricultural machinery, agricultural input industries (fertilizers, pesticides, herbicides, etc.) and service industries in the agricultural sector (Suprpto and Purnomo, 2010; Udayana,

2011). Agroindustry is an activity with characteristics: (a) increasing added value, (b) producing products that can be marketed or used or eaten, (c) increasing storage capacity, and (d) increasing producer income and profits (Setyowati, 2012: 179). The nature of its activities is able to create jobs, improve income distribution and have a large enough capacity to attract agricultural sector development. In this research, the downstream sub-sector (farm and non-farm) agroindustry is processing agricultural products into raw materials or goods ready for consumption or postharvest industries of agricultural products. Post-harvest processing can be in the form of simple processing that can be done by community members (farmers and family farmers, and non-farmers) such as cleaning, grading, packing or can be more sophisticated processing, such as milling, milling (powdering)), extraction and refining (extraction), frying (roasting), and spinning, canning and other manufacturing processes which this year have not been carried out. The activity was suspected of absorbing workers (Ministry of Agriculture, 2013) encouraging a number of labor-intensive agricultural projects to anticipate the potential explosion of human resources.

Cassava-based agroindustry aims to increase the added value of cassava commodities by processing these commodities into a variety of high-value value products. A variety of cassava-based products have been produced, both by the people's industry with simple equipment and large industries equipped with modern machines, ranging from semi-finished products to finished products (Wibowo, 2015: 51). Semi-processed processed products based on cassava, tapioca flour, are developing rapidly in Indonesia. The last few years have begun to develop also mocaf (Modified Cassava Flour) agroindustry which is a derivative product of cassava flour with the principle of modifying fermented cassava cells (Wibowo, 2015: 51). Not only processing cassava into semi-finished products, some agro-industries also process cassava commodities into finished products, such as: tape, suwir, cassava chips, tape chips, brownie tape, prol tape, dodol tape, and so on. In addition to food, residues from cassava processing can also be used as fertilizer / fertilizer that helps fertilize plants, especially plantation crops and their skin can be used for animal feed (Wibowo, 2015: 51).

Citing data from the Central Bureau of Statistics, as of May 2017 the number of employment in the agricultural sector amounted to 39.68 million people (31.86 percent) of the total national labor force. The multiplier effect of developing rural agroindustry covers all industries from upstream to downstream industries. To meet the requirements for the existence of agribusiness in rural areas, the presence of entrepreneurs is needed to be the initiator, pioneer, fabricator, engineer, driver and guide to the work process of the agribusiness system in certain localities (Priyadi, 2000). The characteristics of agro-industry have advantages compared to other industries, including: (a) having strong links with both upstream industries and downstream industries, (b) using existing and renewable natural resources, (c) being able to have good comparative and competitive advantages in the international market as well as in the domestic market, (d) can accommodate large numbers of workers, (e) agro-industry products are generally elastic enough to increase people's incomes that affect the wider market, especially the domestic market. Processing cassava serves as a strategic activity adding value to the chain and creating a competitive and comparative advantage. Cassava cultivation is very feasible because farmers can earn up to 67% of the total costs incurred (Banowati, 2018: 453).

III. METHODOLOGY

The research was conducted in Provision of Central Java, Indonesia as a cassava-producing region and tapioca center, namely in Margoyoso District - Pati Regency. The object of the research included: facilitation measures for empowering the community on the job training on processing agricultural products and PUAP Mandiri, community potential, cassava farming land, and the center of cassava processing industry. The population in this study is 2: a) farm: areas of cassava land and centers of agribusiness, and b) Community members, consisting of: farmer elements (cassava farmers), non-farmers (agribusiness business owners, and agribusiness workers), and off farmer (transport owner, transport driver). Cluster area sampling technique on cassava land to find out agribusiness data and test the accuracy of accuracy of image interpretation. Determination of the number of samples using the guidelines for the provisions of the Geographic Information Agency (BIG). Simple random sampling sampling technique for agribusiness centers. The data analysis technique used is simple linear regression for participatory synergistic analysis, and synthesizing information to be used in formulating alternatives and policy preferences is expressed comparatively, predicted in quantitative and qualitative languages as the basis for decision making for poverty reduction analysis.

IV. RESULT AND DISCUSSION

A. General description of agricultural land and the ability of farmers

Profile of Agricultural Land. Before empowerment, it is necessary to know the initial conditions of the agricultural system applied by farmers. Initially, farmers used Margona seeds with a tight planting system with a spacing of 70 x 80 cm. This method of dense cropping has disadvantages such as the use of large amounts of plant seeds (18,000 plants / ha) and dense plants causing higher levels of pest and disease attacks due to lack of sunlight that escapes the canopy, resulting in increased micro humidity around the plant, and seizure of nutrients by colliding roots. Further impact on low productivity (18-22 tons/ha). Opportunities for increasing the yield of cassava can reach 50-60 tons (BPTP Lampung, 2009).

A system or method of planting to increase land production and productivity is used as a double row planting system. Besides, the use of seedlings was also changed to UJ 5 (Casessat) with the use of a smaller number of seeds, namely 1,150 plants / 0, 1 Ha. IB Agro (2012) published this pattern by constructing double rows.

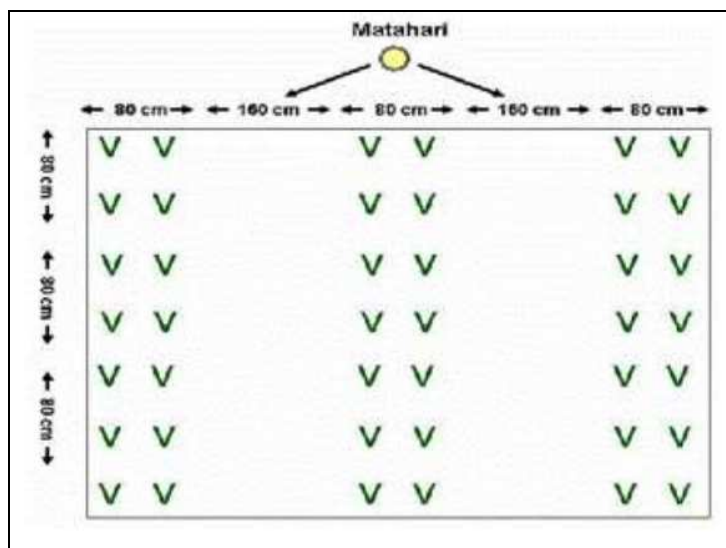


Figure 1. Double Row Garden System Technique.

Source: IB Agro, 2012

Moving on from the weaknesses of the first planting system, then in the double row planting system, thinning is carried out to intensify the sunlight that is acceptable to cassava so that the formation of starch in the bulbs is more and the size of the bulbs is large. The distance between the rows is 160 cm and 80 cm, while the distance in the same row is 80 cm. So that the spacing of the first row of cassava (160 cm x 80 cm) and the second row (80 cm x 80 cm).

Table 1. Cassava Harvesting on Pilot Use Plots
Cassava Cassava Seeds (UJ5) in Pati Regency

Application of Science and Technology	Initially	Empowerment
Seeds	Margona	Kasesat (UJ5)
Haow to plant	tight planting with a spacing of 70 x 80 cm	<i>double row</i> that is 80 cm x 160 cm
Number of seeds	18.000 seeds/Ha.	1.150 seeds/ 0, 1 Ha.
Land area	0,1 Ha	0,1 Ha
Production	(18-22 ton/ha)	34,2 ton/ha.

Source: Primary Data Analysis, 2018/2019

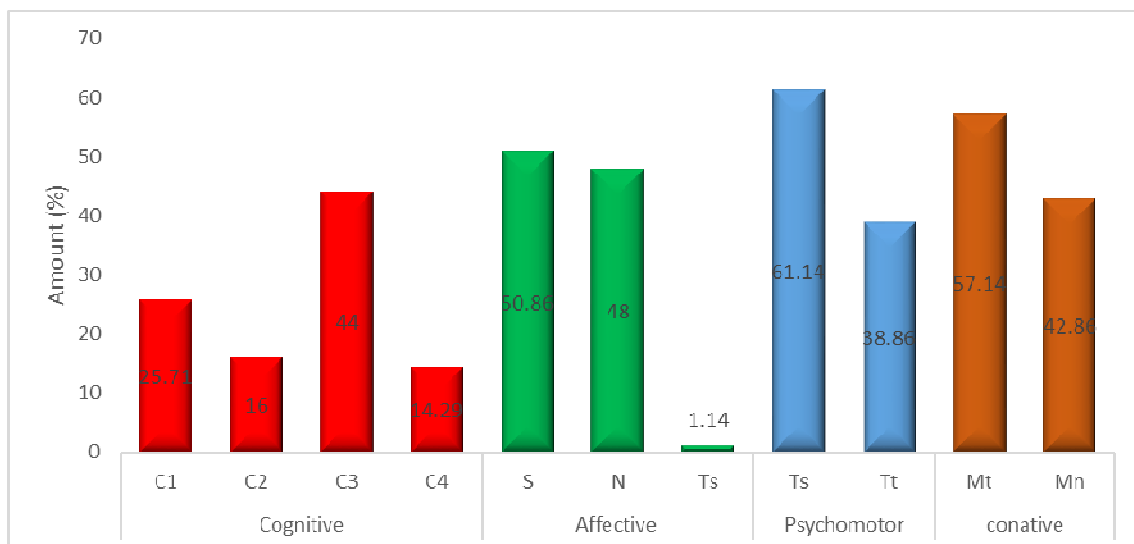
Implementation through the use of UJ 5 (Kasesat) seedlings which applied the double row planting method in a pilot plot with an area of 0.1 hectares produces 3.42 tons. That is an increase in production every 0.1 hectares 1,262 tons or an increase of 40%.

Farmer's ability. The results of data mining through training, begins with a personal approach to prominent farmers, to capture data from the empowerment actions that will be carried out, namely the making of demonstration plots (demonstration) double row (double row) to downstream human resources, namely cultivating farmers (owners, land tenants and tenants)) totaling 35 people. In this study seen from 5 aspects, namely: access to information, participation, interest/interest, post-harvest processing, and the formation of associations.

Training as facilitation for education empowerment in addition to skills is intended to increase knowledge, attitudes, and skills that impact the building of conative behavior. Conative behavior is a behavior or tendency to do that relates to the motivation or driving factors of a person's behavior that comes from his needs. Recording with observation techniques using visual recording devices (photo cameras), audiovisual (video cameras), and field notes.

The outcome indicators in this study were examined in four interrelated aspects, namely:

1. Inputs include HR, time, training activities, materials, and tools that support community empowerment activities.
2. The process includes: the number of counselors/trainers, the frequency of training carried out, and the effective and efficient number of upstream and downstream HR involved.
3. Outputs include the number and types of businesses that have community resources, the number of people who have increased their knowledge and behavior about the products produced, increasing the income generated from the work of each HR element.
4. Outcomes from community empowerment have contributed to reducing: the number of crop failures/production, sale failure, and losses as well as increasing cassava and tapioca production and productivity.



Information

C1 : Knowledge	S : Agree
C2 : Understanding	N : Neutral / no answer
C3 : Application	Ts : Disagree / refuse
C4 : Analysis	T : skillful
C5 : Evaluating	Tt : Not Skilled
C6 : Be Creative	Mt : Refuse
	Mn : Receiving

Source: Analysis of primary data, 2018

Figure 2. The ability of cassava farmers.

The cognitive domain demonstrates knowledge about the intrinsic potential of HR and insights on how to apply this potential to the livelihood activities that they are engaged in. The results of observation and analysis showed that the cognitive of farmers before empowerment was at stage C3, namely the application of 44% and the ability to analyze the information conveyed was only 14.29% of the total number of farmers. This amount is expected to be able to think critically about the problem of cassava farming in its environment. **Affective Conditions** provide information on how farmers behave towards the empowerment

plan that will be carried out after empowerment socialization is carried out. Half of the farmers (50.86%) agreed and only 1.14% said they disagreed, then the rest preferred to be neutral. Interventions result in an affective condition of HR to achieve empowerment in attitudes and behavior. **Psychomotor abilities** are skills possessed by upstream HR (Farmers) in producing cassava with high production. Psychomotor ability is not only determined by the experience of farming alone, but also the interest and openness in receiving information about increasing the value of production. Most farmers are already skilled in producing high sinking production, but there is still a need to improve efforts to all other farmers. **Conative conditions** are derived from the realm of attitudes, especially the upstream HR behavior that is formed and directed towards behaviors that are sensitive to the values of development and empowerment for the realization of food self-sufficiency. This figure will be used in taking the next step because in empowerment the most important thing is the participation of the community as the subject of empowerment. As many as 42.86% or 15 farmers stated that they were willing to be empowered to increase the productivity value of cassava owned. Sticking to the principles of empowering Human Resources (HR), namely: developing the potential of the community from the variable development of cognitive, affective, psychomotor abilities with the results of the conative aspects of Downstream HR who reject 51.14% and those who receive 42.86% more towards resignation but it is also possible that the decision will change along with the empowerment process undertaken.

B. Synergy of participation in Rural Agribusiness Enterprise Development (PUAP)

Rural Agribusiness Development (PUAP) is one of the government programs, especially the Ministry of Agriculture. The PUAP program is carried out by farmers (fund owners or cultivators), farm workers, processing products and marketing of agricultural products, especially for poor families in the village / kelurahan, through Gapoktan as an institution owned and managed by farmers. Gapoktan as the executor of PUAP is a combination of several farmer groups in one village area. The purpose of combining groups into Gapoktan in PERMENTAN Number 273 / Kpts / OT.160 / 4/2007 is to gather cooperative interests together so that farmer groups are more efficient and effective, in providing agricultural production facilities, capital, raising or expanding farming in upstream and downstream sectors, marketing and cooperation in increasing bargaining positions (Banowati, 2018).

Farming in Indonesia is dominated by small-scale family farms that are very weak in various fields, such as limitations in controlling productive assets, working capital, bargaining positions and political economy, so they cannot develop independently dynamically. Small farmers are very dependent on large groups of farmers or traders to obtain productive assets (land, equipment), working capital and the acquisition of production facilities. Likewise, the sale of farmers' results is very dependent on the merchant yield. Therefore, efforts to empower farmers through developing farmer groups and through consolidative agribusiness business partnerships are strategic steps.

Farmers are the main actors who must be empowered. The first step that needs to be taken to empower farmers is to form institutions in the form of farmer groups that are cooperative organizations. Collaboration is needed to deal with various problems faced which are basically very difficult when faced individually. So far, farmers are weak in determining the price of production because it is difficult to get access to market information. In this case the farmer must carry out horizontal consolidation. Furthermore, through counseling (education and training) that is sustainable towards the group that gets the guidance is expected to produce human resources for farmers who have knowledge and skills in farming. To be able to make farming more organized and directed, the farmer group institutions need to establish cooperation and partnerships with outside / business people. Linkages and institutional cooperation of farmer groups with private / business parties can be well established if there are interdependencies and symmetrical cooperation and mutual benefits.

The role of the government through various policies and programs is expected to be able to encourage and create a conducive business climate and encourage farmers / farmer groups and the private sector / businessmen, so that agribusiness can develop. In this case the government acts as a facilitator, regulator, motivator who must harmonize the relations between the agribusiness actors, so that the perpetrators can interact proportionally and there is no contradictory exploitation. Business people can achieve a balanced profit. With the integration of various elements (farmer groups, private sector / business people and the government), it is expected that agribusiness that is vertically consolidative or that the partnership can develop.

The synergy of each element both from farmers and non-farmers is very necessary in PUAP, because without the cooperation and synergy of the two elements, the agricultural business will always be lame and

will always harm one party. Based on the results of the study, there is a strong synergy between the two variables, these results can be seen in table 1 below :

Tabel 2. Synergy Analysis of Community Participation

No.	Type of Regression Statistics	Number of Regression Statistic
1.	Intercept	0.8714482
2.	Multiple R	0.8016636
3.	R Square	0.6426646
4.	Adjusted R Square	0.6299026
5.	Standard Error	51697.229
6.	Observations	30

(Source: Research Results Primary Data, 2019).

Based on the research data in Table 2, the results of simple linear regression analysis result in a regression equation $Y = 5.26 + 18.26X$, this shows a positive influence of each variable where X represents the amount of daily cassava production and Y variable represents the number daily income, meaning that there will be an increase in participation synergy if each of these variables is increased in quantity or quantity. Meanwhile, in testing hypotheses between the two variables produces t count of 0.871, where the t table is 0.374 which means $t \text{ count} > t \text{ table}$ so that the conclusions obtained are the influence between variables on the magnitude of the synergy of participation from PUAP. According to the calculation of correlation analysis, the results of the calculation of simple linear regression analysis produce a correlation coefficient of 0.801 and a determination coefficient of 0.642, which means that when linked to the interpretation table the correlation coefficient for correlation between variables is in the "very strong" interval level classification (0 , 80 - 1.00).

C. Cooperative farming as a Solution to the Obstacles to Agribusiness Business Chain Participation

Participation in the agribusiness business chain puts forward postharvest and marketing of agricultural products. Community members consisting of: farmer elements (cassava farmers), non farmers (agribusiness business owners), and off farmers (transport owners, transport drivers) have been concentrated on their respective activities and problems. Farmers who are oriented towards increasing the quantity of crops. Productivity of farmers as providers, without being able to set the price of their products as if they were natural law. Agribusiness owners, often have difficulty in raw materials and are not easy to sell products. The off farmer element is difficult to get an order. It was suspected as a trigger for the emergence of internal barriers in the community to participate. As stated by Hetifah (2003), including lack of initiative, not organized and not having enough capacity to be productively involved in the decision-making process.

Based on the analysis of the situation, the community is synergized through empowerment by accommodating the offer of Nuryanti (2005: 153), about a model of cooperative farming which includes social, economic, technological and value added engineering. Implemented in PUAP Mandiri based on community empowerment done in 4 stages according to locus conditions. The first stage of social engineering is in the words of Banowati, et al. (2016) strengthening farmer institutions, counseling and HR development. The second stage, economic engineering is done by developing capital access for the procurement of production facilities and market access. The third stage, technology engineering is carried out by achieving technology agreement recommendations with farmers' habits. Furthermore, the fourth stage of value added engineering is carried out through the development of off farm businesses that are coordinated vertically and horizontally.

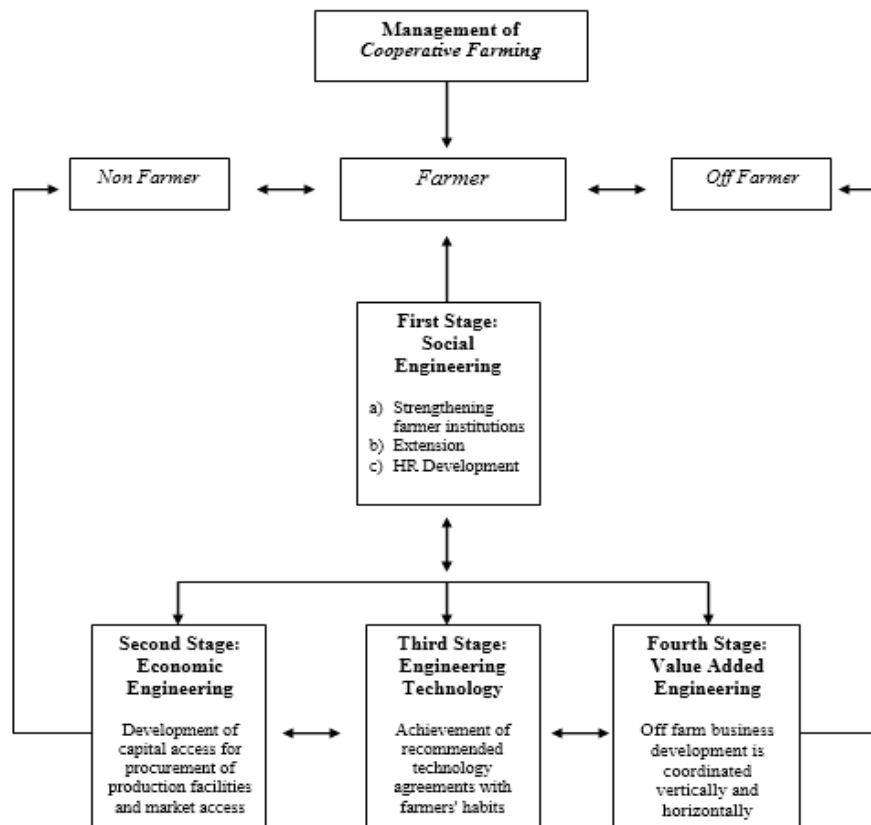


Figure 3. Implementation of Cooperative Farming Model on Community-Based PUAP Mandiri.

At the research location, cassava farming is processed into tapioca. The results of the study revealed that cassava farmers worked on an average of 1.86 hectares of land. Market-oriented cassava products, but because of the long harvest waiting period, which is between 8-10 months as a result, farmer families are pressed for financial problems. Because the waiting period of the harvest is very long and due to financial problems, at the harvest time the prices of cassava tend to be low and whatever price they will sell. The properties of cassava after leaving the soil cannot last long, in less than 24 hours the quality of starch decreases. Increasingly position them at low bargaining power. One way to increase the added value of cassava is to make mocaf according to a cooperative farming model which includes social, economic, technological, and value added engineering.

Farmer's access to markets is not yet affordable. The marketing flow of cassava before the first consumer (tapioca industry and snack producers) passes through two links: cassava traders and brokers.

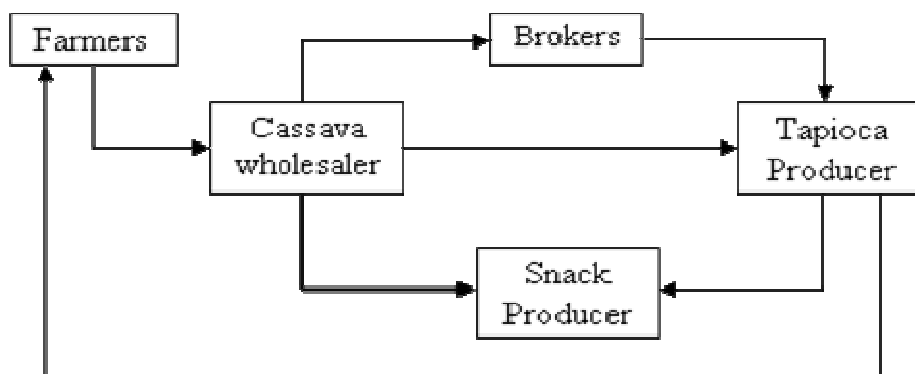


Figure 4. Marketing Flow of Cassava and Tapioca in Pati Regency (Source: Wijana et al., 2011 in Banowati et al, 2018).

The first flow is from the farmer, to the cassava trader, then directly to the tapioca producer without going through a broker, until finally reaching the snack producer. The second flow is from the farmer, to the cassava trader, then to the tapioca producer but through a broker first, and finally to the snack producer. The

fundamental difference from these two lines is in terms of time and cost, usually the second channel that must go through a broker requires more time and more costs than the first channel without a broker.

C. Community Facilitation Sub-Model

The progress of rural agricultural communities as well as rapid economic progress is motivated by the relatively strong organization of farmer groups. The economic organization system of independent and strong farmer groups can be easily developed if the structure of the agricultural division of labor is relatively evenly distributed, effective and efficient. Institutional development should take place naturally. In this case government intervention should be facilitative and facilitative development of incentive systems. In the end, the development and role of farmer groups is a manifestation of the social power of farmers who are self-sufficient to achieve independence.

Based on Figure 3 about the implementation of the cooperative farming model at PUAP Mandiri community-based empowerment on the job training of agricultural product processing, there are 3 main community elements that become the driving force, namely:

a) Farmer

Farmer as an upstream producer, and carried out its duties in the first phase of cooperative farming management, namely strengthening farmer institutions, counseling, and developing human resources, as well as engineering technology that has now implemented a double row planting method. In addition, there are also management that are managed by Balitkabi (Indonesian Peanut and Tuber Crops Research Institute) which applies single row planting methods with technology verification (Indriani, 2017). From the activities that have been carried out, there is a result in the form of cassava 1 which has good quality and cassava cassava which is of poor quality (which was rejected by tapioca industry) can be processed independently into a mocaf in order to increase the value of goods and selling value of goods.

b) Non Farmer

Non-farmer has a function as an agribusiness owner, as well as carrying out its duties in the second, third, and fourth stages of cooperative farming management, namely stages of economic engineering in terms of developing capital access to procure snack production facilities according to tables and market access, technology engineering stages recommended technology agreements with farmers' habits, as well as stages of value added engineering in terms of developing off farm businesses that are coordinated vertically and horizontally. Non-farmers also carry out manufacturing processes such as milling, powdering, extraction and refining (extraction), roasting, and spinning, canning and other manufacturing processes.

c) Off Farmer

Off farmer has a function as a transporter and collaborates with non-farmer sub-communities within and performs its duties in the second, third, and fourth stages of cooperative farming management, namely the stages of economic engineering in terms of developing capital access for procurement of production facilities and market access, technology engineering stages the achievement of recommended technology agreements with farmers' habits, as well as the stages of value-added engineering in terms of developing off farm business that is coordinated vertically and horizontally. Cassava harvest products that must arrive or be received by buyers are less than 24 hours so that the quality is maintained, which can produce high starch. Likewise, as a transporter of non-farm products, in the form of flour and snacks, the quality must be maintained so that the faster and safer the delivery of these products, the better quality of these products will be, in addition to being careful when shipping to maintain the quality of goods performance.

V. CONCLUSION

The results of empowerment showed an increase in agricultural productivity of 40% from originally 18-21 tons/ha to 34.2 tons/ha. In developing the potential of farmers from the variable of cognitive abilities, affective, psychomotor aspects with the results of the conative aspect, it is found that HR Upstream who rejects a total of 51.14% and who receives 42.86% is more directed to submission.

Rural Agribusiness Development (PUAP) is the first agriculture ministry program for farmers launched in 2008. The PUAP program regulated in the Minister of Agriculture Regulation Number: 16 / Permentan / OT.140 / 2/2008 aims to improve quality of life, independence, and welfare by providing

facilitation of business capital assistance for farmers, cultivators, farm laborers and farm households through business capital assistance in developing agribusiness enterprises in accordance with the potential of the agricultural target villages. One of the goals of PUAP is to provide access to financing for farmers in Gapoktan members while at the same time reducing development disparities between the central and regional regions and the disparity between sub-sectors. The results of the study indicate that there is a synergy of community member participation for the development of agribusiness through empowering rural communities, there is an acceleration of networking between citizens / communities through social planned change known as social engineering, as well as increased agribusiness through production and marketing. The elements involved in the concept of participatory synergy consist of farmers, cassava downstream industry, and off farmers, namely the distributor between farmers and industry. Also, the relationship in the chain of a community needs to be stretched by the existence of the Agribusiness Microfinance Institution (AMI). Each element has its task and role in ensuring the sustainability of the industry and so as not to disadvantage one another

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#21546 Review

SUMMARY**REVIEW**EDITING

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Cassava Farming Based on Rural Agribusiness Development

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Abstract

Agriculture products need market value increases through the development of rural agribusiness. The success of the program needs to be supported by the community to create the expansion of marketing access, the sustainability of the agribusiness and strengthening of capital so as to create savings. Community as a regional unit (natural and social), where its members (farmers and non farmers) carry out various daily activities, which are social capital to play an important role in a development process. This research had the following objectives: a) determining the synergy of participation of each element (farmer and non farmer) in the development of rural agribusiness, b) finding solutions to the participation constraints of each agribusiness chain, and c) finding sub models of community facilities. The research was conducted in Central Java Province as a cassava-producing region and tapioca center, namely in the districts of Pati and. Meanwhile, the objects of the research included : facilitation actions for community empowerment on the job training, agriculture product processing and independent of the rural agribusiness development, community potential, and the establishment of agribusiness microfinance institutions. There were two populations of this study, they were: area of cassava land and center of agribusiness, and community members consisting of farmers element (cassava farmers), non farmer (owner of agribusiness and workforces of agribusiness), and off farmers (owner of transport, transport drivers). Sampling technique used in this study was cluster sampling technique to find out agribusiness data and accuracy test of the accuracy of image interpretation in determining the number of samples using the guidelines of BIG (Geographic Information Institution in Indonesia), as well as simple random sampling technique for agribusiness center. Data analysis technique used was multiple linear regression for participatory synergistic analysis and synthesizing information to be used in formulating alternatives and policy preferences are expressed comparatively, predicted in quantitative and qualitative languages as the basis for decision making for poverty reduction analysis. Based on the research data, the results of simple linear regression analysis result in a regression equation $Y = 5.26 + 18.26X$, this shows a positive influence of each variable where X represents the amount of daily cassava production and Y variable represents the number daily income, meaning that there will be an increase in participation synergy if each of these variables is increased in quantity or quantity. Meanwhile, in testing hypotheses between the two variables produces t count of 0.871, where the t table is 0.374 which means t count > t table so that the conclusions obtained are the influence between variables on the magnitude of the synergy of participation from PUAP. According to the calculation of correlation analysis, the results of the calculation of simple linear regression analysis produce a correlation coefficient of 0.801 and a determination coefficient of 0.642, which means that when linked to the interpretation table the correlation coefficient for correlation between variables is in the "very strong" interval level classification (0,80 - 1.00). The results of the study were to increase the synergy of the participation of members of rural communities, accelerate networking between citizens or communities through social planned change known as social engineering and labor intensive agricultural processing.

Keywords: agribusiness, development, product, rural.

I. INTRODUCTION

Agricultural products need to increase sales value through Rural Agribusiness Development (PUAP). The success of the program needs to be supported by the community to realize the expansion of access to marketing, the sustainability of agribusiness and strengthening of capital in order to form savings. Community as a regional unit (natural and social) where its members (farmers and non-farmers) carry out various activities of daily life, constituting social capital plays an important role in a development process. Networking between citizens has been formed. Community elements need to be empowered so that agribusiness businesses can process agricultural products before trading. In the food supply chain, cassava farmers as producers leave the problem of the inability to determine market prices because of the severely damaged or declining quality of the crop. The period of planting cassava until harvest is around 10 months ending with a short decision with a low selling price determined by the middleman / buyer. Processing of agricultural products by community members indicates increasing selling value. This scheme brings rural agriculture created employment, increases people's purchasing power, strengthens entrepreneurship, which has the potential to form financial institutions as partners of farmers and non-farmers in accessing capital. Linkages in one community need to be linked to the existence of the Agribusiness Microfinance Institution (LKMA).

This study has the following objectives: a) determine the synergy of participation of each element (farmers and non-farmers) in the development of rural agribusiness (PUAP), b) find solutions to constraints on participation of each agribusiness business chain, and c) find sub community facilitation model. The study was conducted in Provision of Central Java Indonesia as a cassava-producing region and tapioca center, namely in Pati Regency, while the object of research included: facilitation measures for community empowerment on agricultural product processing and PUAP Mandiri training, community potential, cassava farming land, and centers cassava processing industry.

II. LITERATURE REVIEW

Rural Agribusiness Development (PUAP) is the first agriculture ministry program for farmers launched in 2008. The PUAP program regulated in Minister of Agriculture Regulation Number: 16 / Permentan / OT.140 / 2/2008 aims to improve quality of life, independence, and welfare by providing facilitation of business capital assistance for farmers, sharecroppers, farm workers and farm households. PUAP is part of the implementation of the National Program for Community Empowerment (PNPMMandiri) through business capital assistance in developing agribusiness enterprises in accordance with the agricultural potential of the target villages. PNPMMandiri is aimed at reducing poverty and increasing employment opportunities. One of the goals of PUAP is to provide access to financing for farmers in Gapoktan members while at the same time reducing development disparities between the central and regional regions and the disparity between sub-sectors. Weak supervision is thought to be at the root of the problem of the PUAP program, continued to stop the distribution of funds (Pangestika, et al., 2014; Novaly, in Kompasiana, 2016).

Rural communities as a regional (natural and social) entity in which members (farmers and non-farmers) have similar interests or values in carrying out daily life activities that care for each other. Community is social capital playing an important role in a development process. Networking between community members or community groups is formed by the support of independent rural financial institutions, the development of agricultural resource bases (Elizabeth, 2007; Hermawan, 2008). Rural as a community is a resource that needs acceleration to be realized through empowerment. The community empowerment context is in line with Jamal's (2009) writings on rural Indonesian development. The rural community is distinctive and specific, but currently in moving the development has not received intensive attention from the government. The village is seen as something homogeneous and needs to be facilitated by the government to the fullest. The third thought tries to balance the power of rural communities and the state in determining the direction and purpose of social change that occurs in rural communities. Tamin's Thought (2011) indicates that achieving prosperity is possible in agrarian villages that are full of agrarian stages through social planned change known as social engineering (Banowati et al., 2017) in resource management and resource competency human.

Agroindustry is an industry that uses agricultural products as raw material as a means or input in agricultural business. Agroindustry activities include industrial processing of agricultural products, industries that produce equipment and agricultural machinery, agricultural input industries (fertilizers, pesticides, herbicides, etc.) and service industries in the agricultural sector (Suprpto and Purnomo, 2010; Udayana,

2011). Agroindustry is an activity with characteristics: (a) increasing added value, (b) producing products that can be marketed or used or eaten, (c) increasing storage capacity, and (d) increasing producer income and profits (Setyowati, 2012: 179). The nature of its activities is able to create jobs, improve income distribution and have a large enough capacity to attract agricultural sector development. In this research, the downstream sub-sector (farm and non-farm) agroindustry is processing agricultural products into raw materials or goods ready for consumption or postharvest industries of agricultural products. Post-harvest processing can be in the form of simple processing that can be done by community members (farmers and family farmers, and non-farmers) such as cleaning, grading, packing or can be more sophisticated processing, such as milling, milling (powdering)), extraction and refining (extraction), frying (roasting), and spinning, canning and other manufacturing processes which this year have not been carried out. The activity was suspected of absorbing workers (Ministry of Agriculture, 2013) encouraging a number of labor-intensive agricultural projects to anticipate the potential explosion of human resources.

Cassava-based agroindustry aims to increase the added value of cassava commodities by processing these commodities into a variety of high-value value products. A variety of cassava-based products have been produced, both by the people's industry with simple equipment and large industries equipped with modern machines, ranging from semi-finished products to finished products (Wibowo, 2015: 51). Semi-processed processed products based on cassava, tapioca flour, are developing rapidly in Indonesia. The last few years have begun to develop also mocaf (Modified Cassava Flour) agroindustry which is a derivative product of cassava flour with the principle of modifying fermented cassava cells (Wibowo, 2015: 51). Not only processing cassava into semi-finished products, some agro-industries also process cassava commodities into finished products, such as: tape, suwir, cassava chips, tape chips, brownie tape, prol tape, dodol tape, and so on. In addition to food, residues from cassava processing can also be used as fertilizer / fertilizer that helps fertilize plants, especially plantation crops and their skin can be used for animal feed (Wibowo, 2015: 51).

Citing data from the Central Bureau of Statistics, as of May 2017 the number of employment in the agricultural sector amounted to 39.68 million people (31.86 percent) of the total national labor force. The multiplier effect of developing rural agroindustry covers all industries from upstream to downstream industries. To meet the requirements for the existence of agribusiness in rural areas, the presence of entrepreneurs is needed to be the initiator, pioneer, fabricator, engineer, driver and guide to the work process of the agribusiness system in certain localities (Priyadi, 2000). The characteristics of agro-industry have advantages compared to other industries, including: (a) having strong links with both upstream industries and downstream industries, (b) using existing and renewable natural resources, (c) being able to have good comparative and competitive advantages in the international market as well as in the domestic market, (d) can accommodate large numbers of workers, (e) agro-industry products are generally elastic enough to increase people's incomes that affect the wider market, especially the domestic market. Processing cassava serves as a strategic activity adding value to the chain and creating a competitive and comparative advantage. Cassava cultivation is very feasible because farmers can earn up to 67% of the total costs incurred (Banowati, 2018: 453).

III. METHODOLOGY

The research was conducted in Provision of Central Java, Indonesia as a cassava-producing region and tapioca center, namely in Margoyoso District - Pati Regency. The object of the research included: facilitation measures for empowering the community on the job training on processing agricultural products and PUAP Mandiri, community potential, cassava farming land, and the center of cassava processing industry. The population in this study is 2: a) farm: areas of cassava land and centers of agribusiness, and b) Community members, consisting of: farmer elements (cassava farmers), non-farmers (agribusiness business owners, and agribusiness workers), and off farmer (transport owner, transport driver). Cluster area sampling technique on cassava land to find out agribusiness data and test the accuracy of accuracy of image interpretation. Determination of the number of samples using the guidelines for the provisions of the Geographic Information Agency (BIG). Simple random sampling sampling technique for agribusiness centers. The data analysis technique used is simple linear regression for participatory synergistic analysis, and synthesizing information to be used in formulating alternatives and policy preferences is expressed comparatively, predicted in quantitative and qualitative languages as the basis for decision making for poverty reduction analysis.

IV. RESULT AND DISCUSSION

A. General description of agricultural land and the ability of farmers

Profile of Agricultural Land. Before empowerment, it is necessary to know the initial conditions of the agricultural system applied by farmers. Initially, farmers used Margona seeds with a tight planting system with a spacing of 70 x 80 cm. This method of dense cropping has disadvantages such as the use of large amounts of plant seeds (18,000 plants / ha) and dense plants causing higher levels of pest and disease attacks due to lack of sunlight that escapes the canopy, resulting in increased micro humidity around the plant, and seizure of nutrients by colliding roots. Further impact on low productivity (18-22 tons/ha). Opportunities for increasing the yield of cassava can reach 50-60 tons (BPTP Lampung, 2009).

A system or method of planting to increase land production and productivity is used as a double row planting system. Besides, the use of seedlings was also changed to UJ 5 (Casessat) with the use of a smaller number of seeds, namely 1,150 plants / 0, 1 Ha. IB Agro (2012) published this pattern by constructing double rows.

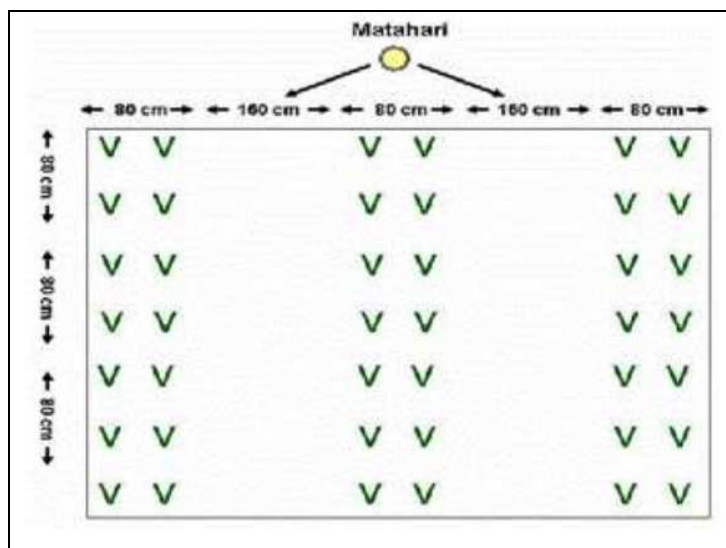


Figure 1. Double Row Garden System Technique.

Source: IB Agro, 2012

Moving on from the weaknesses of the first planting system, then in the double row planting system, thinning is carried out to intensify the sunlight that is acceptable to cassava so that the formation of starch in the bulbs is more and the size of the bulbs is large. The distance between the rows is 160 cm and 80 cm, while the distance in the same row is 80 cm. So that the spacing of the first row of cassava (160 cm x 80 cm) and the second row (80 cm x 80 cm).

Table 1. Cassava Harvesting on Pilot Use Plots
Cassava Cassava Seeds (UJ5) in Pati Regency

Application of Science and Technology	Initially	Empowerment
Seeds	Margona	Kasesat (UJ5)
Haow to plant	tight planting with a spacing of 70 x 80 cm	<i>double row</i> that is 80 cm x 160 cm
Number of seeds	18.000 seeds/Ha.	1.150 seeds/ 0, 1 Ha.
Land area	0,1 Ha	0,1 Ha
Production	(18-22 ton/ha)	34,2 ton/ha.

Source: Primary Data Analysis, 2018/2019

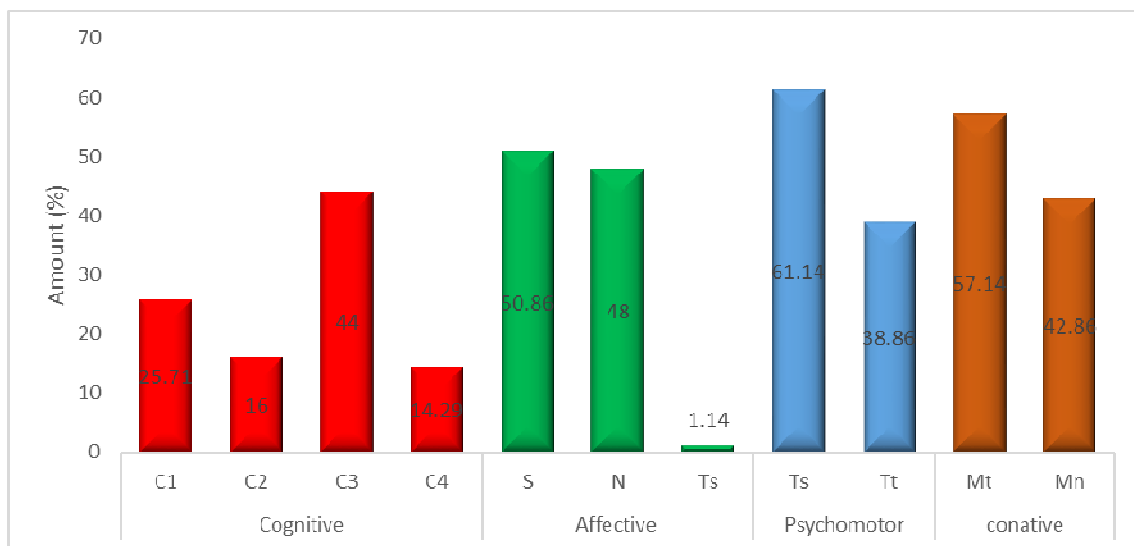
Implementation through the use of UJ 5 (Kasesat) seedlings which applied the double row planting method in a pilot plot with an area of 0.1 hectares produces 3.42 tons. That is an increase in production every 0.1 hectares 1,262 tons or an increase of 40%.

Farmer's ability. The results of data mining through training, begins with a personal approach to prominent farmers, to capture data from the empowerment actions that will be carried out, namely the making of demonstration plots (demonstration) double row (double row) to downstream human resources, namely cultivating farmers (owners, land tenants and tenants)) totaling 35 people. In this study seen from 5 aspects, namely: access to information, participation, interest/interest, post-harvest processing, and the formation of associations.

Training as facilitation for education empowerment in addition to skills is intended to increase knowledge, attitudes, and skills that impact the building of conative behavior. Conative behavior is a behavior or tendency to do that relates to the motivation or driving factors of a person's behavior that comes from his needs. Recording with observation techniques using visual recording devices (photo cameras), audiovisual (video cameras), and field notes.

The outcome indicators in this study were examined in four interrelated aspects, namely:

1. Inputs include HR, time, training activities, materials, and tools that support community empowerment activities.
2. The process includes: the number of counselors/trainers, the frequency of training carried out, and the effective and efficient number of upstream and downstream HR involved.
3. Outputs include the number and types of businesses that have community resources, the number of people who have increased their knowledge and behavior about the products produced, increasing the income generated from the work of each HR element.
4. Outcomes from community empowerment have contributed to reducing: the number of crop failures/production, sale failure, and losses as well as increasing cassava and tapioca production and productivity.



Information

C1 : Knowledge	S : Agree
C2 : Understanding	N : Neutral / no answer
C3 : Application	Ts : Disagree / refuse
C4 : Analysis	T : skillful
C5 : Evaluating	Tt : Not Skilled
C6 : Be Creative	Mt : Refuse
	Mn : Receiving

Source: Analysis of primary data, 2018

Figure 2. The ability of cassava farmers.

The cognitive domain demonstrates knowledge about the intrinsic potential of HR and insights on how to apply this potential to the livelihood activities that they are engaged in. The results of observation and analysis showed that the cognitive of farmers before empowerment was at stage C3, namely the application of 44% and the ability to analyze the information conveyed was only 14.29% of the total number of farmers. This amount is expected to be able to think critically about the problem of cassava farming in its environment. **Affective Conditions** provide information on how farmers behave towards the empowerment

plan that will be carried out after empowerment socialization is carried out. Half of the farmers (50.86%) agreed and only 1.14% said they disagreed, then the rest preferred to be neutral. Interventions result in an affective condition of HR to achieve empowerment in attitudes and behavior. **Psychomotor abilities** are skills possessed by upstream HR (Farmers) in producing cassava with high production. Psychomotor ability is not only determined by the experience of farming alone, but also the interest and openness in receiving information about increasing the value of production. Most farmers are already skilled in producing high sinking production, but there is still a need to improve efforts to all other farmers. **Conative conditions** are derived from the realm of attitudes, especially the upstream HR behavior that is formed and directed towards behaviors that are sensitive to the values of development and empowerment for the realization of food self-sufficiency. This figure will be used in taking the next step because in empowerment the most important thing is the participation of the community as the subject of empowerment. As many as 42.86% or 15 farmers stated that they were willing to be empowered to increase the productivity value of cassava owned. Sticking to the principles of empowering Human Resources (HR), namely: developing the potential of the community from the variable development of cognitive, affective, psychomotor abilities with the results of the conative aspects of Downstream HR who reject 51.14% and those who receive 42.86% more towards resignation but it is also possible that the decision will change along with the empowerment process undertaken.

B. Synergy of participation in Rural Agribusiness Enterprise Development (PUAP)

Rural Agribusiness Development (PUAP) is one of the government programs, especially the Ministry of Agriculture. The PUAP program is carried out by farmers (fund owners or cultivators), farm workers, processing products and marketing of agricultural products, especially for poor families in the village / kelurahan, through Gapoktan as an institution owned and managed by farmers. Gapoktan as the executor of PUAP is a combination of several farmer groups in one village area. The purpose of combining groups into Gapoktan in PERMENTAN Number 273 / Kpts / OT.160 / 4/2007 is to gather cooperative interests together so that farmer groups are more efficient and effective, in providing agricultural production facilities, capital, raising or expanding farming in upstream and downstream sectors, marketing and cooperation in increasing bargaining positions (Banowati, 2018).

Farming in Indonesia is dominated by small-scale family farms that are very weak in various fields, such as limitations in controlling productive assets, working capital, bargaining positions and political economy, so they cannot develop independently dynamically. Small farmers are very dependent on large groups of farmers or traders to obtain productive assets (land, equipment), working capital and the acquisition of production facilities. Likewise, the sale of farmers' results is very dependent on the merchant yield. Therefore, efforts to empower farmers through developing farmer groups and through consolidative agribusiness business partnerships are strategic steps.

Farmers are the main actors who must be empowered. The first step that needs to be taken to empower farmers is to form institutions in the form of farmer groups that are cooperative organizations. Collaboration is needed to deal with various problems faced which are basically very difficult when faced individually. So far, farmers are weak in determining the price of production because it is difficult to get access to market information. In this case the farmer must carry out horizontal consolidation. Furthermore, through counseling (education and training) that is sustainable towards the group that gets the guidance is expected to produce human resources for farmers who have knowledge and skills in farming. To be able to make farming more organized and directed, the farmer group institutions need to establish cooperation and partnerships with outside / business people. Linkages and institutional cooperation of farmer groups with private / business parties can be well established if there are interdependencies and symmetrical cooperation and mutual benefits.

The role of the government through various policies and programs is expected to be able to encourage and create a conducive business climate and encourage farmers / farmer groups and the private sector / businessmen, so that agribusiness can develop. In this case the government acts as a facilitator, regulator, motivator who must harmonize the relations between the agribusiness actors, so that the perpetrators can interact proportionally and there is no contradictory exploitation. Business people can achieve a balanced profit. With the integration of various elements (farmer groups, private sector / business people and the government), it is expected that agribusiness that is vertically consolidative or that the partnership can develop.

The synergy of each element both from farmers and non-farmers is very necessary in PUAP, because without the cooperation and synergy of the two elements, the agricultural business will always be lame and

will always harm one party. Based on the results of the study, there is a strong synergy between the two variables, these results can be seen in table 1 below :

Tabel 2. Synergy Analysis of Community Participation

No.	Type of Regression Statistics	Number of Regression Statistic
1.	Intercept	0.8714482
2.	Multiple R	0.8016636
3.	R Square	0.6426646
4.	Adjusted R Square	0.6299026
5.	Standard Error	51697.229
6.	Observations	30

(Source: Research Results Primary Data, 2019).

Based on the research data in Table 2, the results of simple linear regression analysis result in a regression equation $Y = 5.26 + 18.26X$, this shows a positive influence of each variable where X represents the amount of daily cassava production and Y variable represents the number daily income, meaning that there will be an increase in participation synergy if each of these variables is increased in quantity or quantity. Meanwhile, in testing hypotheses between the two variables produces t count of 0.871, where the t table is 0.374 which means $t \text{ count} > t \text{ table}$ so that the conclusions obtained are the influence between variables on the magnitude of the synergy of participation from PUAP. According to the calculation of correlation analysis, the results of the calculation of simple linear regression analysis produce a correlation coefficient of 0.801 and a determination coefficient of 0.642, which means that when linked to the interpretation table the correlation coefficient for correlation between variables is in the "very strong" interval level classification (0 , 80 - 1.00).

C. Cooperative farming as a Solution to the Obstacles to Agribusiness Business Chain Participation

Participation in the agribusiness business chain puts forward postharvest and marketing of agricultural products. Community members consisting of: farmer elements (cassava farmers), non farmers (agribusiness business owners), and off farmers (transport owners, transport drivers) have been concentrated on their respective activities and problems. Farmers who are oriented towards increasing the quantity of crops. Productivity of farmers as providers, without being able to set the price of their products as if they were natural law. Agribusiness owners, often have difficulty in raw materials and are not easy to sell products. The off farmer element is difficult to get an order. It was suspected as a trigger for the emergence of internal barriers in the community to participate. As stated by Hetifah (2003), including lack of initiative, not organized and not having enough capacity to be productively involved in the decision-making process.

Based on the analysis of the situation, the community is synergized through empowerment by accommodating the offer of Nuryanti (2005: 153), about a model of cooperative farming which includes social, economic, technological and value added engineering. Implemented in PUAP Mandiri based on community empowerment done in 4 stages according to locus conditions. The first stage of social engineering is in the words of Banowati, et al. (2016) strengthening farmer institutions, counseling and HR development. The second stage, economic engineering is done by developing capital access for the procurement of production facilities and market access. The third stage, technology engineering is carried out by achieving technology agreement recommendations with farmers' habits. Furthermore, the fourth stage of value added engineering is carried out through the development of off farm businesses that are coordinated vertically and horizontally.

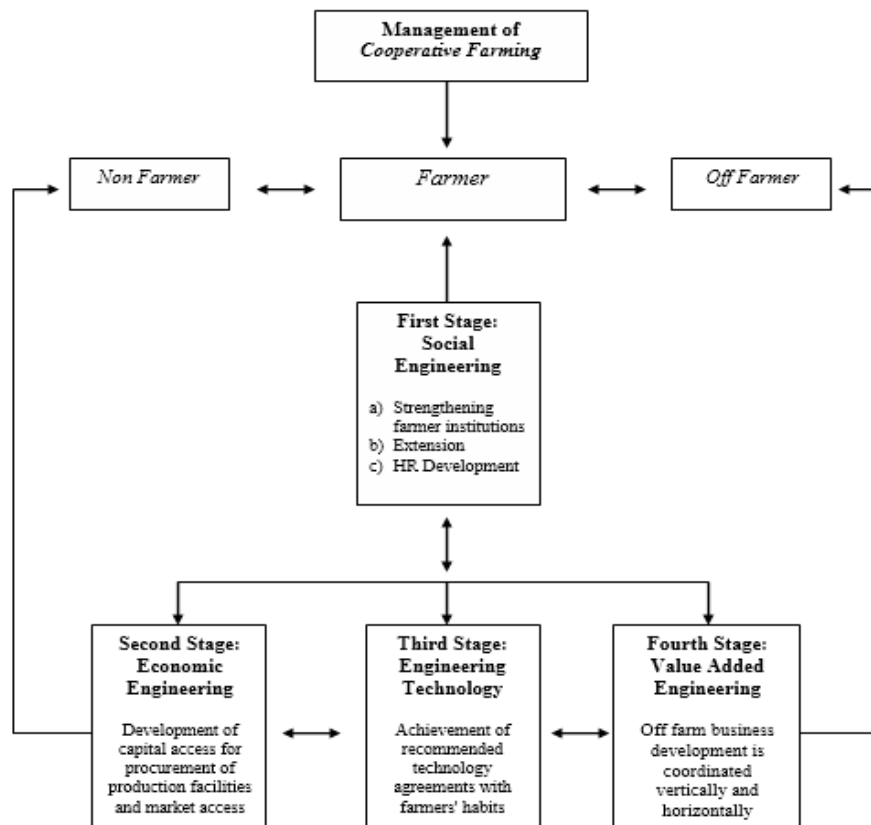


Figure 3. Implementation of Cooperative Farming Model on Community-Based PUAP Mandiri.

At the research location, cassava farming is processed into tapioca. The results of the study revealed that cassava farmers worked on an average of 1.86 hectares of land. Market-oriented cassava products, but because of the long harvest waiting period, which is between 8-10 months as a result, farmer families are pressed for financial problems. Because the waiting period of the harvest is very long and due to financial problems, at the harvest time the prices of cassava tend to be low and whatever price they will sell. The properties of cassava after leaving the soil cannot last long, in less than 24 hours the quality of starch decreases. Increasingly position them at low bargaining power. One way to increase the added value of cassava is to make mocaf according to a cooperative farming model which includes social, economic, technological, and value added engineering.

Farmer's access to markets is not yet affordable. The marketing flow of cassava before the first consumer (tapioca industry and snack producers) passes through two links: cassava traders and brokers.

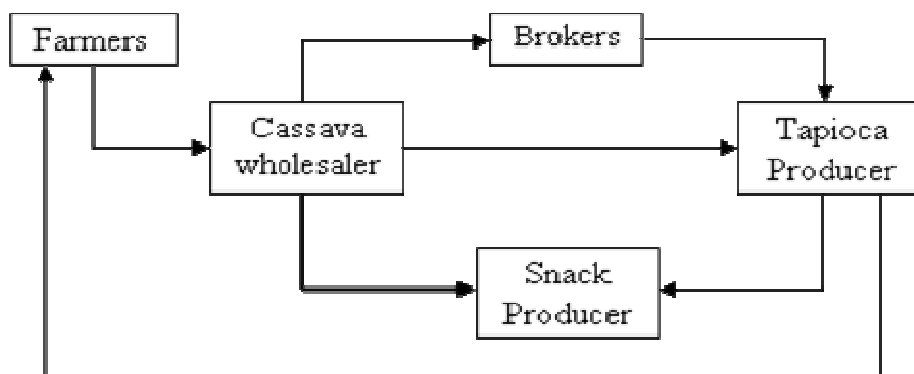


Figure 4. Marketing Flow of Cassava and Tapioca in Pati Regency (Source: Wijana et al., 2011 in Banowati et al, 2018).

The first flow is from the farmer, to the cassava trader, then directly to the tapioca producer without going through a broker, until finally reaching the snack producer. The second flow is from the farmer, to the cassava trader, then to the tapioca producer but through a broker first, and finally to the snack producer. The

fundamental difference from these two lines is in terms of time and cost, usually the second channel that must go through a broker requires more time and more costs than the first channel without a broker.

C. Community Facilitation Sub-Model

The progress of rural agricultural communities as well as rapid economic progress is motivated by the relatively strong organization of farmer groups. The economic organization system of independent and strong farmer groups can be easily developed if the structure of the agricultural division of labor is relatively evenly distributed, effective and efficient. Institutional development should take place naturally. In this case government intervention should be facilitative and facilitative development of incentive systems. In the end, the development and role of farmer groups is a manifestation of the social power of farmers who are self-sufficient to achieve independence.

Based on Figure 3 about the implementation of the cooperative farming model at PUAP Mandiri community-based empowerment on the job training of agricultural product processing, there are 3 main community elements that become the driving force, namely:

a) Farmer

Farmer as an upstream producer, and carried out its duties in the first phase of cooperative farming management, namely strengthening farmer institutions, counseling, and developing human resources, as well as engineering technology that has now implemented a double row planting method. In addition, there are also management that are managed by Balitkabi (Indonesian Peanut and Tuber Crops Research Institute) which applies single row planting methods with technology verification (Indriani, 2017). From the activities that have been carried out, there is a result in the form of cassava 1 which has good quality and cassava cassava which is of poor quality (which was rejected by tapioca industry) can be processed independently into a mocaf in order to increase the value of goods and selling value of goods.

b) Non Farmer

Non-farmer has a function as an agribusiness owner, as well as carrying out its duties in the second, third, and fourth stages of cooperative farming management, namely stages of economic engineering in terms of developing capital access to procure snack production facilities according to tables and market access, technology engineering stages recommended technology agreements with farmers' habits, as well as stages of value added engineering in terms of developing off farm businesses that are coordinated vertically and horizontally. Non-farmers also carry out manufacturing processes such as milling, powdering, extraction and refining (extraction), roasting, and spinning, canning and other manufacturing processes.

c) Off Farmer

Off farmer has a function as a transporter and collaborates with non-farmer sub-communities within and performs its duties in the second, third, and fourth stages of cooperative farming management, namely the stages of economic engineering in terms of developing capital access for procurement of production facilities and market access, technology engineering stages the achievement of recommended technology agreements with farmers' habits, as well as the stages of value-added engineering in terms of developing off farm business that is coordinated vertically and horizontally. Cassava harvest products that must arrive or be received by buyers are less than 24 hours so that the quality is maintained, which can produce high starch. Likewise, as a transporter of non-farm products, in the form of flour and snacks, the quality must be maintained so that the faster and safer the delivery of these products, the better quality of these products will be, in addition to being careful when shipping to maintain the quality of goods performance.

V. CONCLUSION

The results of empowerment showed an increase in agricultural productivity of 40% from originally 18-21 tons/ha to 34.2 tons/ha. In developing the potential of farmers from the variable of cognitive abilities, affective, psychomotor aspects with the results of the conative aspect, it is found that HR Upstream who rejects a total of 51.14% and who receives 42.86% is more directed to submission.

Rural Agribusiness Development (PUAP) is the first agriculture ministry program for farmers launched in 2008. The PUAP program regulated in the Minister of Agriculture Regulation Number: 16 / Permentan / OT.140 / 2/2008 aims to improve quality of life, independence, and welfare by providing

facilitation of business capital assistance for farmers, cultivators, farm laborers and farm households through business capital assistance in developing agribusiness enterprises in accordance with the potential of the agricultural target villages. One of the goals of PUAP is to provide access to financing for farmers in Gapoktan members while at the same time reducing development disparities between the central and regional regions and the disparity between sub-sectors. The results of the study indicate that there is a synergy of community member participation for the development of agribusiness through empowering rural communities, there is an acceleration of networking between citizens / communities through social planned change known as social engineering, as well as increased agribusiness through production and marketing. The elements involved in the concept of participatory synergy consist of farmers, cassava downstream industry, and off farmers, namely the distributor between farmers and industry. Also, the relationship in the chain of a community needs to be stretched by the existence of the Agribusiness Microfinance Institution (AMI). Each element has its task and role in ensuring the sustainability of the industry and so as not to disadvantage one another

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Abstract

The success of the rural agribusiness program needs to be supported by the community to create the expansion of marketing access, the sustainability of the agribusiness and strengthening of capital so as to create savings. This research had the following objectives: a) determining the synergy of participation of each element (farmer and non farmer) in the development of rural agribusiness, b) finding solutions to the participation constraints of each agribusiness chain, and c) finding sub models of community facilities. The research was conducted in Pati Central Java Province as a cassava-producing region and tapioca center. There were two populations of this study, they were: area of cassava land and center of agribusiness, and community members consisting of farmers element (cassava farmers), non farmer (owner of agribusiness and workforces of agribusiness), and off farmers (owner of transport, transport drivers). Sampling technique used in this study was cluster sampling technique to find out agribusiness data and accuracy test of the accuracy of image interpretation in determining the number of samples using the guidelines of BIG (Geographic Information Institution in Indonesia), as well as simple random sampling technique for agribusiness center. According to the calculation of correlation analysis, the results of the calculation of simple linear regression analysis produce a correlation coefficient of 0.801 and a determination coefficient of 0.642, which means that when linked to the interpretation table the correlation coefficient for correlation between variables is in the "very strong" interval level classification (0, 80 - 1.00). The study recommended to increase the synergy of the participation of members of rural communities, accelerate networking between citizens or communities through social planned change known as social engineering and labor intensive agricultural processing.

Keywords

agribusiness; development; product; rural

INTRODUCTION

Agricultural products need to increase sales value through Rural Agribusiness Development (PUAP). The success of the program needs to be supported by the community to realize the expansion of access to marketing, the sustainability of agribusiness and strengthening of capital in order to form savings. Community as a regional unit (natural and social) where its members (farmers and non-farmers) carry out various activi-

ties of daily life, constituting social capital plays an important role in a development process. Networking between citizens has been formed. Community elements need to be empowered so that agribusiness businesses can process agricultural products before trading. In the food supply chain, cassava

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farmers as producers leave the problem of the inability to determine market prices because of the severely damaged or declining quality of the crop. The period of planting cassava until harvest is around 10 months ending with a short decision with a low selling price determined by the middleman / buyer. Processing of agricultural products by community members indicates increasing selling value. This scheme brings rural agriculture created employment, increases people's purchasing power, strengthens entrepreneurship, which has the potential to form financial institutions as partners of farmers and non-farmers in accessing capital. Linkages in one community need to be linked to the existence of the Agribusiness Microfinance Institution (LKMA).

This study has the following objectives: a) determine the synergy of participation of each element (farmers and non-farmers) in the development of rural agribusiness (PUAP), b) find solutions to constraints on participation of each agribusiness business chain, and c) find sub community facilitation model. The study was conducted in Provision of Central Java Indonesia as a cassava-producing region and tapioca center, namely in Pati Regency, while the object of research included: facilitation measures for community empowerment on agricultural product processing and PUAP Mandiri training, community potential, cassava farming land, and centers cassava processing industry.

Rural Agribusiness Development (PUAP) is the first agriculture ministry program for farmers launched in 2008. The PUAP program regulated in Minister of Agriculture Regulation Number: 16 / Permentan / OT.140 / 2/2008 aims to improve quality of life, independence, and welfare by providing facilitation of business capital assistance for farmers, sharecroppers, farm workers and farm households. PUAP is part of the implementation of the National Program for Community Empowerment (PNPMMandiri) through business capital assistance in developing agribusiness enterprises in accordance with the agricultural potential of the target villages. PNPMMandiri

Mandiri is aimed at reducing poverty and increasing employment opportunities. One of the goals of PUAP is to provide access to financing for farmers in Gapoktan members while at the same time reducing development disparities between the central and regional regions and the disparity between sub-sectors. Weak supervision is thought to be at the root of the problem of the PUAP program, continued to stop the distribution of funds (Pangestika, et al., 2014; Novaly, in Kompasiana, 2016).

Rural communities as a regional (natural and social) entity in which members (farmers and non-farmers) have similar interests or values in carrying out daily life activities that care for each other. Community is social capital playing an important role in a development process. Networking between community members or community groups is formed by the support of independent rural financial institutions, the development of agricultural resource bases (Elizabeth, 2007; Hermawan, 2008). Rural as a community is a resource that needs acceleration to be realized through empowerment. The community empowerment context is in line with Jamal's (2009) writings on rural Indonesian development. The rural community is distinctive and specific, but currently in moving the development has not received intensive attention from the government. The village is seen as something homogeneous and needs to be facilitated by the government to the fullest. The third thought tries to balance the power of rural communities and the state in determining the direction and purpose of social change that occurs in rural communities. Tamin's Thought (2011) indicates that achieving prosperity is possible in agrarian villages that are full of agrarian stages through social planned change known as social engineering (Banowati et al., 2017) in resource management and resource competency human.

Agroindustry is an industry that uses agricultural products as raw material as a means or input in agricultural business. Agroindustry activities include industrial processing of agricultural products, industries

that produce equipment and agricultural machinery, agricultural input industries (fertilizers, pesticides, herbicides, etc.) and service industries in the agricultural sector (Suprpto and Purnomo, 2010; Udayana, 2011). Agroindustry is an activity with characteristics: (a) increasing added value, (b) producing products that can be marketed or used or eaten, (c) increasing storage capacity, and (d) increasing producer income and profits (Setyowati, 2012: 179). The nature of its activities is able to create jobs, improve income distribution and have a large enough capacity to attract agricultural sector development. In this research, the downstream sub-sector (farm and non-farm) agroindustry is processing agricultural products into raw materials or goods ready for consumption or postharvest industries of agricultural products. Post-harvest processing can be in the form of simple processing that can be done by community members (farmers and family farmers, and non-farmers) such as cleaning, grading, packing or can be more sophisticated processing, such as milling, milling (powdering) , extraction and refining (extraction), frying (roasting), and spinning, canning and other manufacturing processes which this year have not been carried out. The activity was suspected of absorbing workers (Ministry of Agriculture, 2013) encouraging a number of labor-intensive agricultural projects to anticipate the potential explosion of human resources.

Cassava-based agroindustry aims to increase the added value of cassava commodities by processing these commodities into a variety of high-value value products. A variety of cassava-based products have been produced, both by the people's industry with simple equipment and large industries equipped with modern machines, ranging from semi-finished products to finished products (Wibowo, 2015: 51). Semi-processed processed products based on cassava, tapioca flour, are developing rapidly in Indonesia. The last few years have begun to develop also mocaf (Modified Cassava Flour) agroindustry which is a derivative product of cassava flour with the principle of modifying fermented cassava cells (Wi-

bowo, 2015: 51). Not only processing cassava into semi-finished products, some agroindustries also process cassava commodities into finished products, such as: tape, suwir, cassava chips, tape chips, brownie tape, prol tape, dodol tape, and so on. In addition to food, residues from cassava processing can also be used as fertilizer / fertilizer that helps fertilize plants, especially plantation crops and their skin can be used for animal feed (Wibowo, 2015: 51).

Citing data from the Central Bureau of Statistics, as of May 2017 the number of employment in the agricultural sector amounted to 39.68 million people (31.86 percent) of the total national labor force. The multiplier effect of developing rural agroindustry covers all industries from upstream to downstream industries. To meet the requirements for the existence of agribusiness in rural areas, the presence of entrepreneurs is needed to be the initiator, pioneer, fabricator, engineer, driver and guide to the work process of the agribusiness system in certain localities (Priyadi, 2000). The characteristics of agroindustry have advantages compared to other industries, including: (a) having strong links with both upstream industries and downstream industries, (b) using existing and renewable natural resources, (c) being able to have good comparative and competitive advantages in the international market as well as in the domestic market, (d) can accommodate large numbers of workers, (e) agro-industry products are generally elastic enough to increase people's incomes that affect the wider market, especially the domestic market. Processing cassava serves as a strategic activity adding value to the chain and creating a competitive and comparative advantage. Cassava cultivation is very feasible because farmers can earn up to 67% of the total costs incurred (Banowati, 2018: 453).

METHODS

The research was conducted in Provision of Central Java, Indonesia as a cassava-producing region and tapioca center, namely

in Margoyoso District - Pati Regency. The object of the research included: facilitation measures for empowering the community on the job training on processing agricultural products and PUAP Mandiri, community potential, cassava farming land, and the center of cassava processing industry. The population in this study is 2: a) farm: areas of cassava land and centers of agribusiness, and b) Community members, consisting of: farmer elements (cassava farmers), non-farmers (agribusiness business owners, and agribusiness workers), and off farmer (transport owner, transport driver). Cluster area sampling technique on cassava land to find out agribusiness data and test the accuracy of accuracy of image interpretation. Determination of the number of samples using the guidelines for the provisions of the Geographic Information Agency (BIG). Simple random sampling technique for agribusiness centers. The data analysis technique used is simple linear regression for participatory synergistic analysis, and synthesizing information to be used in formulating alternatives and policy preferences is expressed comparatively, predicted in quantitative and qualitative languages as the basis for decision making for poverty reduction analysis.

escapes the canopy, resulting in increased micro humidity around the plant, and seizure of nutrients by colliding roots. Further impact on low productivity (18-22 tons/ha). Opportunities for increasing the yield of cassava can reach 50-60 tons (BPTP Lampung, 2009).

A system or method of planting to increase land production and productivity is used as a double row planting system. Besides, the use of seedlings was also changed to UJ 5 (Casessat) with the use of a smaller number of seeds, namely 1,150 plants / o, 1 Ha. IB Agro (2012) published this pattern by constructing double rows.

RESULT AND DISCUSSION

General description of agricultural land and the ability of farmers

Profile of Agricultural Land

Before empowerment, it is necessary to know the initial conditions of the agricultural system applied by farmers. Initially, farmers used Margona seeds with a tight planting system with a spacing of 70 x 80 cm. This method of dense cropping has disadvantages such as the use of large amounts of plant seeds (18,000 plants / ha) and dense plants causing higher levels of pest and disease attacks due to lack of sunlight that

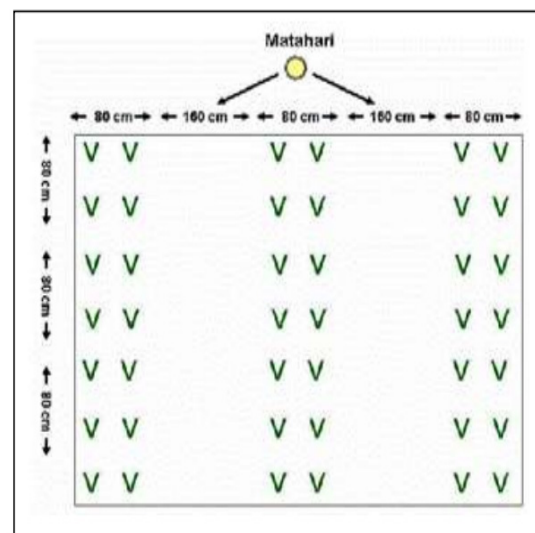


Figure 1. Double Row Garden System Technique.

Source: IB Agro, 2012

Moving on from the weaknesses of the first planting system, then in the double row planting system, thinning is carried out to intensify the sunlight that is acceptable to cassava so that the formation of starch in the bulbs is more and the size of the bulbs is large. The distance between the rows is 160 cm and 80 cm, while the distance in the same row is 80 cm. So that the spacing of the first row of cassava (160 cm x 80 cm) and the second row (80 cm x 80 cm).

Table 1. Cassava Harvesting on Pilot Use Plots Cassava Cassava Seeds (UJ5) in Pati Regency

Application of Science and Technology	Initially	Empowerment
Seeds	Margona	Kasesat (UJ5)
Haow to plant	tight planting with a spacing of 70 x 80 cm	<i>double row</i> that is 80 cm x 160 cm
Number of seeds	18.000 seeds/Ha.	1.150 seeds/ o, 1 Ha.
Land area	0,1 Ha	0,1 Ha
Production	(18-22 ton/ha)	34,2 ton/ha.

Source: Primary Data Analysis, 2018/2019

Implementation through the use of UJ 5 (Kasesat) seedlings which applied the double row planting method in a pilot plot with an area of 0.1 hectares produces 3.42 tons. That is an increase in production every 0.1 hectares 1,262 tons or an increase of 40%.

Farmer's ability

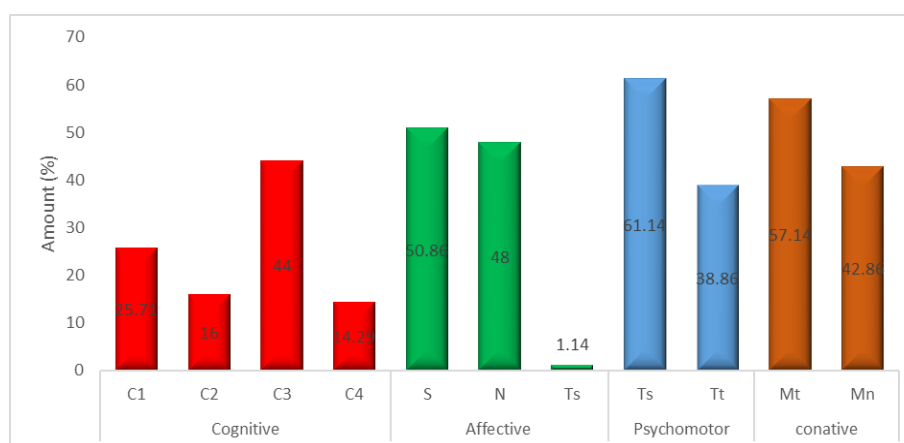
The results of data mining through training, begins with a personal approach to prominent farmers, to capture data from the empowerment actions that will be carried out, namely the making of demonstration plots (demonstration) double row (double row) to downstream human resources, namely cultivating farmers (owners, land tenants and tenants)) totaling 35 people. In this study seen from 5 aspects, namely: ac-

cess to information, participation, interest/ interest, post-harvest processing, and the formation of associations.

Training as facilitation for education empowerment in addition to skills is intended to increase knowledge, attitudes, and skills that impact the building of conative behavior. Conative behavior is a behavior or tendency to do that relates to the motivation or driving factors of a person's behavior that comes from his needs. Recording with observation techniques using visual recording devices (photo cameras), audiovisual (video cameras), and field notes.

The outcome indicators in this study were examined in four interrelated aspects, namely:

1. Inputs include HR, time, training ac-



Information

- C1 : Knowledge
 C2 : Understanding
 C3 : Application
 C4 : Analysis
 C5 : Evaluating
 C6 : Be Creative

- S : Agree
 N : Neutral / no answer
 Ts : Disagree / refuse
 T : skillful
 Tt : Not Skilled
 Mt : Refuse
 Mn : Receiving

Source: Analysis of primary data, 2018

Figure 2. The ability of cassava farmers.

tivities, materials, and tools that support community empowerment activities.

2. The process includes: the number of counselors/trainers, the frequency of training carried out, and the effective and efficient number of upstream and downstream HR involved.
3. Outputs include the number and types of businesses that have community resources, the number of people who have increased their knowledge and behavior about the products produced, increasing the income generated from the work of each HR element.
4. Outcomes from community empowerment have contributed to reducing: the number of crop failures/production, sale failure, and losses as well as increasing cassava and tapioca production and productivity.

The cognitive domain demonstrates knowledge about the intrinsic potential of HR and insights on how to apply this potential to the livelihood activities that they are engaged in. The results of observation and analysis showed that the cognitive of farmers before empowerment was at stage C₃, namely the application of 44% and the ability to analyze the information conveyed was only 14.29% of the total number of farmers. This amount is expected to be able to think critically about the problem of cassava farming in its environment. Affective Conditions provide information on how farmers behave towards the empowerment plan that will be carried out after empowerment socialization is carried out. Half of the farmers (50.86%) agreed and only 1.14% said they disagreed, then the rest preferred to be neutral. Interventions result in an affective condition of HR to achieve empowerment in attitudes and behavior. **Psychomotor abilities** are skills possessed by upstream HR (Farmers) in producing cassava with high production. Psychomotor ability is not only determined by the experience of farming alone, but also the interest and openness in receiving information about increasing

the value of production. Most farmers are already skilled in producing high sinking production, but there is still a need to improve efforts to all other farmers. **Conative conditions** are derived from the realm of attitudes, especially the upstream HR behavior that is formed and directed towards behaviors that are sensitive to the values of development and empowerment for the realization of food self-sufficiency. This figure will be used in taking the next step because in empowerment the most important thing is the participation of the community as the subject of empowerment. As many as 42.86% or 15 farmers stated that they were willing to be empowered to increase the productivity value of cassava owned. Sticking to the principles of empowering Human Resources (HR), namely: developing the potential of the community from the variable development of cognitive, affective, psychomotor abilities with the results of the conative aspects of Downstream HR who reject 51.14% and those who receive 42.86% more towards resignation but it is also possible that the decision will change along with the empowerment process undertaken.

Synergy of participation in Rural Agribusiness Enterprise Development (PUAP)

Rural Agribusiness Development (PUAP) is one of the government programs, especially the Ministry of Agriculture. The PUAP program is carried out by farmers (fund owners or cultivators), farm workers, processing products and marketing of agricultural products, especially for poor families in the village / kelurahan, through Gapoktan as an institution owned and managed by farmers. Gapoktan as the executor of PUAP is a combination of several farmer groups in one village area. The purpose of combining groups into Gapoktan in PERMENTAN Number 273 / Kpts / OT.160 / 4/2007 is to gather cooperative interests together so that farmer groups are more efficient and effective, in providing agricultural production facilities, capital, raising or expanding farming in upstream and downstream sectors, marketing and cooperation in increasing bargaining posi-

tions (Banowati, 2018).

Farming in Indonesia is dominated by small-scale family farms that are very weak in various fields, such as limitations in controlling productive assets, working capital, bargaining positions and political economy, so they cannot develop independently dynamically. Small farmers are very dependent on large groups of farmers or traders to obtain productive assets (land, equipment), working capital and the acquisition of production facilities. Likewise, the sale of farmers' results is very dependent on the merchant yield. Therefore, efforts to empower farmers through developing farmer groups and through consolidative agribusiness business partnerships are strategic steps.

Farmers are the main actors who must be empowered. The first step that needs to be taken to empower farmers is to form institutions in the form of farmer groups that are cooperative organizations. Collaboration is needed to deal with various problems faced which are basically very difficult when faced individually. So far, farmers are weak in determining the price of production because it is difficult to get access to market information. In this case the farmer must carry out horizontal consolidation. Furthermore, through counseling (education and training) that is sustainable towards the group that gets the guidance is expected to produce human resources for farmers who have knowledge and skills in farming. To be able to make farming more organized and directed, the farmer group institutions need to establish cooperation and partnerships with outside / business people. Linkages and institutional cooperation of farmer groups with private / business parties can be well established if there are interdependencies and symmetrical cooperation and mutual benefits.

The role of the government through various policies and programs is expected to be able to encourage and create a conducive business climate and encourage farmers / farmer groups and the private sector / businessmen, so that agribusiness can develop. In this case the government acts as a facilitator, regulator, motivator who must harmo-

nize the relations between the agribusiness actors, so that the perpetrators can interact proportionally and there is no contradictory exploitation. Business people can achieve a balanced profit. With the integration of various elements (farmer groups, private sector / business people and the government), it is expected that agribusiness that is vertically consolidative or that the partnership can develop.

The synergy of each element both from farmers and non-farmers is very necessary in PUAP, because without the cooperation and synergy of the two elements, the agricultural business will always be lame and will always harm one party. Based on the results of the study, there is a strong synergy between the two variables, these results can be seen in Table 1.

Table 2. Synergy Analysis of Community Participation

No.	Type of Regression Statistics	Number of Regression Statistic
1.	Intercept	0.8714482
2.	Multiple R	0.8016636
3.	R Square	0.6426646
4.	Adjusted R Square	0.6299026
5.	Standard Error	51697.229
6.	Observations	30

(Source: Research Results Primary Data, 2019).

Based on the research data in Table 2, the results of simple linear regression analysis result in a regression equation $Y = 5.26 + 18.26X$, this shows a positive influence of each variable where X represents the amount of daily cassava production and Y variable represents the number daily income, meaning that there will be an increase in participation synergy if each of these variables is increased in quantity or quantity. Meanwhile, in testing hypotheses between the two variables produces t count of 0.871, where the t table is 0.374 which means t count > t table so that the conclusions obtained are the influence between variables on the magnitude of the synergy of participation from PUAP. According to the calculation of corre-

lation analysis, the results of the calculation of simple linear regression analysis produce a correlation coefficient of 0.801 and a determination coefficient of 0.642, which means that when linked to the interpretation table the correlation coefficient for correlation between variables is in the "very strong" interval level classification (0,80 - 1.00).

Cooperative farming as a Solution to the Obstacles to Agribusiness Business Chain Participation

Participation in the agribusiness business chain puts forward postharvest and marketing of agricultural products. Community members consisting of: farmer elements (cassava farmers), non farmers (agribusiness business owners), and off farmers (transport owners, transport drivers) have been concentrated on their respective activities and problems. Farmers who are oriented towards increasing the quantity of crops. Productivity of farmers as providers, without being able to set the price of their

products as if they were natural law. Agribusiness owners, often have difficulty in raw materials and are not easy to sell products. The off farmer element is difficult to get an order. It was suspected as a trigger for the emergence of internal barriers in the community to participate. As stated by Hetifah (2003), including lack of initiative, not organized and not having enough capacity to be productively involved in the decision-making process.

Based on the analysis of the situation, the community is synergized through empowerment by accommodating the offer of Nuryanti (2005: 153), about a model of cooperative farming which includes social, economic, technological and value added engineering. Implemented in PUAP Mandiri based on community empowerment done in 4 stages according to locus conditions. The first stage of social engineering is in the words of Banowati, et al. (2016) strengthening farmer institutions, counseling and HR development. The second stage,

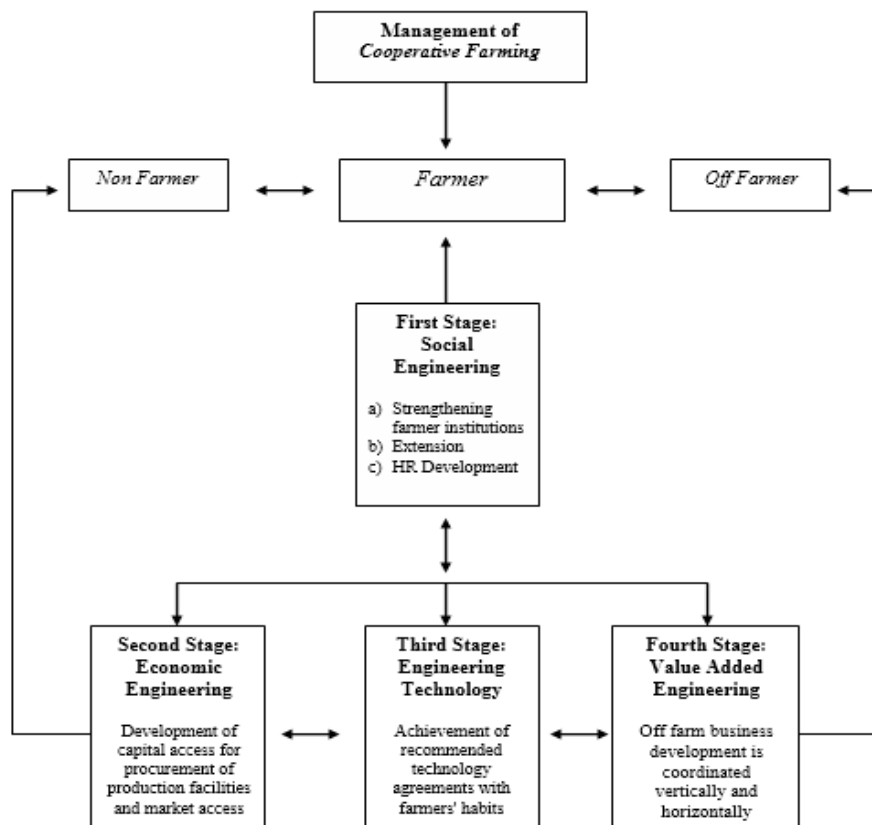


Figure 3. Implementation of Cooperative Farming Model on Community-Based PUAP Mandiri.

economic engineering is done by developing capital access for the procurement of production facilities and market access. The third stage, technology engineering is carried out by achieving technology agreement recommendations with farmers' habits. Furthermore, the fourth stage of value added engineering is carried out through the development of off farm businesses that are coordinated vertically and horizontally.

At the research location, cassava farming is processed into tapioca. The results of the study revealed that cassava farmers worked on an average of 1.86 hectares of land. Market-oriented cassava products, but because of the long harvest waiting period, which is between 8-10 months as a result, farmer families are pressed for financial problems. Because the waiting period of the harvest is very long and due to financial problems, at the harvest time the prices of cassava tend to be low and whatever price they will sell. The properties of cassava after leaving the soil cannot last long, in less than 24 hours the quality of starch decreases. Increasingly position them at low bargaining power. One way to increase the added value of cassava is to make mocaf according to a cooperative farming model which includes social, economic, technological, and value added engineering.

Farmer's access to markets is not yet affordable. The marketing flow of cassava before the first consumer (tapioca industry and snack producers) passes through two links: cassava traders and brokers.

The first flow is from the farmer, to

the cassava trader, then directly to the tapioca producer without going through a broker, until finally reaching the snack producer. The second flow is from the farmer, to the cassava trader, then to the tapioca producer but through a broker first, and finally to the snack producer. The fundamental difference from these two lines is in terms of time and cost, usually the second channel that must go through a broker requires more time and more costs than the first channel without a broker.

Community Facilitation Sub-Model

The progress of rural agricultural communities as well as rapid economic progress is motivated by the relatively strong organization of farmer groups. The economic organization system of independent and strong farmer groups can be easily developed if the structure of the agricultural division of labor is relatively evenly distributed, effective and efficient. Institutional development should take place naturally. In this case government intervention should be facilitative and facilitative development of incentive systems. In the end, the development and role of farmer groups is a manifestation of the social power of farmers who are self-sufficient to achieve independence.

Based on Figure 3 about the implementation of the cooperative farming model at PUAP Mandiri community-based empowerment on the job training of agricultural product processing, there are 3 main community elements that become the driving

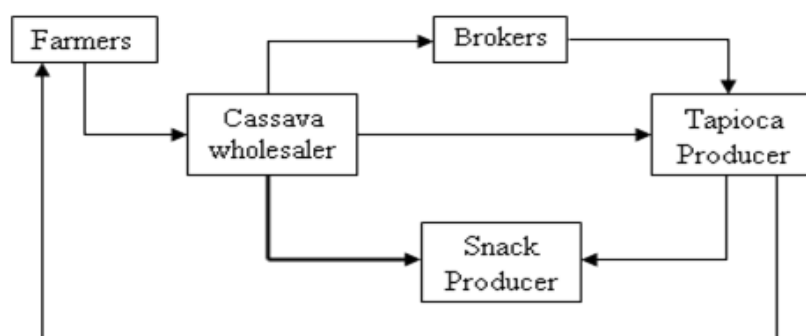


Figure 4. Marketing Flow of Cassava and Tapioca in Pati Regency (Source: Wijana et al., 2011 in Banowati et al, 2018).

force, namely:

a) *Farmer*

Farmer as an upstream producer, and carried out its duties in the first phase of cooperative farming management, namely strengthening farmer institutions, counseling, and developing human resources, as well as engineering technology that has now implemented a double row planting method. In addition, there are also management that are managed by Balitkabi (Indonesian Peanut and Tuber Crops Research Institute) which applies single row planting methods with technology verification (Indriani, 2017). From the activities that have been carried out, there is a result in the form of cassava 1 which has good quality and cassava cassava which is of poor quality (which was rejected by tapioca industry) can be processed independently into a mocaf in order to increase the value of goods and selling value of goods.

b) *Non Farmer*

Non-farmer has a function as an agribusiness owner, as well as carrying out its duties in the second, third, and fourth stages of cooperative farming management, namely stages of economic engineering in terms of developing capital access to procure snack production facilities according to tables and market access, technology engineering stages recommended technology agreements with farmers' habits, as well as stages of value added engineering in terms of developing off farm businesses that are coordinated vertically and horizontally. Non-farmers also carry out manufacturing processes such as milling, powdering, extraction and refining (extraction), roasting, and spinning, canning and other manufacturing processes.

c) *Off Farmer*

Off farmer has a function as a transporter and collaborates with non-farmer sub-communities within and performs its duties in the second, third, and fourth stages of cooperative farming management, namely the stages of economic engineering in

terms of developing capital access for procurement of production facilities and market access, technology engineering stages the achievement of recommended technology agreements with farmers' habits, as well as the stages of value-added engineering in terms of developing off farm business that is coordinated vertically and horizontally. Cassava harvest products that must arrive or be received by buyers are less than 24 hours so that the quality is maintained, which can produce high starch. Likewise, as a transporter of non-farm products, in the form of flour and snacks, the quality must be maintained so that the faster and safer the delivery of these products, the better quality of these products will be, in addition to being careful when shipping to maintain the quality of goods performance.

CONCLUSION

The results of empowerment showed an increase in agricultural productivity of 40% from originally 18-21 tons/ha to 34.2 tons/ha. In developing the potential of farmers from the variable of cognitive abilities, affective, psychomotor aspects with the results of the conative aspect, it is found that HR Upstream who rejects a total of 51.14% and who receives 42.86% is more directed to submission.

Rural Agribusiness Development (PUAP) is the first agriculture ministry program for farmers launched in 2008. The PUAP program regulated in the Minister of Agriculture Regulation Number: 16 / Permentan / OT.140 / 2/2008 aims to improve quality of life, independence, and welfare by providing facilitation of business capital assistance for farmers, cultivators, farm laborers and farm households through business capital assistance in developing agribusiness enterprises in accordance with the potential of the agricultural target villages. One of the goals of PUAP is to provide access to financing for farmers in Gapoktan members while at the same time reducing development disparities between the central and regional regions and the disparity between sub-sectors. The results of the study indi-

cate that there is a synergy of community member participation for the development of agribusiness through empowering rural communities, there is an acceleration of networking between citizens / communities through social planned change known as social engineering, as well as increased agribusiness through production and marketing. The elements involved in the concept of participatory synergy consist of farmers, cassava downstream industry, and off farmers, namely the distributor between farmers and industry. Also, the relationship in the chain of a community needs to be stretched by the existence of the Agribusiness Microfinance Institution (AMI). Each element has its task and role in ensuring the sustainability of the industry and so as not to disadvantage one another

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Cassava Farming Based on Rural Agribusiness Development

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UNNES JOURNALS

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Abstract

The success of the rural agribusiness program needs to be supported by the community to create the expansion of marketing access, the sustainability of the agribusiness and strengthening of capital so as to create savings. This research had the following objectives: a) determining the synergy of participation of each element (farmer and non farmer) in the development of rural agribusiness, b) finding solutions to the participation constraints of each agribusiness chain, and c) finding sub models of community facilities. The research was conducted in Pati Central Java Province as a cassava-producing region and tapioca center. There were two populations of this study, they were: area of cassava land and center of agribusiness, and community members consisting of farmers element (cassava farmers), non farmer (owner of agribusiness and workforces of agribusiness), and off farmers (owner of transport, transport drivers). Sampling technique used in this study was cluster sampling technique to find out agribusiness data and accuracy test of the accuracy of image interpretation in determining the number of samples using the guidelines of BIG (Geographic Information Institution in Indonesia), as well as simple random sampling technique for agribusiness center. According to the calculation of correlation analysis, the results of the calculation of simple linear regression analysis produce a correlation coefficient of 0.801 and a determination coefficient of 0.642, which means that when linked to the interpretation table the correlation coefficient for correlation between variables is in the "very strong" interval level classification (0, 80 - 1.00). The study recommended to increase the synergy of the participation of members of rural communities, accelerate networking between citizens or communities through social planned change known as social engineering and labor intensive agricultural processing.

Keywords

agribusiness; development; product; rural

INTRODUCTION

Agricultural products need to increase sales value through Rural Agribusiness Development (PUAP). The success of the program needs to be supported by the community to realize the expansion of access to marketing, the sustainability of agribusiness and strengthening of capital in order to form savings. Community as a regional unit (natural and social) where its members (farmers and non-farmers) carry out various activi-

ties of daily life, constituting social capital plays an important role in a development process. Networking between citizens has been formed. Community elements need to be empowered so that agribusiness businesses can process agricultural products before trading. In the food supply chain, cassava

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farmers as producers leave the problem of the inability to determine market prices because of the severely damaged or declining quality of the crop. The period of planting cassava until harvest is around 10 months ending with a short decision with a low selling price determined by the middleman / buyer. Processing of agricultural products by community members indicates increasing selling value. This scheme brings rural agriculture created employment, increases people's purchasing power, strengthens entrepreneurship, which has the potential to form financial institutions as partners of farmers and non-farmers in accessing capital. Linkages in one community need to be linked to the existence of the Agribusiness Microfinance Institution (LKMA).

This study has the following objectives: a) determine the synergy of participation of each element (farmers and non-farmers) in the development of rural agribusiness (PUAP), b) find solutions to constraints on participation of each agribusiness business chain, and c) find sub community facilitation model. The study was conducted in Provision of Central Java Indonesia as a cassava-producing region and tapioca center, namely in Pati Regency, while the object of research included: facilitation measures for community empowerment on agricultural product processing and PUAP Mandiri training, community potential, cassava farming land, and centers cassava processing industry.

Rural Agribusiness Development (PUAP) is the first agriculture ministry program for farmers launched in 2008. The PUAP program regulated in Minister of Agriculture Regulation Number: 16 / Permentan / OT.140 / 2/2008 aims to improve quality of life, independence, and welfare by providing facilitation of business capital assistance for farmers, sharecroppers, farm workers and farm households. PUAP is part of the implementation of the National Program for Community Empowerment (PNPMMandiri) through business capital assistance in developing agribusiness enterprises in accordance with the agricultural potential of the target villages. PNPMMandiri

Mandiri is aimed at reducing poverty and increasing employment opportunities. One of the goals of PUAP is to provide access to financing for farmers in Gapoktan members while at the same time reducing development disparities between the central and regional regions and the disparity between sub-sectors. Weak supervision is thought to be at the root of the problem of the PUAP program, continued to stop the distribution of funds (Pangestika, et al., 2014; Novaly, in Kompasiana, 2016).

Rural communities as a regional (natural and social) entity in which members (farmers and non-farmers) have similar interests or values in carrying out daily life activities that care for each other. Community is social capital playing an important role in a development process. Networking between community members or community groups is formed by the support of independent rural financial institutions, the development of agricultural resource bases (Elizabeth, 2007; Hermawan, 2008). Rural as a community is a resource that needs acceleration to be realized through empowerment. The community empowerment context is in line with Jamal's (2009) writings on rural Indonesian development. The rural community is distinctive and specific, but currently in moving the development has not received intensive attention from the government. The village is seen as something homogeneous and needs to be facilitated by the government to the fullest. The third thought tries to balance the power of rural communities and the state in determining the direction and purpose of social change that occurs in rural communities. Tamin's Thought (2011) indicates that achieving prosperity is possible in agrarian villages that are full of agrarian stages through social planned change known as social engineering (Banowati et al., 2017) in resource management and resource competency human.

Agroindustry is an industry that uses agricultural products as raw material as a means or input in agricultural business. Agroindustry activities include industrial processing of agricultural products, industries

that produce equipment and agricultural machinery, agricultural input industries (fertilizers, pesticides, herbicides, etc.) and service industries in the agricultural sector (Suprpto and Purnomo, 2010; Udayana, 2011). Agroindustry is an activity with characteristics: (a) increasing added value, (b) producing products that can be marketed or used or eaten, (c) increasing storage capacity, and (d) increasing producer income and profits (Setyowati, 2012: 179). The nature of its activities is able to create jobs, improve income distribution and have a large enough capacity to attract agricultural sector development. In this research, the downstream sub-sector (farm and non-farm) agroindustry is processing agricultural products into raw materials or goods ready for consumption or postharvest industries of agricultural products. Post-harvest processing can be in the form of simple processing that can be done by community members (farmers and family farmers, and non-farmers) such as cleaning, grading, packing or can be more sophisticated processing, such as milling, milling (powdering) , extraction and refining (extraction), frying (roasting), and spinning, canning and other manufacturing processes which this year have not been carried out. The activity was suspected of absorbing workers (Ministry of Agriculture, 2013) encouraging a number of labor-intensive agricultural projects to anticipate the potential explosion of human resources.

Cassava-based agroindustry aims to increase the added value of cassava commodities by processing these commodities into a variety of high-value value products. A variety of cassava-based products have been produced, both by the people's industry with simple equipment and large industries equipped with modern machines, ranging from semi-finished products to finished products (Wibowo, 2015: 51). Semi-processed processed products based on cassava, tapioca flour, are developing rapidly in Indonesia. The last few years have begun to develop also mocaf (Modified Cassava Flour) agroindustry which is a derivative product of cassava flour with the principle of modifying fermented cassava cells (Wi-

bowo, 2015: 51). Not only processing cassava into semi-finished products, some agroindustries also process cassava commodities into finished products, such as: tape, suwir, cassava chips, tape chips, brownie tape, prol tape, dodol tape, and so on. In addition to food, residues from cassava processing can also be used as fertilizer / fertilizer that helps fertilize plants, especially plantation crops and their skin can be used for animal feed (Wibowo, 2015: 51).

Citing data from the Central Bureau of Statistics, as of May 2017 the number of employment in the agricultural sector amounted to 39.68 million people (31.86 percent) of the total national labor force. The multiplier effect of developing rural agroindustry covers all industries from upstream to downstream industries. To meet the requirements for the existence of agribusiness in rural areas, the presence of entrepreneurs is needed to be the initiator, pioneer, fabricator, engineer, driver and guide to the work process of the agribusiness system in certain localities (Priyadi, 2000). The characteristics of agroindustry have advantages compared to other industries, including: (a) having strong links with both upstream industries and downstream industries, (b) using existing and renewable natural resources, (c) being able to have good comparative and competitive advantages in the international market as well as in the domestic market, (d) can accommodate large numbers of workers, (e) agro-industry products are generally elastic enough to increase people's incomes that affect the wider market, especially the domestic market. Processing cassava serves as a strategic activity adding value to the chain and creating a competitive and comparative advantage. Cassava cultivation is very feasible because farmers can earn up to 67% of the total costs incurred (Banowati, 2018: 453).

METHODS

The research was conducted in Provision of Central Java, Indonesia as a cassava-producing region and tapioca center, namely

in Margoyoso District - Pati Regency. The object of the research included: facilitation measures for empowering the community on the job training on processing agricultural products and PUAP Mandiri, community potential, cassava farming land, and the center of cassava processing industry. The population in this study is 2: a) farm: areas of cassava land and centers of agribusiness, and b) Community members, consisting of: farmer elements (cassava farmers), non-farmers (agribusiness business owners, and agribusiness workers), and off farmer (transport owner, transport driver). Cluster area sampling technique on cassava land to find out agribusiness data and test the accuracy of accuracy of image interpretation. Determination of the number of samples using the guidelines for the provisions of the Geographic Information Agency (BIG). Simple random sampling technique for agribusiness centers. The data analysis technique used is simple linear regression for participatory synergistic analysis, and synthesizing information to be used in formulating alternatives and policy preferences is expressed comparatively, predicted in quantitative and qualitative languages as the basis for decision making for poverty reduction analysis.

escapes the canopy, resulting in increased micro humidity around the plant, and seizure of nutrients by colliding roots. Further impact on low productivity (18-22 tons/ha). Opportunities for increasing the yield of cassava can reach 50-60 tons (BPTP Lampung, 2009).

A system or method of planting to increase land production and productivity is used as a double row planting system. Besides, the use of seedlings was also changed to UJ 5 (Casessat) with the use of a smaller number of seeds, namely 1,150 plants / o, 1 Ha. IB Agro (2012) published this pattern by constructing double rows.

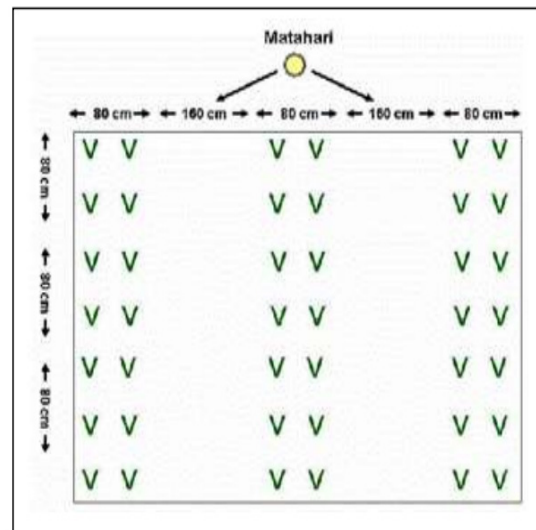


Figure 1. Double Row Garden System Technique.

Source: IB Agro, 2012

RESULT AND DISCUSSION

General description of agricultural land and the ability of farmers

Profile of Agricultural Land

Before empowerment, it is necessary to know the initial conditions of the agricultural system applied by farmers. Initially, farmers used Margona seeds with a tight planting system with a spacing of 70 x 80 cm. This method of dense cropping has disadvantages such as the use of large amounts of plant seeds (18,000 plants / ha) and dense plants causing higher levels of pest and disease attacks due to lack of sunlight that

Moving on from the weaknesses of the first planting system, then in the double row planting system, thinning is carried out to intensify the sunlight that is acceptable to cassava so that the formation of starch in the bulbs is more and the size of the bulbs is large. The distance between the rows is 160 cm and 80 cm, while the distance in the same row is 80 cm. So that the spacing of the first row of cassava (160 cm x 80 cm) and the second row (80 cm x 80 cm).

Table 1. Cassava Harvesting on Pilot Use Plots Cassava Cassava Seeds (UJ5) in Pati Regency

Application of Science and Technology	Initially	Empowerment
Seeds	Margona	Kasesat (UJ5)
Haow to plant	tight planting with a spacing of 70 x 80 cm	<i>double row</i> that is 80 cm x 160 cm
Number of seeds	18.000 seeds/Ha.	1.150 seeds/ o, 1 Ha.
Land area	0,1 Ha	0,1 Ha
Production	(18-22 ton/ha)	34,2 ton/ha.

Source: Primary Data Analysis, 2018/2019

Implementation through the use of UJ 5 (Kasesat) seedlings which applied the double row planting method in a pilot plot with an area of 0.1 hectares produces 3.42 tons. That is an increase in production every 0.1 hectares 1,262 tons or an increase of 40%.

Farmer's ability

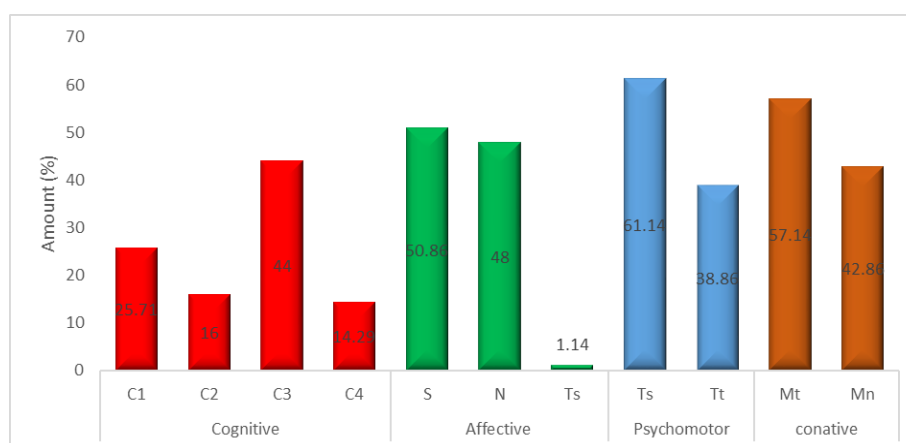
The results of data mining through training, begins with a personal approach to prominent farmers, to capture data from the empowerment actions that will be carried out, namely the making of demonstration plots (demonstration) double row (double row) to downstream human resources, namely cultivating farmers (owners, land tenants and tenants)) totaling 35 people. In this study seen from 5 aspects, namely: ac-

cess to information, participation, interest/ interest, post-harvest processing, and the formation of associations.

Training as facilitation for education empowerment in addition to skills is intended to increase knowledge, attitudes, and skills that impact the building of conative behavior. Conative behavior is a behavior or tendency to do that relates to the motivation or driving factors of a person's behavior that comes from his needs. Recording with observation techniques using visual recording devices (photo cameras), audiovisual (video cameras), and field notes.

The outcome indicators in this study were examined in four interrelated aspects, namely:

1. Inputs include HR, time, training ac-



Information

- C1 : Knowledge
- C2 : Understanding
- C3 : Application
- C4 : Analysis
- C5 : Evaluating
- C6 : Be Creative

- S : Agree
- N : Neutral / no answer
- Ts : Disagree / refuse
- T : skillful
- Tt : Not Skilled
- Mt : Refuse
- Mn : Receiving

Source: Analysis of primary data, 2018

Figure 2. The ability of cassava farmers.

tivities, materials, and tools that support community empowerment activities.

2. The process includes: the number of counselors/trainers, the frequency of training carried out, and the effective and efficient number of upstream and downstream HR involved.
3. Outputs include the number and types of businesses that have community resources, the number of people who have increased their knowledge and behavior about the products produced, increasing the income generated from the work of each HR element.
4. Outcomes from community empowerment have contributed to reducing: the number of crop failures/production, sale failure, and losses as well as increasing cassava and tapioca production and productivity.

The cognitive domain demonstrates knowledge about the intrinsic potential of HR and insights on how to apply this potential to the livelihood activities that they are engaged in. The results of observation and analysis showed that the cognitive of farmers before empowerment was at stage C₃, namely the application of 44% and the ability to analyze the information conveyed was only 14.29% of the total number of farmers. This amount is expected to be able to think critically about the problem of cassava farming in its environment. Affective Conditions provide information on how farmers behave towards the empowerment plan that will be carried out after empowerment socialization is carried out. Half of the farmers (50.86%) agreed and only 1.14% said they disagreed, then the rest preferred to be neutral. Interventions result in an affective condition of HR to achieve empowerment in attitudes and behavior. **Psychomotor abilities** are skills possessed by upstream HR (Farmers) in producing cassava with high production. Psychomotor ability is not only determined by the experience of farming alone, but also the interest and openness in receiving information about increasing

the value of production. Most farmers are already skilled in producing high sinking production, but there is still a need to improve efforts to all other farmers. **Conative conditions** are derived from the realm of attitudes, especially the upstream HR behavior that is formed and directed towards behaviors that are sensitive to the values of development and empowerment for the realization of food self-sufficiency. This figure will be used in taking the next step because in empowerment the most important thing is the participation of the community as the subject of empowerment. As many as 42.86% or 15 farmers stated that they were willing to be empowered to increase the productivity value of cassava owned. Sticking to the principles of empowering Human Resources (HR), namely: developing the potential of the community from the variable development of cognitive, affective, psychomotor abilities with the results of the conative aspects of Downstream HR who reject 51.14% and those who receive 42.86% more towards resignation but it is also possible that the decision will change along with the empowerment process undertaken.

Synergy of participation in Rural Agribusiness Enterprise Development (PUAP)

Rural Agribusiness Development (PUAP) is one of the government programs, especially the Ministry of Agriculture. The PUAP program is carried out by farmers (fund owners or cultivators), farm workers, processing products and marketing of agricultural products, especially for poor families in the village / kelurahan, through Gapoktan as an institution owned and managed by farmers. Gapoktan as the executor of PUAP is a combination of several farmer groups in one village area. The purpose of combining groups into Gapoktan in PERMENTAN Number 273 / Kpts / OT.160 / 4/2007 is to gather cooperative interests together so that farmer groups are more efficient and effective, in providing agricultural production facilities, capital, raising or expanding farming in upstream and downstream sectors, marketing and cooperation in increasing bargaining posi-

tions (Banowati, 2018).

Farming in Indonesia is dominated by small-scale family farms that are very weak in various fields, such as limitations in controlling productive assets, working capital, bargaining positions and political economy, so they cannot develop independently dynamically. Small farmers are very dependent on large groups of farmers or traders to obtain productive assets (land, equipment), working capital and the acquisition of production facilities. Likewise, the sale of farmers' results is very dependent on the merchant yield. Therefore, efforts to empower farmers through developing farmer groups and through consolidative agribusiness business partnerships are strategic steps.

Farmers are the main actors who must be empowered. The first step that needs to be taken to empower farmers is to form institutions in the form of farmer groups that are cooperative organizations. Collaboration is needed to deal with various problems faced which are basically very difficult when faced individually. So far, farmers are weak in determining the price of production because it is difficult to get access to market information. In this case the farmer must carry out horizontal consolidation. Furthermore, through counseling (education and training) that is sustainable towards the group that gets the guidance is expected to produce human resources for farmers who have knowledge and skills in farming. To be able to make farming more organized and directed, the farmer group institutions need to establish cooperation and partnerships with outside / business people. Linkages and institutional cooperation of farmer groups with private / business parties can be well established if there are interdependencies and symmetrical cooperation and mutual benefits.

The role of the government through various policies and programs is expected to be able to encourage and create a conducive business climate and encourage farmers / farmer groups and the private sector / businessmen, so that agribusiness can develop. In this case the government acts as a facilitator, regulator, motivator who must harmo-

nize the relations between the agribusiness actors, so that the perpetrators can interact proportionally and there is no contradictory exploitation. Business people can achieve a balanced profit. With the integration of various elements (farmer groups, private sector / business people and the government), it is expected that agribusiness that is vertically consolidative or that the partnership can develop.

The synergy of each element both from farmers and non-farmers is very necessary in PUAP, because without the cooperation and synergy of the two elements, the agricultural business will always be lame and will always harm one party. Based on the results of the study, there is a strong synergy between the two variables, these results can be seen in Table 1.

Table 2. Synergy Analysis of Community Participation

No.	Type of Regression Statistics	Number of Regression Statistic
1.	Intercept	0.8714482
2.	Multiple R	0.8016636
3.	R Square	0.6426646
4.	Adjusted R Square	0.6299026
5.	Standard Error	51697.229
6.	Observations	30

(Source: Research Results Primary Data, 2019).

Based on the research data in Table 2, the results of simple linear regression analysis result in a regression equation $Y = 5.26 + 18.26X$, this shows a positive influence of each variable where X represents the amount of daily cassava production and Y variable represents the number daily income, meaning that there will be an increase in participation synergy if each of these variables is increased in quantity or quantity. Meanwhile, in testing hypotheses between the two variables produces t count of 0.871, where the t table is 0.374 which means t count > t table so that the conclusions obtained are the influence between variables on the magnitude of the synergy of participation from PUAP. According to the calculation of corre-

lation analysis, the results of the calculation of simple linear regression analysis produce a correlation coefficient of 0.801 and a determination coefficient of 0.642, which means that when linked to the interpretation table the correlation coefficient for correlation between variables is in the "very strong" interval level classification (0,80 - 1.00).

Cooperative farming as a Solution to the Obstacles to Agribusiness Business Chain Participation

Participation in the agribusiness business chain puts forward postharvest and marketing of agricultural products. Community members consisting of: farmer elements (cassava farmers), non farmers (agribusiness business owners), and off farmers (transport owners, transport drivers) have been concentrated on their respective activities and problems. Farmers who are oriented towards increasing the quantity of crops. Productivity of farmers as providers, without being able to set the price of their

products as if they were natural law. Agribusiness owners, often have difficulty in raw materials and are not easy to sell products. The off farmer element is difficult to get an order. It was suspected as a trigger for the emergence of internal barriers in the community to participate. As stated by Hetifah (2003), including lack of initiative, not organized and not having enough capacity to be productively involved in the decision-making process.

Based on the analysis of the situation, the community is synergized through empowerment by accommodating the offer of Nuryanti (2005: 153), about a model of cooperative farming which includes social, economic, technological and value added engineering. Implemented in PUAP Mandiri based on community empowerment done in 4 stages according to locus conditions. The first stage of social engineering is in the words of Banowati, et al. (2016) strengthening farmer institutions, counseling and HR development. The second stage,

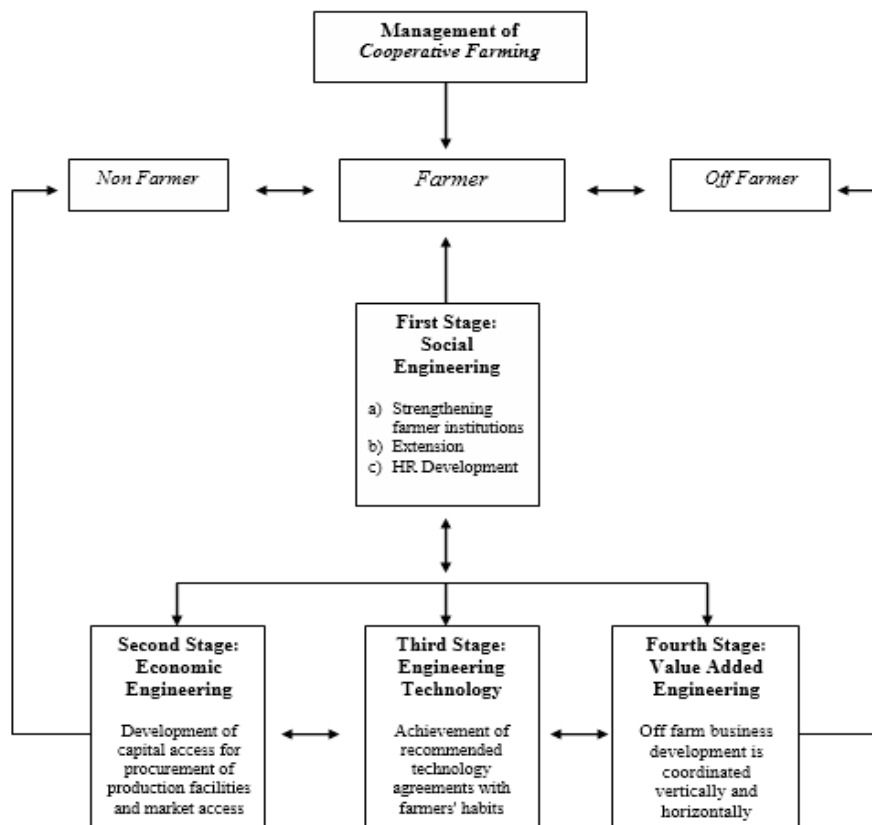


Figure 3. Implementation of Cooperative Farming Model on Community-Based PUAP Mandiri.

economic engineering is done by developing capital access for the procurement of production facilities and market access. The third stage, technology engineering is carried out by achieving technology agreement recommendations with farmers' habits. Furthermore, the fourth stage of value added engineering is carried out through the development of off farm businesses that are coordinated vertically and horizontally.

At the research location, cassava farming is processed into tapioca. The results of the study revealed that cassava farmers worked on an average of 1.86 hectares of land. Market-oriented cassava products, but because of the long harvest waiting period, which is between 8-10 months as a result, farmer families are pressed for financial problems. Because the waiting period of the harvest is very long and due to financial problems, at the harvest time the prices of cassava tend to be low and whatever price they will sell. The properties of cassava after leaving the soil cannot last long, in less than 24 hours the quality of starch decreases. Increasingly position them at low bargaining power. One way to increase the added value of cassava is to make mocaf according to a cooperative farming model which includes social, economic, technological, and value added engineering.

Farmer's access to markets is not yet affordable. The marketing flow of cassava before the first consumer (tapioca industry and snack producers) passes through two links: cassava traders and brokers.

The first flow is from the farmer, to

the cassava trader, then directly to the tapioca producer without going through a broker, until finally reaching the snack producer. The second flow is from the farmer, to the cassava trader, then to the tapioca producer but through a broker first, and finally to the snack producer. The fundamental difference from these two lines is in terms of time and cost, usually the second channel that must go through a broker requires more time and more costs than the first channel without a broker.

Community Facilitation Sub-Model

The progress of rural agricultural communities as well as rapid economic progress is motivated by the relatively strong organization of farmer groups. The economic organization system of independent and strong farmer groups can be easily developed if the structure of the agricultural division of labor is relatively evenly distributed, effective and efficient. Institutional development should take place naturally. In this case government intervention should be facilitative and facilitative development of incentive systems. In the end, the development and role of farmer groups is a manifestation of the social power of farmers who are self-sufficient to achieve independence.

Based on Figure 3 about the implementation of the cooperative farming model at PUAP Mandiri community-based empowerment on the job training of agricultural product processing, there are 3 main community elements that become the driving

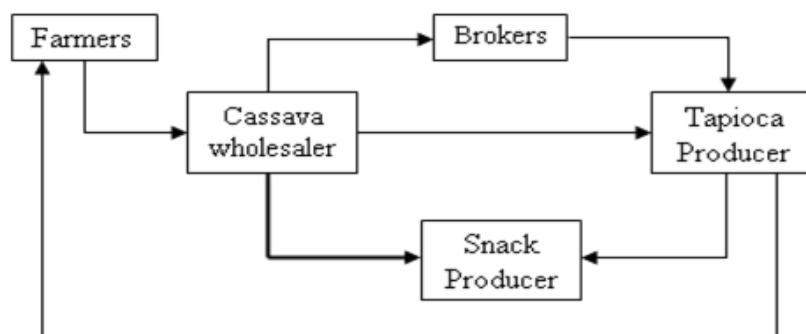


Figure 4. Marketing Flow of Cassava and Tapioca in Pati Regency (Source: Wijana et al., 2011 in Banowati et al, 2018).

force, namely:

a) *Farmer*

Farmer as an upstream producer, and carried out its duties in the first phase of cooperative farming management, namely strengthening farmer institutions, counseling, and developing human resources, as well as engineering technology that has now implemented a double row planting method. In addition, there are also management that are managed by Balitkabi (Indonesian Peanut and Tuber Crops Research Institute) which applies single row planting methods with technology verification (Indriani, 2017). From the activities that have been carried out, there is a result in the form of cassava 1 which has good quality and cassava cassava which is of poor quality (which was rejected by tapioca industry) can be processed independently into a mocaf in order to increase the value of goods and selling value of goods.

b) *Non Farmer*

Non-farmer has a function as an agribusiness owner, as well as carrying out its duties in the second, third, and fourth stages of cooperative farming management, namely stages of economic engineering in terms of developing capital access to procure snack production facilities according to tables and market access, technology engineering stages recommended technology agreements with farmers' habits, as well as stages of value added engineering in terms of developing off farm businesses that are coordinated vertically and horizontally. Non-farmers also carry out manufacturing processes such as milling, powdering, extraction and refining (extraction), roasting, and spinning, canning and other manufacturing processes.

c) *Off Farmer*

Off farmer has a function as a transporter and collaborates with non-farmer sub-communities within and performs its duties in the second, third, and fourth stages of cooperative farming management, namely the stages of economic engineering in

terms of developing capital access for procurement of production facilities and market access, technology engineering stages the achievement of recommended technology agreements with farmers' habits, as well as the stages of value-added engineering in terms of developing off farm business that is coordinated vertically and horizontally. Cassava harvest products that must arrive or be received by buyers are less than 24 hours so that the quality is maintained, which can produce high starch. Likewise, as a transporter of non-farm products, in the form of flour and snacks, the quality must be maintained so that the faster and safer the delivery of these products, the better quality of these products will be, in addition to being careful when shipping to maintain the quality of goods performance.

CONCLUSION

The results of empowerment showed an increase in agricultural productivity of 40% from originally 18-21 tons/ha to 34.2 tons/ha. In developing the potential of farmers from the variable of cognitive abilities, affective, psychomotor aspects with the results of the conative aspect, it is found that HR Upstream who rejects a total of 51.14% and who receives 42.86% is more directed to submission.

Rural Agribusiness Development (PUAP) is the first agriculture ministry program for farmers launched in 2008. The PUAP program regulated in the Minister of Agriculture Regulation Number: 16 / Permentan / OT.140 / 2/2008 aims to improve quality of life, independence, and welfare by providing facilitation of business capital assistance for farmers, cultivators, farm laborers and farm households through business capital assistance in developing agribusiness enterprises in accordance with the potential of the agricultural target villages. One of the goals of PUAP is to provide access to financing for farmers in Gapoktan members while at the same time reducing development disparities between the central and regional regions and the disparity between sub-sectors. The results of the study indi-

cate that there is a synergy of community member participation for the development of agribusiness through empowering rural communities, there is an acceleration of networking between citizens / communities through social planned change known as social engineering, as well as increased agribusiness through production and marketing. The elements involved in the concept of participatory synergy consist of farmers, cassava downstream industry, and off farmers, namely the distributor between farmers and industry. Also, the relationship in the chain of a community needs to be stretched by the existence of the Agribusiness Microfinance Institution (AMI). Each element has its task and role in ensuring the sustainability of the industry and so as not to disadvantage one another

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