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Design Model of Seaweed Bank as an Alternative to Rural Microfinance Institutions

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Abstract: This study aims to create a design model of Seaweed Bank. Seaweed banks are designed by combining the financing model of Cooperatives and Banking, but both the initial and subsequent deposits are not in cash, but in the form of commodities (dried seaweed).The study was conducted from 2017 to May 2018 (four seaweed seasons). The results showed that farmers' revenue (with set aside 5 percent per Planting Season of total revenue) amounted to US$ 433 per year per farmer or US$ 107.161 from 300 farmers. During the famine season, farmers no longer borrow funds from patron but farmers can take it from Seaweed Bank. Farmers' need of seed that can be provided as much as US$ 96.435 or as many as 296 ropes per farmer and still remaining balance of saving as much as US$ 199.239 in the village. At the normal price US$ 0,942 per kg of dried seaweed there is an addition to the total seaweed value as much as US$ 199.239, which will impact the expected year-end saving to be as much as US$ 18.430

Keywords: planting season, deposit, revenue, income, saving.

I. Introduction

Various types of credit programs have been launched by the government for the agricultural sector, such as Bimas, Inmas, Farming Credit (FC), Food Security Credit (FSC) and People's Business Credit (PBS). However, programs of credit are still not optimal enough to empower farmers as shown by the fact that farmers are weak in capital.

The study conducted by Limsombunchai et al (2005) pointed out that borrowers who have a long relationship with banks and who have higher gross revenues on total assets have a higher probability to fail in defaulting debt. One of the most prominent features of both formal and non-formal agricultural credit is that credit schemes are always interest-based, whereas the risk-laden agricultural sector has a high chance of failure, both in production and falling prices. If farmers fail in their farms, in addition to not being able to repay the loan, they can also get into debt that is getting more and more swollen. This credit model also imposes all business risks only to the borrower (farmer), while the owner of the funds always get a profit at the rate of interest that has been set. farmers generally have limited knowledge about requirements, which are important to each type of financial provider (Wulandari et al, 2017).

Other researchers (Sossou CH et al, 2014) found that educational background, farming experience, total landholding, monthly income, family size, and proportion of owned land are significant factors in farmers' access to credit (Saqib et al, 2017; Fausayana I et al 2017) and financial literacy (Gaurav and Singh, 2012). The factors determining the demand for and supply of agricultural credit (loans), were younger (average: 47 years old), and that cultivated farm sizes is average: 3.8 ha (Oluwasola O and Alimi T. 2008).

Paper by Baker and Calum (1999), investigate the relationships of farming programs and farming finance on farmers' decisions to hedge with futures or options. The results imply that two important points. First, farmers' use of futures and options decreases in the presence of loan rates and target prices, and second, farms with high debt hedge more than farms with low debt.

The government's program over the years, the supply and demand for financial services continues unsuitable, both in terms of type and volume of services. Government policy has not been able to remedy this shortfall. Nevertheless, recent innovations in agricultural finance have created renewed interest in the sector (Gashayie A and Singh M. 2015). Other research has shown that traditional credit use, formal or informal, is extremely low (across credit type, country, crop and farm size categories). Instead, farmers primarily finance modern input purchases with cash from nonfarm activities and crop sales. Tied output-labor arrangements appear to be the only form of credit used in farming (Adjognon SG et al, 2016).

Research on Financial Exclusion of Farmers and Rural Entrepreneurs by Walenia A and Kata R (2015) found that financial exclusion appears to be greater in rural areas than in cities. The article concludes that the problem is connected not only with the people of low incomes but also individuals running their own businesses e.g. farmers and small entrepreneurs. The extent and reasons for financial exclusion among such entities have been identified and accompanied by the analysis of access to banking services – the key to effective management.

In Indonesia, there have been many financing programs pursued by the government, but until now the seaweed farmers prefer to borrow from the capital owners (patrons) rather than borrowing in pawnshops or cooperatives and other official financial institutions (Arif A, 2008). Very Ironical! It is because the cooperatives that should give the relief to the community turned out to not get a place in the hearts of farmers. The reason is that cooperatives do not give concession even if farmers experience crop failure or crops are insufficient to repay loans (Fausayana I, 2014).

This fact shows the importance of micro financing model that is intended specifically for seaweed farmers in this case the invention is a model of Seaweed Bank that is designed in accordance with the characteristics of the business and the characteristic of seaweed farmers. The way that can be used is to combine financing model of Cooperative and Banking, but neither the initial deposit nor the subsequent deposit is in the form of money, but in the form of commodity (dried seaweed).

II. Research methods

Location and Time of Study

This research was conducted in Bungin Permai Village, Tinanggea Subdistrict, South Konawe Regency, Indonesia. The research location is purposively determined by considering that this location is one of seaweed cultivation center area in South Konawe Regency and the biggest seaweed contributor in Southeast Sulawesi Province. The study was conducted from 2017 to May 2018 (four seaweed seasons).

Types and Data Sources

The data in this study were obtained from 300 seaweed farmers and this data is a census data. The data used are primary data and secondary data. Primary data is data obtained directly through systematic interviews by prioritizing elements of accuracy, consistency, and objectivity of information from seaweed farmers. Secondary data is data obtained through literature information retrieval sourced from literature books, articles, journals and some relevant agencies to this research.

Data analysis

Formulation of Bank Seaweed Design Model = First Deposit 10 Kg Dried Seaweed + Deposit Per Planting Season Seaweed (5% of Q) (Fausayana I, 2016).

III. Results and Discussion

Background of Seaweed Bank Model

In general, seaweed farmers only have 4 effective planting season (8 months). Three planting seasons produce maximum while the 4th planting season (month 8th) farmers usually only plant 25-30 percent of the maximum production. At the 4th planting season or the 8th month of farming is the moment when farmers usually borrow the capital to the patron.

Capital borrowing from banks is unfamiliar and less desirable to seaweed farmers. This is due to several factors, namely: (1) It takes time for farmers to go to bank, whereas patron, usually sending their agents who come to the Village to offer services, (2) farmers are embarrassed to go to the bank because still there are many farmers who cannot read and write/ writing signature (educational problem) (4) Too many requirements and guarantees (territorial problem), especially to people/seaweed farmers who are living on the sea) (5) There is no excuse given to farmers even if they experience harvest failure in paying debt to creditors, either from banks, cooperatives or pawnshops (Fausayana, 2014). Seaweed studies toward several technical and sociological aspects have also been conducted which shown that farmers need for technological empowerment and financing models (Fausayana, 2016).

The Seaweed Bank Design Model is principally a combination of financing model of Cooperatives and Banking, but both the initial and subsequent deposits are not in the form of money, but in the form of commodities (dried seaweed) and the deposit is adjusted to the business characteristics and the characteristics of farmers in the intention to help seaweed farmers in the famine season, so farmers do not rely on patrons (owners of capital).

Model Illustration

The Seaweed Bank Model in recruiting members has the following procedure: The requirements to be Seaweed Bank Member are working as seaweed farmer as the main job, Membership is individual and not in the form of legal entity, Willing to pay the initial deposit (principal savings) and deposit per planting season (compulsory savings) in accordance with the provisions, accept the terms and conditions applicable in the Seaweed Bank set by the inventor.

To be able to design Seaweed Bank, the steps are as follows: (1) finding out how the average of stretch (rope) owned by the farmers (member) per planting season (PS), (2) setting the planting season I to planting season IV to find out the months of famine season when farmers need fund (3) then calculating the average of production, cost, revenue and farmers income, (4) establishing the initial deposit (principal savings) as many as 10 kg of dried seaweed per farmer. The next deposit (mandatory savings) from planting season I up to planting season IV (maximum production) is 5 percent of the total production of dried seaweed, (5) distributing the deposit (saving) at the famine season (from 8th to 11th month). Funds disbursed by Seaweed Bank in the famine season as many as 90 percent maximum from the total seaweed deposited value (10 percent of seaweed as Bank reserve funds) and distributed in accordance with the deposit per planting season (each maximum 90 percent of the total value of the deposit). Providing incentive as much as 7.5 percent of the total value of Seaweed Bank savings to administrators and for administrative costs.

Average of Production, Cost and Income of Farmers

The average production, cost and income of farmers is obtained from seaweed cultivation activities during 4 periods of planting season. Production in question is the result of dried seaweed. Costs include purchasing seeds, labor and tool shrinkage. Revenue is the result of a deduction from income with all costs.

Description of farmers' income per planting season and per month (Table 1) can be explained as follows:

Column 1: Dried seaweed in Planting Season I up to Planting Season III (from December to July). At the Fourth Planting Season on August usually farmers only plant 25 to 30 percent maximum from the total amount of seaweed that is usually planted, and in this season farmers also trying to maintain the seeds for the next planting season.

Column 2: Average amount of rope per farmer from Plant season I - III are 178 ropes and 45 ropes at planting season IV (each rope has 50 m long)

Column 3: Average of seaweed production per rope as many as 24 kg with 178 ropes per planting season, resulting in production as many as 12,816 kg (3PS). The average amount of ropes at Planting Season IV are 45 ropes and producing as many as 1.068 kg, so the total production is 13.884 kg.

Column 4: Revenue from Planting Season I up to Planting Season III amounting to US$ 6.501, Planting Season IV US$ 542 (obtained from production multiplied by dry seaweed price per kg), so the total revenue is US$ 7.043.

Column 5: Total Cost from Planting Season I up to Planting Season III amounting to US$ 1.440 and Planting Season IV US$ 360 (obtained from total variable cost and total fixed cost), so the total cost is US$ 1.800.

Column 6.7: Total Income from Planting Season I up to Planting Season III amounting to US$ 5.061 or US$ 1.687 per planting season for each farmer and planting season IV as much as US$ 182.

Table 1. Production, Cost and Income of Farmers

Planting Seasons (PS)	Average amount of Rope	Produk tion (Kg)	Revenue (US$)	Total Cost (US$)	Income Per PS	I/PS/Farmer
(1)	(2)	(3)	(4)	(5)	(6)	(7)
PS I-III	178	12.816	6.501	1.440	5.061	1.687
PS IV	45	1.068	542	360	182	182
Total		13.884	7.043	1800	5.243	1869

Illustration of Seaweed Bank Design Model can be seen in Table 2 as follows:

Illustration Model at Low Price

The seaweed price at the study site is very fluctuating. US$ 0.507 is the price of dried seaweed per kg when the price drops (low value). This price occurs in 2016 and 2017. Although the price received by farmers is low but still they can save (5 percent) of the total quantity of production (Q).

Table 3. Model Illustration At Low Price

DEPOSIT		Number of Farmers	Production (Kg) (5% of Q)	Total Dried of Seaweed (Kg)	Price (US$)	Revenue /Farmer (US$)	Total Revenue (US$)
First Deposit		300	10	3.000	0,507	5,072	1.522
Deposit per PS	PS I	300	214	64.080	0,507	108,348	32.504
	PS II	300	214	64.080	0,507	108,348	32.504
	PS III	300	214	64.080	0,507	108,348	32.504
	PS IV	300	53	16.020	0,507	108,348	8.126
		Total	**704**	**211.260**		438,464	107.161

In table 3 the initial deposit is only made when the farmer joins the seaweed bank. Production from planting season I up to planting season IV is 4,272 kg paid as much as 5 percent or equal to 214 kg and 53 kg.

Table 4. Seed Needs and Total Saving At Low Price

Number of Farmers	Seed Needs (Kg)	Price (US$)	Cost (US$)	Saving Expected (10%)
300	4.436 (296 Ropes)	0,072	96.435	10.716
7.5 percent incentive for board and administration				804
Year-End Seaweed Bank Savings				9.912

If each farmer deposits in the model of seaweed bank in each planting season, it will result in revenue from farmers' savings (5 percent saving per MT of total revenue) of US$ 433 per year for each farmer or US$ 107.161 from 300 farmers, during the famine season (from August to November) farmers no longer borrow from patrons but farmers can take it from Seaweed Bank. Looking at farmers yearly acceptance in Table 4, as if the farmer is willing to save 10 percent annually from the income then the farmer needs of seeds that can be provided is as much as US$ 196.445 or as many as 296 ropes per farmer and the remaining balance of saving is US$ 10.716 in the village.

Illustration Model at Normal Price

The seaweed price is fluctuate in 2016 to 2017, ranging from US$ 0,507 , US$ 0,616 to US$ 0,725 per kg of dried seaweed. In the year 2018 from January to May showed a fairly stable trend that is priced at normal price, which is US$ 0,942 per kg Illustration of seaweed bank design model at normal price can be seen in table 5.

Tabel 5. Illustration of Seaweed Bank Design Model at Normal Price

DEPOSIT		Number of Farmers	Production (Kg) (5% of Q)	Total Dried Seaweed (Kg)	Price (US$)	Revenue per Farmer (US$)	Total Revenue (US$)
First Deposit		300	10	3.000	0,942	9	2.826
Deposit per PS	PS I	300	214	64.200	0,942	202	60.478
	PS II	300	214	64.200	0,942	202	60.478
	PS III	300	214	64.200	0,942	202	60.478
	PS IV	300	53	15.900	0,942	50	14.978
		Total	**705**	**211.500**	**65.000**	**664**	**199.239**

Table 6. Seed Needs and Total Saving At Normal Price

Jml Petani	Seed Needs (kg)	Seed Price (US$)	Cost (US$)	Saving Expected (10%)
300	4.436 (296 Ropes)	0,072	96.435	19.924
7.5 percent incentive for board and administration (US$)				1.494
Year-End Seaweed Bank Savings (US$)				18.430

At the normal price US$ 0,942 per kg of dried seaweed (price in April 2018) then there is an addition to the total seaweed value as much as US$ 199.239 , which will impact the expected year-end saving to be as much as US$ 18.430 (table 5). In the history of seaweed selling, the highest price received by farmers is up to US$ 1,304 per kg, so with the seaweed bank empowerment it is expected to increase farmers bargaining power.

IV. Conclusion

With the Seaweed Bank's design model, the farmers' dependence on Patron is decreasing and will strengthen the capital of the cultivation group. In the famine season (from August to November) farmers no longer need to borrow on patrons but farmers can take it from Seaweed Bank, because fund is available to buy seaweed seeds so that farmers can avoid debt bondage.

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