

The development of the food barn in achieving food security of poor household in Wonogiri Regency

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Abstract. Food barn has function as food stock which managed by households both individually and collectively. It has important role in food security. This study aims to determine the factors that influence the development of food barns, and formulate alternative strategies in the development of food barns in Wonogiri regency. The samples of this research were determined by random sampling. The data collection technique was done by interview, field observation and focus group discussion (FGD). The data analysis was done quantitatively with multiple regression, and qualitative information. The results showed that the age of respondents included in the category of middle age, their level of education was mostly from elementary school, most of their occupation were farmers, they had narrow knowledge of land management, and their income was around 1-2 million rupiah/ month. In fact, the perception of food barns, institutional regulation of food barns, and the Economic institutions of food barn have a positive significant influence toward food barn development, filling the food barn and institutional capacity of food barn groups in realizing the food security of poor household in Wonogiri Regency. In food barn development, there are positive and clear perceptions of the food barn, institutional regulations. It indicates that significant as well as the economic institution of food barn are needed so that the food security can be realized.

1. Introduction

Food is a basic necessity and a strategic commodity in human life to maintain its healthy and productive survival. However, the reality shows that there are still many poor people who cannot meet their needs for food that they are experiencing shortage of consumption and food insecurity. The percentage of poor people in Wonogiri Regency is 12.19% [1]. The poor are people who have an average monthly per capita expenditure below the poverty line. Wonogiri poverty line is 245.129 rupiah per capita per month. These poor people (grassroot groups) are at high risk and vulnerable to food insecurity level so that in such situation, a food barn is needed. The food barn is an institution formed by rural and/or urban communities aimed at the development of provision of food reserves with a delay sale, storage, distribution, processing and trading system managed in groups [2]. The purpose of empowering the food barn is to increase the supply of food so that food security can be realized. The food barn is as a food reserve which is controlled by households individually or collectively. The food barn has an important role in: (1) anticipating the lack of food supply in the famine season and (2) anticipating the threat of crop failure due to natural disasters such as pest and disease attacks, climate anomalies and floods.

In addition, the problem of food security in the future becomes increasingly complex, both as the impact of the global food crisis, global economic crisis and the impact of global warming, so the food



barn as a buffer institution of food storage becomes strategic to be developed in every area. indicates that the food barn can not be relied upon as an institution that is able to absorb marketable plus at harvest time. Moreover, it is expected to be the stability of food storage and help to secure grain prices from the fall. In Central Java, the whole capacity of food barns absorbs only 0.92 percent marketable plus [3]. Similarly, the role of Bulog is also not fully capable in the formation of national food security.

Actually, food barn has been developed in some areas in Central Java, including in Wonogiri Regency but its development still faces many problems, including; (1) lack of support from the local government in the form of allocation of activities, (3) lack of roles of village government in developing the food barns for food security of poor households and (4) lack of commitment of policy makers in food barns development. Therefore, the potential of this food barn needs to be revitalized through a systematic, integrated and sustainable empowerment process involving all related elements.

In order to increase family food security, some efforts are made through strengthening the food storage of society in the form of institutional food barns. Thus, the institution of food barns will be a supporting element of food security that needs to be developed in order to be able to give more significant contribution to realize the welfare of society. Related to the condition above, the food barn should be developed through empowerment process in a systematic, integrated and sustainable by involving all related elements. In the development of the food barn, firstly the community needs to know what factors affect the development of food barn, so that it can formulate alternative strategy in the development of food barn in realizing the food security of poor households in Wonogiri Regency.

2. Method

This research uses quantitative method with survey technique. The location of research is determined purposively in Wonogiri Regency because it is a district with high poverty rate and there is a food barn. The population in this study are the members of the poor food barn in Wonogiri regency.

The samples were taken by random sampling. The qualitative information which generated from the preliminary survey, it shows that in Wonogiri district, there are currently 281 food barn groups which spread over 112 villages, from 294 villages in 25 sub-districts. Then from 25 districts in Wonogiri Regency, five rural districts were taken randomly with the food barn activities. From each sub-district, five groups of food barn were taken with the most active member. Furthermore, from each group of food barn, 6 random samples were collected including poor households so that the total number of respondents from 5 districts which interviewed were as many as 150 people. The technique of collecting data was done by interview, field observation and focus group discussion (FGD). The data analysis technique was done by using multiple regression.

3. Results and Discussion

3.1 Socio-Economic Characteristics of Poor Household

Poor households are a group of people who live in some or all of the buildings and generally eat together from one kitchen and those who with poor condition. Socio-economic characteristics of respondents of households include some data about age, education level, occupation, land area and income of poor households. The characteristics of respondents will influence the availability, access, and consumption of family food which will ultimately impact on household food security of household. Respondents in this study were members of food barn group who were in Wonogiri District. The samples were 150 husbands and wives. The characteristics of respondents can be seen in Table 1.

Table 1. The distribution of Poor Household Respondents' Characteristics in Wonogiri District

Variables	Categories	Persentase (%)
The Age of Father:		
20 – 40 th	Young adults	12.3
41 – 60 th	Mature adults	56.5
60 th <	Old	28.1
Mother's age:		
20 – 40 th	Young adults	31.5
41 – 60 th	Mature adults	63.7
60 th <	Old	4.7
Last education of father	No school	14.0
	Did not pass elementary school	13.0
	Graduated from elementary school	45.0
	Graduated from SLTP	18.0
	Graduated from SLTA	20.0
	University/ college	1.0
Last education of mother	No school	19.0
	Did not pass elementary school	2.0
	Graduated from elementary school	45.8
	Graduated from SLTP	19.0
	Graduated from SLTA	11.1
	University/ college	0.7
The main job of father	Labors	32.4
	Farmers	57.4
	Traders	8.8
	PNS/ civil servant	1.4
The main job of mother	No work	24.8
	Labors	21.5
	Farmers	40.9
	Traders	12.0
	PNS/ civil servant	0.67
Land area (ha):		
<0,25	Very narrow	62.7
0,25 – 0.50	Narrow	32.7
0,51 – 1,00	Medium	3.3
1,00 <	Large	1.3
Family income /month :		
< 1.000	Low	36.6
1.000-2.000	Medium	45.7
2.000 <	High	17.7

From the table 1, it can be explained that the age of father and mother are included in the medium category. The age of father and mother can be said in productive groups, so that it can work optimally and can enough income to meet the need of household food. The education will affect on one's knowledge and insight. Most of the education level of them is still low, that is primary school or elementary school. The low level of their education is because of limited cost. This condition can be understood because the income is also low. In addition they are also difficult to access transportation, and it is common for them to help their parents to work to support their life. The work of poor fathers is mostly work as farmers. In this case, there are still mothers who do not have a job or do not work. Meanwhile, having job or working will have an impact on their family income so that it influences the availability of household food. The land area of poor household will affect the total of agricultural production which will ultimately affect the food consumption of family, and the land production will

contribute to the availability of family food. The average size of poor households' ownership is very narrow. It is less than 0.25 ha where 96 are from 153 people most of them owned it because of heritance. The income of poor households is mostly in the medium category around 1 - 2 million per month, this condition will affect the purchasing power of food.

3.2 Normality Test

One kinds of tests which can be used to test the normality of data is to see the value of skewness ratio and the ratio of kurtosis. Data is said to be normally distributed if it is in the range -2.58 and +2.58. Based on the normality test by analysing at the value of the skewness ratio and the kurtosis ratio, the results are obtained as shown in this following table:

Table 2. The Normality Test of Research Variables

Variables	Skewness			Kurtosis		
	Statistics	Std.Error	Ratio	Statistics	Std.Error	Ratio
X1	0.241	0.219	0.589	0.312	0.422	0.881
X2	0.518	0.209	2.478	0.505	0.422	1.031
X3	0.293	0.209	1.402	0.331	0.422	0.790
Y	0.246	0.209	1.177	0.913	0.422	2.107

Notes: From the normality test above, the results in Table 2 show that the value is in the range -2.58 and +2.58 so that the data can be interpreted as in normal distribution.

3.2 Multicollinearity Test

The analysis of the presence of multicollinearity symptoms in this study is done through the measurement of Variance Inflation Factor (VIF) on the regression results. To show the presence of multicollinearity is tolerance <0.50 or it is equal to VIF value <10 [4]. The test results of tolerance and VIF values can be seen in Table 3 below:

Table 3. The Results of Multicollinearity Test of Research Variables

Variables	Collinearity Statistics	
	Tolerance	VIF
Perception on the benefits of food barns	0.217	2.873
Institutional regulation of food barn	0.204	4.172
Economic institutions of food barn	0.273	3.576

3.3 The Development of Food Barns in Realizing the Poor Household Food Security

The development of food barn in this study refers to the criteria of the development stage of food barn which explained by [5] it includes the procurement of food for the filling process of barns and the development of the capacity of the food barn itself. The variables suspected to influence the development of the food barn include: the perception of group members toward the benefits of food barns, institutional regulation of food barns, and various economics institution of food barn itself. The result of the development analysis of food barn in realizing the food security of poor household is presented in Table 4.

Table 4. The Results of Factor Analysis which Influence the Development of Food Barns in Realizing the Food Security of Poor Household

Variables	Coefficient Regression	t-count	p
Constant	11.009	3.599	0.000
Perceptions on the benefits of food barn	0.297	0.259	0.038**)
Institutional regulation of food barns	0.201	0.301	0.019**)
Economic institutions of food barns	0.227	0.222	0.044**)
F Count	17.986		0.000***)
Adjusted R Square	0.568		

Notes: ***) significant at $\alpha = 0.01$; **) significant at $\alpha = 0.05$

3.4 The Influence of Perception of Group Member of Food Barn Concerning to the Benefit of Barrowing Food toward the Development of Food Barns

From the analysis result, it indicates that the perception of member of food barn group toward the benefit of food barn, it has significant effect to the development of food barn, it happens because of food procurement dimension to fill the food barn in realizing food security of poor household. Perception is a process in which individuals organize and interpret their sense impressions to give meaning to their environment [6]. [7] who argued that the perception of a person is an active process that plays a role, not only the stimulus that relate to it but also the individual as a whole with his experiences, motivation and relevant attitude in giving response to the stimulus.

In this study, the perception of poor households on the development of food barns shows that all respondents (100%) stated that food barns can be useful in providing, storing and marketing the crops. A good perception of the benefits of the food barn of the food procurement dimension for filling the food barn is indicated by the awareness of the members to be willing to keep or save some crops in the food barn, for example, Beji Village with 455 Poor Households of 800 households. In addition, besides the to the village barn, there is also a RT, / RW barn. Based on the observations in the institutional field of the RT food barn, although the management is simple but it is very useful for its members. The food barn in RT 01 RW 05 Pandan hamlet, Beji, it currently has 3.5 tons of grain reserves from 42 members. The grain which are as many as 3.5 are obtained from the member's deposit when harvest time, the amount is not determined but the average member of grain according to the leader of RT is approximately 10 beruk. Before the famine is not shared, the grains are shared, but if there are members who need to borrow, for example a new person who has a job, a bayenan or a member who really needs to consume them. Some members who want to borrow 10 beruk, they are obliged to return 11 beruk and multiples. Almost all the activities of the barn are in the form of savings and loans, either in the form of grain, corn, rice or cashed. Food barns which run by members can be useful to overcome difficulties when famine time, crop failure due to pests, diseases or due to natural disasters. [8] research which states that food barns can act as food reserves, especially in rural areas. In addition, the food barn is not only effective in serving the needs of its members' food in crisis condition but also serving the financial needs of its members from the management of barns. [9], which explains that the food barn group has function to serves to overcome food insecurity at the time of famine and assist the members in the provision of capital.

The perception of the benefits of food barns toward its development in the dimensions of group capacity in this study was good, there were 89 percent of members who stated that group capacity always increase. This increase is beginning to show when there is capital aid for filling the food barn from the government. Associated with the name of the group since the establishment of the food barn group, the group which already existing with its name, and it already has the chairman, and the manager, the address is also clear.

This study shows that not all food barns have buildings built through the Special Allocation Fund for Agriculture field. Based on the ownership of warehouse (warehouse building), there are 4% of

food barns which already have warehouse, namely that is food barn village, and the rest do not have warehouse. During this time, the barn is in the home of people who are trusted by their members such as in the house of the group leader, head of RT/RW, or at a member's home based on agreement. In term of the land use for buildings, some members still own the land, and most of the members of the food barn are poor. The groups are also actively conduct regular group meetings which can be proven by the attendance list. In the meeting routine, not all groups of food barn do activity in the meeting, because their meetings were just for arisan, and savings and loan.

3.5 The Influence of Institutional Regulation on Food Barns toward the Development of Food Barns

The results of the study in Wonogiri district show that regulation or rule is often becomes problem in an institution as occurs in food barns. There are still many food barns whose regulations are set by the administrators only without approval of members. In addition, there are also no written rules and sanctions for both the board and members as set in the AD/ART.

The institutional regulation of food barns in this study, the majority 79% food barns do not have good regulation. There are still merely barns with large loan interest, using collateral for grain lending, excessive payback periods, and unsuitable returns on loan. There are some specified loan interests depending on the local barn policy. The interest is set from 1% to 10% of the loan, for example, borrowing 10 kg of grain, she or he must return a number of 15 kg of grain. Lending money in some food barns must use some securities such as BPKB as grain loan guarantee. The payback period is also determined from 3 months to 1 year with monthly installments accompanied by interest on the loan. Some cases also mention that the return is not appropriate with the loan, such as borrowing grain, and then he or she returns using money.

The existing management in the food barn runs simply. According to some respondents, the management is held by local RT leaders or local institutional figures who are believed manage the food barns. It actually does not become a problem, but it will be a problem when there is no cohesiveness in the barn management. Some activities which are undertaken by food barns, such as savings and loan institutions are only savings and loan activities without other activities such as counseling extension. The frequency of meetings is rare so that the members' togetherness fades. This condition is one of the causes of the absence of food barns.

3.6 The Influence of the Economy Institution of Food Barn toward Food Barn Development.

The results of the analysis in this study indicate that the economic institutions of food barn significantly influence the development of food barns. This condition means that the food barn whose economic function is running well then the development of the food barn will also run well. The indicator of economic institution of food granary in this research is seen from the existence of clear bookkeeping, monthly dues regularly, procurement of special money for saving book, and marketing of crops.

The conditions on the field show only 8 percent of food barns which already have a good and clear bookkeeping, the rest of them, their bookkeeping is very simple. Acting as the manager or administrator of food barn, the RT assisted by his family who only has a simple notebook containing who deposit, who borrows without writing when they deposit, when they borrow, and when they return, they just trust each other.

Mostly the condition of the food barn which still exist, especially the food barns that are in a simple classification such as the barn RT / RW caused by the need which arise from the community itself. Seeing the institutional condition of the simple barn, they are now in need of physical warehouse, because the institute has been running. Relating to the role of the simple barn, it is very helpful in supporting the food security, especially for poor households. In addition, the number of grains / assets needs to be increased, both from the amount of the deposit and external capital assistance. Bookkeeping related to the amount of grain which is stored or taken in the time of storage and taking, especially for the food barn of the RT which also does not exist, in their notes, it is just written who entered. Taking no provisions, and any time it can be taken. The village barn which was founded in

2010/2011 under the government, the bookkeeping is good because it is still new. The capital should be given to a food barn that runs well. In term of the new food barn, it seems that its paradigm is behind it, because the board is more focus on seeking profit rather than social.

Routine monthly dues which based on the basis for simple food barn, such as RT or RW barns do not exist. The food barn facilitated by the government, also has no monthly dues, but when its member enter the barn, they have to pay for stocks, either in the form of money or unhulled grain, for example, the village barn which was built in the village of Pijharjo sub-district, Manyaran, it was given the name of Source of Food which was harvested by Mr. Warsa. The village barn is going very well. Since 2011, the condition is similar to the food barn in Beji village which has an initial capital from the government of 20 million, until June 2012, the existing grains if they are changed into the money, the value is as much as 46 million. The difference is obtained from the members as many as 26 million in the form of grain deposits, each of 25 kg of grain from the number of members are as many as 255 people. Then, the activity of buying and selling grain, and savings and lending grain runs well. There is good bookkeeping from the board. To socialize the food barns to the community through the procurement of cheap markets and basic necessities of daily needs in the food barn itself.

The procurement of a special saving book for money where in all food barns which are as samples in this study, they do not have a food barn that holds a special book for note the money, but they can save money in the form of grains. In term of marketing results, simple barns like the RT and RW barns do not do so, but the village barns that get help from their government, they do the marketing of the results of their members.

4. Conclusion

Based on research result of perception of member of food barn group on the benefit of food barn, institutional regulation of food barn, and institution of food barn have significant influence to the development of food barn itself because those three variables have a significant influence in the development of food barn in realizing the food security of poor households. We should pay attention to these three things in order to maximize its development.

The condition of the food barn in the study are various, there is the regulation and the economic institution which run well and some of them are not good, for that reason, it need different way of management, for example the regulation of food granary and economic institutions are good but they do not have buildings, the government should provide assistance to build buildings, so that the development of food barns can be maximum. Almost all barns in this study are not merely as food stocks of their members during famine condition, but the existence of food barns can serve as social media. This condition is potential to be developed through the process of empowering systematically, intact, integrated and sustainable by involving all related elements.

4.1 Alternative Strategies In Food Lumbung Development

Based on the results of strategy studies in the development of food barns can be formulated as follows: The results of the study it is necessary to have the same regulation for all members of the barn related to: (1) grain storage regulation which determined its quantity, for example 50 kg per harvest per member; (2) giving balance interest, for example every 50 kg of 1% interest; (3) the repayment period is based on the total amount of loan, for example 50 kg for a period of 2 months of return, 100 kg for a period of 4 months. The election of the board is done by mutual agreement: (1) the election of the board must be attended at least 50% + 1 member; (2) there are representatives of members who are as administrators. Provision of adequate facilities for barns: (1) providing facilities in the form of granting funds for the manufacture of barns which are suitable for use as storage; (2) supporting facilities such as grinding machines, so that the members have no difficulty in grinding the grain. Development of food barn activities is needed: (1) socialization of barns, there are still many people who do not understand about the barn; (2) general counseling on agriculture, especially in the production and post-harvest of grains; (3) providing information on how to apply for funding to the government.

In term of bookkeeping related to the number of grains that are stored or taken need to be accompanied by the time of storage and retrieval, especially for the barn of RT. Monthly dues on a regular basis need to start, because it can serve as cash or capital for the barn if at any time it is required by its members. The procurement of a special money-saving book should also have begun to be considered by the managers of barns. Saving book has function to facilitate the members in the activities of storage and borrowing money which is non grain. The marketing of the members' harvests is done by cooperating with other parties, for example with a separate sales place in the market, so that members have no difficulty in marketing or distributing their crops.

References

- [1] [BPS] Badan Pusat Statistik 2014 Jawa tengah dalam angka 2014 Badan Pusat Statistik Propinsi Jawa Tengah
- [2] Anonymous 2007 Pedoman umum pemberdayaan lumbung pangan Jakarta: Badan Ketahanan Pangan Departemen Pertanian RI
- [3] Khudori 2006 Urgensi lumbung pangan Harian Republika
- [4] Hair J F, Black W C, Babin B J, Anderson R E, Tatham R L 1998 Multivariate data nalysis Sixth Edition New Jersey Prentice-Hall International
- [5] Rusdiyanto 2017 http://www.academia.edu/29061028/Pengembangan_Lumbung_Pangan
- [6] Gibson J L, Ivancevich, J M, Donnelly J H 1997 Organizations: Behavior, Structure, Processes Chicago: IRWIN
- [7] Suryabrata S 1993 Psikologi Kepribadian Jakarta: CV Rajawali
- [8] Soemarmo 2015 Model pengembangan LPMD lumbung pangan masyarakat desa FP Universitas Brawijaya Malang [http:// marno.lecture.ub.ac.id](http://marno.lecture.ub.ac.id)
- [9] Prasmatiwi F E, Rosanti N, Listiana I 2013 Kajian cadangan pangan rumah tangga petani padi di Provinsi Lampung