

Print ISSN: 2288-4637 / Online ISSN 2288-4645  
doi:10.13106/jafeb.2021.vol8.no2.1225

# Analysis of Farmer Behavior Based on Farmer Characteristics, Economic Conditions, and Number of Family Members

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Received: August 05, 2020 Revised: January 05, 2021 Accepted: January 15, 2021

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## Abstract

This study aims to analyze the influence of farmer characteristics, Ihsan attitude, economic conditions, and socio-cultural environmental support, and the number of family members on farmer behavior in meeting food needs in realizing household food security, with the role of the government as a moderator. This study is about the relationship between farmer behavior and their household food security. This research uses a quantitative research method involving 337 farmers from three villages located in three different sub-districts, namely Alang-alang village, Tragah sub-district, Mrecah village, Tanah Merah sub-district, and finally Gangsean village, Sepulu sub-district. The quantitative analysis approach consists of formulating problems, compiling models, obtaining data, finding solutions, testing solutions, analyzing results, and interpreting results. From the 7 hypotheses that were built, it was identified that there was 1 hypothesis that was not significant, namely the influence of the support of the socio-cultural environment on farmer behavior to meet the food needs of farmers' households. The attitude that is identified is still very rarely used in the context of agricultural human resources and at the same time is an inherent character of Madurese farmers which is an interesting part for researchers to study more deeply and become new or authentic in this research.

**Keywords:** Farmer Behavior, Household Food Security, Food

**JEL Classification Code:** Q18, Q12, Q19

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## 1. Introduction

National food security is a strategic issue for Indonesia and efforts to consolidate food security are inseparable from handling food insecurity because food insecurity can be a cause of instability in food security. The development of the agricultural sector is expected to be able to provide welfare for farmers. Farming activities carried out by farmers are the main cause of the realization of food availability, because

farmers with low income are unable to buy food according to basic nutritional needs, lack of control or land ownership is also the cause of unavailability of foodstuff to meet the needs of farmer families, low income and the absence of ownership or control of agricultural land is the main cause of the low food security of farming families.

The geographic condition of the region shows that the Bangkalan Regency area has differences in physical, topography and geo-socio-economic aspects. This condition also affects the distribution of existing regional resources. In addition, Bangkalan Regency has a very strategic location because it is the entrance and exit (access) to goods and services on Madura Island. This condition is certainly a challenge that must be faced by the Regional Government of Bangkalan Regency as an area of guidance and development to realize food welfare for farmers. The geographical conditions of the area indicate that Bangkalan Regency has physical, topographical and socio-economic characteristics. This condition affects the distribution of existing regional resources.

Problems of farmers and their households are complex and interesting to study, some of them have been an attempt

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by farmers to meet food needs in achieving household food security. Efforts made through farmer behavioral approaches to meeting food needs are reflected in daily actions both within the family, community and work environment. Action that is repeated and internalized is called behavior. A habit will continue to be done. The behavior of farmers is expected to increase the fulfillment of household food needs of farmers, which will automatically lead to increased food security. This means that the behavior of farmers greatly determines household food security.

This study will analyze more deeply the influence of poor farmer behavior (Ihsan or good attitude) in Bangkalan on meeting their family's food needs, considering that the majority of people in Bangkalan Regency are very religious. Religious symbols that are often used by the community are Kyai (a term for Javanese Islamic expert) and Ustad (religious teacher). Ihsan's attitude in its sustainability is aimed at optimizing work and carrying out tasks according to good and quality performance. Culture has shaped the capability of farmers and regulates the behavior of farmers in meeting food needs and managing land so that they can harmonize and balance the interests of fellow farmers and the interests of farmers and nature. Thus, efforts or strategies to fulfill household food needs are continuously carried out by farmers. Each individual farmer as the head of the household has a strategy to overcome food insecurity in accordance with the individual's internal potential and the environment.

Facing limited income, poor farming families adopt coping mechanisms with various strategies such as implementing multiple livelihood patterns, seeking social support, and reducing the quality of life. The survival strategy generally reflects poor farming families. Being nice and providing guarantees to debtors is a strategy to avoid bills as long as possible, maybe even free of debt. Spirit of survival is a general pattern of family farmers to survive by optimizing what they have and what can be accessed in their environment and reducing the quality of life necessities.

The problem of food in Indonesia is not on the aspect of its availability, but on the aspect of the ability of farmers to access it. The chronic problem of food shortages actually occurs more in rural areas, generally depending on agricultural livelihoods (Fatah, 2006). The characteristics of farmers are shaped by age, level of education and experience in farming. The large number of farmers with low education is an inhibiting factor in efforts to increase productivity and farmer welfare in meeting food needs. Pratiwi (2010) states that the age factor is related to the level of performance of farmers in managing agricultural land. Young farmers have higher levels of performance and better behavior in managing agricultural land. In general, it can be said that the quality of education for Indonesian farmers is still very low.

Mosher (1965) reveals the importance of changing farmer behavior to increase productivity in order to avoid food shortages and poverty. Given that attitudes and behavior are largely determined by self-interest, determining and predicting someone's behavior is not easy because every individual has different historical aspects and experiences and different backgrounds. According to Fishbein and Ajzen (1975), a good measure of attitude to predict behavior is to include all four factors (target, behavior, context, and time) into one. Intention and behavior are closely related where every behavior is freely determined by the will of the individual or preceded by intention. The theory of formulation of behavior from Kast and Rozenweig (1995) explains that a person's behavior can occur because of something and is based on the goals to be achieved or the need to achieve the desired conditions. Also, the behavior of farmers in food security shows how to act in fulfilling household food needs. Fulfillment of household needs is reflected in the availability of sufficient healthy food in quantity and quality that is evenly distributed and is affordable as per the purchasing power of farmers.

Based on previous studies and preliminary surveys at research locations in Bangkalan District, household food security can be identified through three indicators (food availability, food accessibility, and food absorption). The availability of family food can be defined as the adequacy of foodstuffs to meet the food needs of all family members. Food accessibility is an easy access to buy staple food around farmer settlements. Food absorption is the purchasing power of farmers to obtain the necessary staple food, while food stability is the continuity of food availability to meet family food needs.

Based on the description above, this study aims to analyze the influence of farmer characteristics, ihsan attitude, economic conditions, and socio-cultural environmental support, and the number of family members on farmer behavior in meeting food needs in realizing household food security, with the role of the government as a moderator in the relationship between farmer behavior and their household food security.

## 2. Literature Review

### 2.1. Previous Studies

The authenticity of the research in this study is based on the results of tracing (tracking) from recent similar studies and the position of the current dissertation research. Fidelia (2009) explains that farmer behavior factors are socio-economic characteristics including age, education, number of families, land area, farmer income as determinants of food security. This underscores the importance of farmer

socio-economic factors, technological attributes and related communication variables in designing strategies to increase food security. Concerned et al. (2012) explains that food security must base itself on the principle of self-reliance or self-sufficiency in food production by encouraging farmers to produce food, especially rice optimally. With such a strengthening model, it will encourage the creation of farmer household welfare. Through his research, Budiono (2006) concluded that farmer behavior tends to be economically motivated and has a socio-cultural dimension so that changing farmer behavior must be carried out jointly on these two dimensions.

Behaviors or household decisions illustrate household food security related to farm production, household income, food expenditures and household food sufficiency (Maleha, 2008). Farm households in Indonesia are rarely pure producers or pure consumers. In the context of food security, this indicates that decision making in one aspect, directly or indirectly, has the potential to have an impact on achieving household food security conditions. Wayan and Mowidu (2010) in their research entitled “Behavior of Farmers in Conservation of Land in Cocoa Farming in North Poso Pesisir District”, showed that 60.3% of cocoa farmers in the North Coast Poso sub-district did not implement land conservation efforts, 27.5% did it sometimes and only 12.2% of farmers completely did it. This shows that the application of land conservation by farmers is low. Together, the factors of knowledge, education, length of farming, farming area, availability of information and counseling influence farmer behavior in land conservation. Partially, the factors that significantly influence farmer behavior in land conservation are knowledge, education, farming area and information. Furthermore, Efrita and Sudrajat (2012), through their research entitled “Farmers’ Behavior in Managing Agricultural Land in Landslide Prone Areas in Sumberrejo Village, Batur District, Banjarnegara Regency” shows that most farmers in Sumberrejo Village are still low in managing agricultural land, namely the behavior of farmers who are not environmentally sound. Factors that significantly influence the tendency of farmers’ behavior in managing agricultural land are the age of the farmers, length of farming and extension services.

Silva (2016) concludes to address the food security debate, focus on behavior in meeting food needs with dimensions of nutritional quality and classify healthy or unhealthy food products, in addition to calculating the caloric value of these foods. Various measures of food security for each household indicate the perception and behavior of the family. This study also explains that food security is a concept that includes several dimensions: adequacy, acceptance, safety, stability and nutritional quality.

Yunita et al., (2012), in his research entitled “Lebak Paddy Farmers Household Capacity Building Strategy Towards Household Food Security in Ogan Ilir and Ogan Komering Ilir Districts”, concluded that lowland rice farmer households are expected to have high capacity both in terms of ability. production and the ability to increase income in order to access food. The conclusions of this study are: (1) the level of household food security of lowland rice farmers is categorized as low, the factors that influence are social environmental characteristics, the empowerment process, farmer household capacity and extension performance, (2) farmer household capacity affects positive for household food security, (3) the capacity of farmer households can be increased through, improving the empowerment process, strengthening social environmental support, and improving the performance of agricultural instructors.

The result of the research by Tamboto (2015) show that farmers’ behavior directly and significantly influence economic decisions. Behavior of farmers directly affect household income of farmers; economic decisions directly and significantly affect household farmers’ income; farmer behavior indirectly and significantly towards household farmers with economic decisions as an intervening variable. It was concluded that the factors that significantly influence the level of household food security of farmers in the village of Tanjung Pering, District of North Inderalaya, Ogan Ilir are the price of rice, the number of family members and income.

Husin (2012) concluded that by allocating all family labor and other resources, farm households can meet their primary needs, especially food needs, to achieve food security for their families. Family purchasing power can be increased by optimizing the allocation of family resources for productive activities. Household agriculture should not only depend on agricultural income because of unpredictable prices and low bargaining power in product prices. Government intervention must pay attention to the behavior of farmers so as to produce the right policies to achieve household food security.

Suhartono (2010), in his research entitled “Indicators and Mapping of Food Hazard Areas in Detecting Food Insecurity in Tanjung Bumi Subdistrict, Bangkalan Regency,” emphasized that food insecurity is a structural problem that is difficult to solve in the short term. The basic directions that need to be formulated are efforts to improve a number of supporting infrastructure / facilities and joint programs which are the main focus in regional development and community empowerment. The method of identifying food insecurity areas at the sub-district level is carried out using various indicators used in the analysis of food insecurity by adjusting the FIA (food insecurity atlas) indicator used in the national food insecurity analysis. Based on the results of the study on determining indicators and determining food

insecure areas in Tanjung Bumi sub-district, it is concluded that the indicators of normative consumption, the number of people below the poverty line, limited access to electricity, illiterate population and access to clean water.

Tobelo (2011), in his research entitled “Farmer Behavior in Fulfilling Basic Needs in Coconut Farming Management in Gosoma Village, Tobelo District, North Halmahera Regency”, states that this study aims to identify farmers’ behavior in meeting basic needs in management of coconut farming in Gosoma Village, Tobelo District. The results showed that the fulfillment of basic needs in coconut farming management is still done traditionally with several considerations. First, 15% of the 60 respondents (coconut farmers in Gosoma Village) are economic actors who manage family-owned coconut farms. Second, most of the respondents still depend on coconut farming. Agricultural land is indeed a reliable source to produce food for households as well as a high value asset and the most important measure for social status. The proceeds from selling the coconut harvest can be used to buy food for the family. The behavior of farmers in utilizing their vacant land / yards for farming is a good strategy to achieve household food security.

Sucipto (2012), in his research entitled “Mapping of Food Prone Areas in Bangkalan Regency (Case Study in Tanah Merah District)”, explains that the method of formulating population indicators in food insecure areas has not fully adopted the indicators used by other regions or methods applied at the national level. This is based on the fact that each district / city has its own characteristics. Therefore, it is necessary to study the formulation of indicators and mapping of food insecure areas in Bangkalan Regency. The method of analysis in this research is through 3 stages, namely formulating food insecurity indicators, determining food insecure areas, and formulating directions for the management of food insecure areas. Based on the results of the study, the determination of indicators and the area of food insecurity in Tanah Merah District has differences. In general, 14 indicators are recommended for use, only 9 indicators can be used in the 3 dimensions of the indicator group. The causes of food insecurity in Tanah Merah Regency include three indicators, namely the population below the poverty line, limited access to electricity, and illiteracy.

The empirical study of Ayinde (2008) proves that there is a relationship between socio-economic characteristics and the risk behavior of farmers. Socio-economic characteristics (consisting of household size, household income, capital, farming experience, agricultural land, assets, and diversification) influence farmer behavior based on economic thinking. Jumlah family members have diverse influences. Susilowati (2014) states that the number of family members has a positive effect on food security because it allows other

family members to also work so that the fulfillment of family needs, especially food needs, is more easily resolved.

Husin (2012) concluded that by allocating all family labor and other resources, agricultural households can meet their primary needs, especially food consumption to achieve food security for their families. Government intervention must pay attention to the behavior of farmers so as to produce the right policies to achieve household food security. On the other hand, research by Arene and Anyaeji (2010) on food insecurity shows that 60% of households in Nsukka, Nigeria experience food insecurity. Food insecurity status is measured based on expenditure. The dominant factors affecting food security are the income and age of the household head. Both of these factors can positively affect food security. Meanwhile, Aidoo (2013) found that household size can actually have a negative effect on household food security. Also, he found that households headed by married people had a greater advantage of food insecurity than those headed by unmarried people. The level of education of household heads was found to be statistically insignificant for household food security. Household income has a positive effect on household food security. Moreover, the pattern of quantity and quality of household expenditures is highly correlated with household purchasing power. According to Kuwenyi et al. (2015), although Swaziland is a middle-income country, the Government is still very concerned about food security and policies on malnutrition and hunger, especially for those who live in rural areas. The implication is that pro-agriculture policies will not be effective unless institutional and cultural reforms are carried out as well as pro-economic policies. Evaluation of the impact of the Swazi Agricultural Policy on food security needs attention.

## 2.2. Theoretical Basis

Based on the literature review and tracing of the results of previous studies and the initial survey conducted at the research location (Bangkalan Regency) it can be explained as follows:

Farmers’ behavior in fulfilling food needs to achieve food security is very much determined by the characteristics of farmers, including age, education and farming experience. On an average, farmers in Bangkalan are mostly old (unproductive age) and in terms of their educational background, most of them have not graduated from elementary school so that indirectly affects the fulfillment of family food needs. Meanwhile, the average farming experience has reached 25 years or more, so it can be said that farming experience is to meet the needs of the family.

Ihsan the attitude of the farmer as the head of the household which is supported by the attitude of all family



members which is manifested in the spirit of hard work, mutual cooperation and sincere work. Ihsan's attitude is an interesting part to be studied more deeply by researchers and becomes something new or authentic in this research. With Ihsan's attitude, farmers in Bangkalan can realize food security for their families. The economic condition of farmers can be seen from the land ownership owned by farmers. Limited land is proportional to the results obtained. The narrower the farm land, the less the yields will be obtained by the farmers. In realizing food security, farmers with narrow or limited land are only able to meet their household food needs. This condition increasingly makes farmers and their family members struggle to earn additional income by working on other people's land or looking for alternative jobs outside the agricultural sector. The behavior of farmers must be able to realize household food security while meeting other needs. In other words, apart from the income of farmers as the head of the family, side income from other businesses can support them to measure the purchasing power of their food needs to meet household food needs.

Likewise, the support of the socio-cultural environment plays a key role in determining farmer behavior in meeting food needs. The support of the socio-cultural environment in the research location can be seen from the support of local community leaders (including clerics, clerics, clerics or village heads), support from farmer groups who have social power to help each other in production or farming, and support for local wisdom which is identified in the form of kinship between neighbors who help each other.

The number of family members determines the amount of living expenses that must be incurred. The number of family members affect the level of food security of the family. The size of the household is grouped into three groups, namely small households if the number of household members is  $\leq 4$  people, medium households if the number of household members is between 5–6 people, and large households if the members are  $\geq 7$  people. This certainly creates a feeling of enthusiasm and hard work for the farmers. Not infrequently too, many family members who are borne also cause many problems. Therefore, it is important to examine the relationship between the number of family members and farmer behavior.

Suminah (2020), conducted that Social support, learning processes, and self-efficacy simultaneously contribute positively to the independence of women in poor households who carry out productive economic activities, with a value of 88%. Nguyen (2020), showed that choosing a place to work is not simply a matter of earning a higher salary or enjoying better work conditions, but is also family related in Eastern individuals. Creative role identity and self-efficacy, and feeling of energy can improve the level of creativity (Kim, 2019)

The behavior of farmers in meeting food needs is manifested in regulating family diet according to the ability or availability of foodstuffs. Farmers are generally accustomed to eating rice, no longer consuming corn and cassava for basic necessities. Therefore, farmer households always struggle to meet their rice needs in various ways. The identified behavior of farmers in an effort to stabilize or secure food needs, among others, changes the dietary arrangement from rice to corn or cassava and from three times a day to two times a day. In addition, farmer behavior is identified from their efforts to meet food needs, including borrowing money or foodstuffs and selling livestock to neighbors or village heads. In addition, farmer behavior can also be identified from farmer empowerment.

One of the roles of the government in meeting basic food needs (rice and corn) for poor families is by lowering the prices of staple food products (rice, corn and sugar). In addition, the government also provides Raskin (subsidized rice) for the poor or low-income people. Overall, the identified roles of government in Bangkalan District consist of social assistance, provision of subsidized rice, and technical guidance for agricultural development or other business development. Farmers' household food security is strongly influenced by their behavior in meeting family food needs. Technically, the condition of household food security can be seen from the availability of food in the household, accessibility to obtain foodstuffs, absorption capacity or the amount of food consumed, and the stability of food availability in the household.

Based on the theoretical basis and frame of mind the research hypothesis is formulated as follows:

**H1:** *Characteristics of farmers influence farmer behavior in meeting food needs to achieve household food security.*

**H2:** *Ihsan attitudes influence farmer behavior in meeting food needs to achieve household food security.*

**H3:** *The economic condition of farmers affects the behavior of farmers in meeting food needs to achieve household food security.*

**H4:** *The support of the socio-cultural environment influences the behavior of farmers in meeting food needs to achieve household food security.*

**H5:** *The number of family members influences the behavior of farmers in meeting food needs to achieve household food security.*

**H6:** *Farmers' behavior in meeting food needs affects household food security.*

**H7:** *The government plays a role in providing food assistance to help achieve household food security.*

### 2.3. Conceptual Framework

Before discussing the conceptual framework of this study, first we need to summarize the frame of mind processes (Figure 1).

Figure 1 illustrates the process thinking framework formulated by the researcher where this research refers to several previous theories and studies. Therefore, the indicators or variables used in this study also adopt from previous studies and theories, including farmer characteristics, ihsan attitudes, farmers' economic conditions, socio-cultural environmental support, number of family dependents, farmer behavior, and food security.

The conceptual framework describes the relationship between variables that are arranged based on theoretical reviews, research results, and logical thinking as illustrated in Figure 1. The conceptual framework is designed using SEM test with the WarpPLS analysis tool. The principle in SEM is to analyze the causal relationship between exogenous and endogenous variables and, at the same time, to test the validity and reliability of research instruments.

### 3. Method

The population in this study were household heads (farmers) of poor families in 3 sub-districts in Bangkalan Regency, namely Sepuluh District (9,942 poor households), Tanah Merah District (13,916 poor households), and poor households in Tragah Regency. The number of samples needed in this study were 105 samples of poor farmer households for each district. The total sample size if multiplied by 3 sub-districts is 315 respondents, from each sub-district one village will be taken, with an even number of respondents. In this study, researchers in the sample collection process managed to get a total of 337 so that the generalization of the results was more accountable.

This research is designed as an explanatory study, because it aims to explain the effect of farmer behavior on endogenous variables of food security. This type of research is a quantitative study derived from quantitative qualitative data using a Likert scale. The scientific approach is carried out by looking at a reality that can be classified, concrete, observable and measurable, the relationship of the variables is causal in which the research data is in the form of numbers and the analysis uses statistics. The quantitative analysis approach consists of formulating problems, compiling models, obtaining data, finding solutions, testing solutions, analyzing results, and interpreting results.

### 4. Research Findings

Based on Figure 3, the results of hypothesis testing can be explained as follows:

First, based on the analysis using WarpPLS, Characteristics Farmers me mpengaruhi behavior of farmers in meeting food needs. The results of the analysis using WarpPLS obtained the path coefficient value = 0.148 and the  $p$ -value = 0.003 is significant at  $\alpha = 0.05$  so that the hypothesis is accepted. The path coefficient is positive, it shows that the better the Characteristics of Farmers are owned by farmers, the better the behavior of farmers to meet food needs, and the indicator of farmer age is the indicator that has the greatest influence on farmer characteristics. The age of a person will affect their behavior, differences in age indicate differences in maturity, these differences are also caused by environmental influences and their interactions with individuals as the characteristic concerned. For farmers who are relatively young (at a productive age) the effort to work hard is still very convincing, even outside of their main activities as a farmer, it is still possible to work in other fields, including being construction workers, laborers or manual laborers even working outside the city to get additional income. But on the other hand, poor farmers who are old with limited labor force conditions, are more likely to take advantage of the existing potential, including the house yard for chicken farming or yard crops. Age is one indicator of the characteristics of poor farmers and affects the behavior of farmers in meeting family food needs. The results of this study are in line with Padmowihardjo (1994) which states that age is not a psychological factor, but what is caused by age is a psychological factor. Furthermore, Wiraatmadja (1986) suggests that the age of the farmer will affect the acceptance of farmers to new things.

The characteristics of farmers determine the pattern of behavior in an effort to meet food needs, the characteristics of farmers also determine their attitude in acting to find alternatives in meeting food needs that lead to food diversification. The results of this study also support the research of Lynne and Rola (2010) which focuses on analyzing the effect of the economic level of farmers on their behavior regarding land conservation in their area. Then this study also further strengthens several previous studies that examined the relationship between these two variables but in different or more general contexts. As research from Sirgy (1982), Palan (2001), Risman (1998), Grier and Deshpande (2001). Characteristics such as age, length of work, level of education, gender and several others were identified as being able to influence individual behavior.

Second, attitude affects the behavior of farmers to meet their needs. The results of the analysis using WarpPLS obtained the path coefficient value =  $-0.430$  and the  $p$ -value of  $< 0.001$  is significant at  $\alpha = 0.05$  so that the hypothesis is accepted. The path coefficient is negative, it shows that the better the Ihsan Attitude the farmer has, the lower the behavior of the farmer to meet food needs. These results show that religious values possessed by a person will directly or indirectly influence the choice of action or behavior. Humans will worship and work sincerely, with dedication, responsibility and sincerity,

just as farmers in Bangkalan do in meeting their family’s food needs, various efforts have been made by farmers by working together, doing good, working sincerely by doing all activities for the sake of mutual interest. Poor farmers in Bangkalan Regency have ihsan attitudes as individual characteristics. The surrounding environment which is very religious with an educational background as large as that of a boarding school, instinctively the ihsan attitude has been formed among farmers in the research location. Individuals having ihsan attitudes of poor farmers will work hard to be able to fulfill their main needs, namely staple food.

Third, the economic conditions of farmers affect the behavior of farmers in meeting food needs. The results of analysis using WarpPLS showed a path coefficient of 0.124 and a *p*-value of 0.010 at a significance level ( $\alpha$ ) of 0.05, which means that the third hypothesis is accepted. The positive path coefficient shows that the better the economic

conditions of farmers, more it will lead to an increase in the behavior of farmers in meeting their food needs. The economic condition of farmers is measured by the amount of income they get from their main job as a farmer and from other jobs as well as the area of land they own. The higher the income received and the more land the farmers have, the more it will influence their behavior to meet family food needs. These results are in line with Yuliati (2006) who states that in order to meet daily needs a person has to sacrifice by working or doing business. Therefore, in addition to meeting the necessities of life, the community also works to improve their economic status in society. The results of this analysis further strengthens the study of Lynne and Rola (2010) which uses variables of economic conditions and farmer behavior. More specifically, their study shows that farmers with higher incomes have a less favorable attitude towards soil erosion, which means that farmers’ behavior or actions in dealing with it are identified as less than optimal.

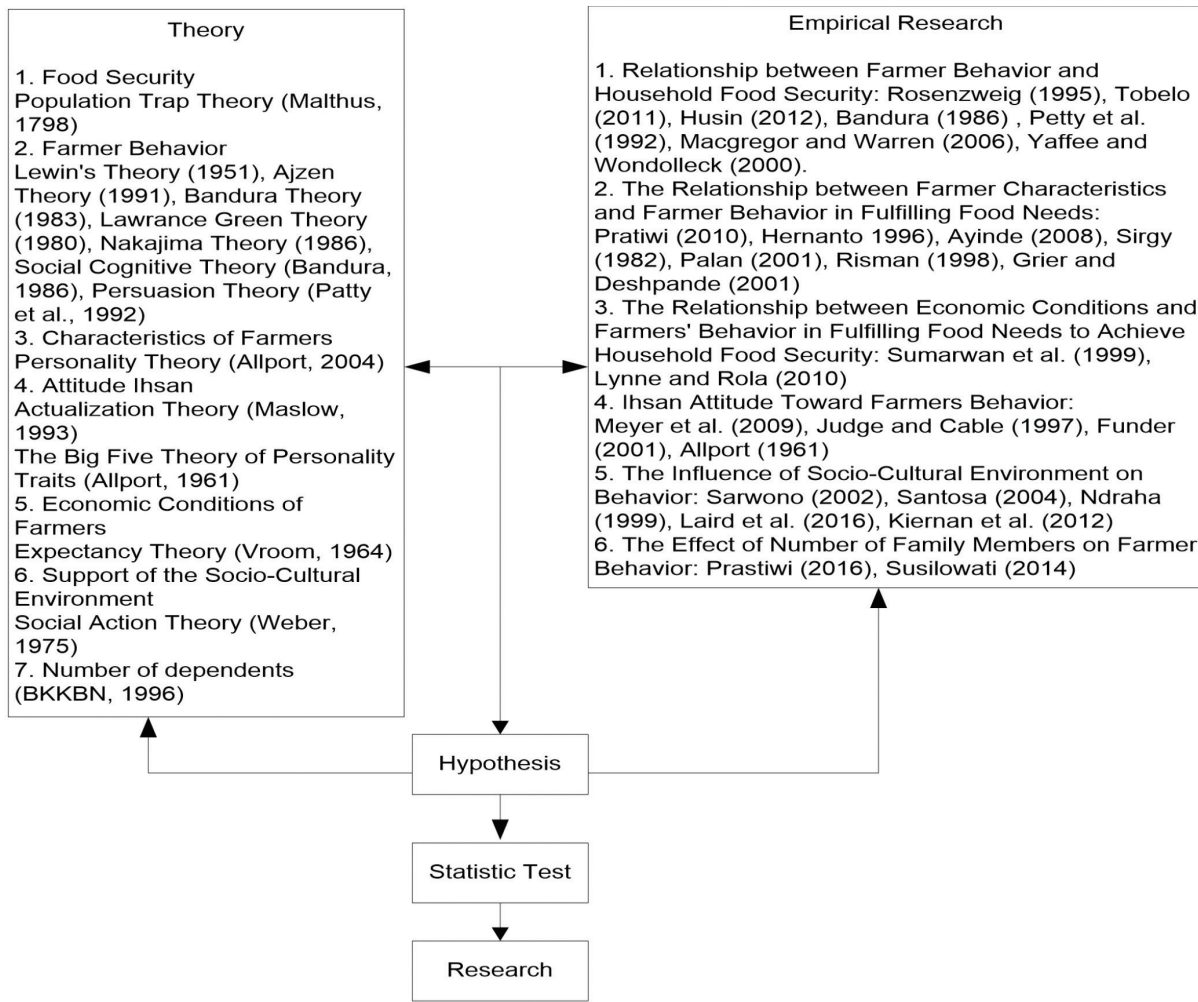
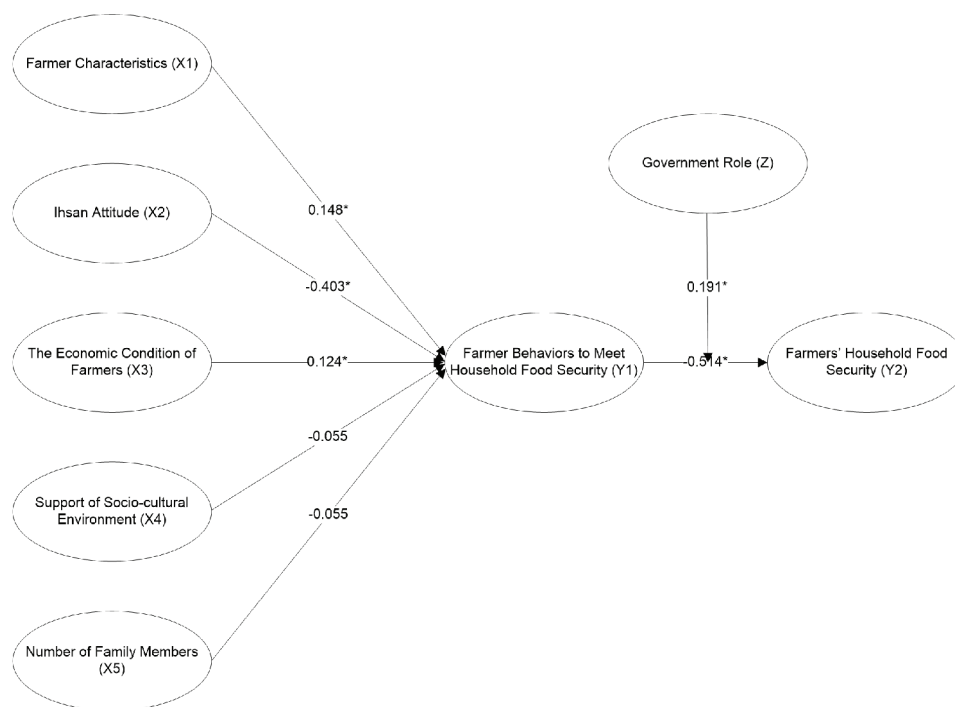


Figure 1: Thinking Process Framework



**Figure 2:** Results of Model Testing Using WarpPLS

Fourth, results of the analysis showed that using WarpPLS Socio-Cultural Environmental Support does not significantly influence the behavior of farmers in meeting food needs. The results of the analysis using WarpPLS obtained the path coefficient value =  $-0.055$  and  $p$ -value =  $0.156$  which is not significant at  $\alpha = 0.05$  so that the hypothesis is rejected, with the support of the socio-cultural environment does not affect the behavior of farmers to meet food needs, with indicators of group support. Farming is the biggest indicator that affects the support of the socio-cultural environment. This shows that the farmer groups scattered in Bangkalan Regency have not been running optimally so they have not been able to provide real support to farmers in Bangkalan Regency. Some of the obstacles faced by farmer groups include: (i) cultural diversity creates different perceptions of the introduction of new technologies, (ii) generally low work ethic and professionalism of group administrators, (iii) low awareness of some members makes it difficult to maintain group integrity, (iv) conflicts of interest between several group members, making it difficult to achieve group goals in technology adoption.

These results do not support research Ndraha (1999) suggests that there is a relationship between human transactions and their environment, both social and natural environments. Humans live depending on and are influenced by the environment, as well as human contributions and

behavior to the environment will provide value or benefits to the environment. Farmer groups should be able to function as an important point in implementing and translating the concept of farmer rights into viable policies, strategies and programs in one piece and as a vehicle for transformation and development into operational steps. The farmer group is important as a forum for fostering farmers who are members of it, so that it can accelerate agricultural development

Fifth, the number of family members in meeting their needs has an impact on household food security. This decision was based on the results of the analysis using WarpPLS which resulted in a path coefficient of  $-0.681$  and a  $p$ -value of  $< 0.001$ , at the significance level ( $\alpha$ ) of  $0.05$ , meaning that the fifth hypothesis was accepted. The path coefficient value which is negative indicates that the better the behavior of farmers in meeting food needs, the lower the household food security will be. This is because the number of dependents or the number of family members is not proportional to the availability of labor in the family. It can be concluded that most family members still depend on the head of the family. This results in a greater burden borne by the family, while the income earned is not sufficient to meet the needs so that family food security is not sufficiently fulfilled.

Sixth, Behavior of farmers in meeting the needs of household food security. The results of the analysis using the WarpPLS obtained the path coefficient value =  $-0.514$



and the  $p$ -value  $< 0.001$  is significant at  $\alpha = 0.05$  so that the hypothesis is accepted. The path coefficient is negative, it shows that the better the behavior of farmers to meet the food needs of farmers, the lower their household food security will be. These results indicate that the behavior of farmers in meeting food needs to achieve household food security is still not effective, the copying mechanism is not optimal yet by working outside of farming, preparing for sustainable food supply, adjusting diet, borrowing from neighbors, selling livestock, receiving Raskin assistance from the government still cannot help farmers to meet household needs. The behavior in this research is the action or effort of the farmer as the head of the household to meet food needs in realizing household food security.

To seven, Role of Government along with the Farmer's behavior in meeting food needs to further encourage farmers to achieve food security of farm households. The results of the analysis using WarpPLS obtained the path coefficient value of the interaction effect between the role of government and the behavior of farmers to meet food needs for household food security of farmers = 0.191 and  $p$ -value  $< 0.001$  is significant at  $\alpha = 0.05$  so that the hypothesis is accepted. On the other hand, the path coefficient of the influence of farmers' behavior to meet their needs has an effect on household food security which is negative ( $-0.514$ ) and significant. This shows that the better the role of the government, the less negative effects of farmers' behavior in meeting food needs on their household food security. These results indicate that the government does not yet have clear and consistent policies, strategies and programs regarding national food system policies that are holistic, integrated and comprehensive. Excessive imports carried out by the government made domestic farmers unable to enjoy their production. On the other hand, the government demands sugar farmers to be self-sufficient in sugar, but on the other hand, the government imports, which actually denies the existence of the farmers. Farmers' needs such as fertilizers and agricultural medicines still face problems. Farmers have never felt prosperity even though they are half dead in cultivating their agricultural land. It is time for the government to stop importing rice and immediately shift to appreciating domestic agricultural products by providing a more adequate guarantee of prices.

## 5. Recommendation and Conclusion

Knowing the characteristics of farmers in Bangkalan Madura Regency, who on average are in the elderly (unproductive age) and low education (only up to the level of primary school education or even not attending school), the person in charge must be able to make policies that can encourage improvement in the quality of farmers. Improving the quality of human resources can be done in several ways,

one of which is through cooperation between the government and other third parties such as universities throughout Indonesia, especially those engaged in agriculture, to jointly develop the local potential of the Madurese community. The synergy that is carried out by continuously sending the best students to apply and transfer their knowledge to farmers in Bangkalan is expected to improve the quality of human resources and farm productivity. Apart from sending students, another thing the government can do is to open training posts in several areas in Madura. In training posts, various activities were carried out related to extension and extension of farmer productivity improvement. This policy is expected to improve farmer behavior in meeting food needs and realizing household food security. Several activities were held related to coaching and counseling on increasing farmer productivity. This policy is expected to improve farmer behavior in meeting food needs and realizing household food security. Several activities were held related to coaching and counseling on increasing farmer productivity. This policy is expected to improve farmer behavior in meeting food needs and realizing household food security.

Ihsan's attitude in this study is something new that the researcher wants to highlight. This is because the attitude of ihsan is likely never used in the realm of human resources in the agricultural sector. Ihsan's attitude is one of the strongest characters possessed by the Madurese community in Bangkalan. The attitude of ihsan farmers which consists of three indicators, namely working hard, working together, and working sincerely is a local wisdom that must be maintained. Although in this study the influence of ihsan's attitude tends to be negative on farmer behavior in meeting food needs, this variable has a very extraordinary indicator in increasing agricultural productivity such as hard work and mutual cooperation. Therefore, with directions and directions from related parties, ihsan's attitude can have a positive effect on the farming community in Bangkalan, Madura. In addition, the researcher hopes that there will be a confirmative study that examines the influence of ihsan's attitude on farmer behavior in meeting food needs or other variables in the same or different sectors in the future. In addition, the researcher suggests that further research related to ihsan attitudes be developed more comprehensively in several non-religious sectors, considering that research using the ihsan attitude variable has been found in the religious sector.

The role of government is one of the variables identified as crucial in this study. Knowing that the role of the government is able to have a positive influence on the relationship between farmer behavior in meeting food needs and household food security, the government must be able to optimize the programs implemented to support farmers, especially in Madura, which geographically has less supportive natural conditions. Three indicators of government assistance used

in this study, namely the provision of subsidized rice, social assistance, and technical assistance, were identified as having a fairly low value when compared to other variable indicators. This indicates that the government's role in providing subsidized rice, social assistance and technical assistance is deemed lacking. This is of course a big concern for the government as the party responsible for realizing the welfare of its people. Although rice subsidies are a good program, they have not had a positive impact on farmer productivity. Therefore, the researchers recommend that the government pay attention only to maximizing social and technical assistance. Social assistance such as free health care and educational scholarships for poor farming families in Madura are considered to have more impact on improving human resources in Madura.

Furthermore, this study identifies the kiai as the most influential community figure in Madura. Therefore, the government is advised to invite kiai as a mediator between the government (with the human resource development program and food sources) and the farmers. Through this synergy, it is hoped that the policies taken by the government can be implemented properly so as to improve the quality of human resources and productivity of farmers' crops.

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