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ECONOMIC COPING STRATEGIES AND FOOD SECURITY IN POOR RURAL HOUSEHOLDS

Purpose. *This study aims to analyze economic coping strategies and their relationship to the food security of poor rural households.*

Methodology / approach. *This research was conducted by comparing food crop farming households with those who farm plantation crops. The used data were sourced from surveys in four sample rural areas in two districts of Jambi Province, Indonesia, namely Merangin Regency and Tanjung Jabung Timur Regency. The used analysis tool was Structural Equation Modeling (SEM).*

Results. *The results show that poor rural households' economic coping strategies are still low, both in the context of a passive strategy (cutting back expenses) and an active strategy (generating income). Plantation households have a lower economic coping strategy than food crop farming households. The level of food security in food crop households is relatively good compared to that of plantation crop households. Nearly half of food crop households are categorized as having good food security, while only around 20 % of plantation crop households are so categorized. Family characteristics and coping strategies significantly influence household food security in plantation crop households. On the other hand, the level of household food security in food crop households is not influenced by coping strategies, but only by family characteristics.*

Originality / scientific novelty. *The scientific novelty of the study is in a study approach that links household food security with coping strategies and family socio-economic conditions. Furthermore, this study specifically conducted a comparative study of households of food crop farmers and plantation crop farmers, considering that these are the two main livelihood commodities for rural residents.*

Practical value / implications. *Through this research, it is hoped that the concept/theory of improving the food security of poor households (especially in rural areas) can be developed based on the potential and real conditions of the households themselves, so that the formulated policies can be more effective and sustainable.*

Key words: *cutting back expenses, economic coping, food security, income-generating.*

Introduction and review of literature. Many developing and developed countries face poverty as one of the most common problems. Poverty occurs when there is increasing inequality [1]. According to Cordero-Ahiman et al. [2], poverty is a violation of human dignity as well as a denial of choices and opportunities. This problem is difficult to solve and a dilemma for governments around the world [3; 4]. The highest poverty level occurs in working-age adults (18 to 64 years) [5]. However, the community feels poverty in the family context [6].

In Indonesia, poverty has become one of the serious problems hindering its development process, as has the level of household food insecurity. Poverty causes households to be unable to access food properly [7], and the low rate of nutrient

intake impacts the availability of quality human resources at the next stage. The low quality of human resources means a low ability to improve welfare, and in turn, humans remain in a state of poverty. Data from the Central Bureau of Statistics [8; 9] in March 2019 showed that 25.14 million poor people make up 9.41 % of Indonesia's total population. Compared to the previous ten years, Indonesia's poverty rate has indeed decreased – in March 2009, it amounted to 14.15 %. However, this decline was not able to meet the Millennium Development Goals' second vision target, namely the lowering of poverty and hunger in the population to 7.50 % by 2015. Therefore, substantial food security improvements need to be made, so that every household can access and obtain food and break the cycle of poverty [7; 10; 11].

The poverty rate in the Indonesian region of Jambi Province is in general relatively low compared to the national average. In March 2019, the poverty rate in Jambi Province was 7.6 %, ranking 15th of the 34 provinces in Indonesia. However, if we look at poverty reduction in this area, it is relatively slow. Nationally, the reduction in the poverty rate over the last ten years (2009 to 2019) reached 4.74 %, while in Jambi Province, the poverty rate only decreased by 1.72 % in the same period (in 2009, it amounted to 8.77 %) [8; 9; 12].

The urban poverty rate is relatively high compared to that in rural areas (urban 9.81 % and rural 6.53 %). Even so, based on the data [12], there are almost 1.5 times more rural poor than urban poor: in March 2019, there were 115.08 thousand poor people in urban areas, but 159.24 thousand in rural areas. In other words, policies to improve the welfare of the poor in rural areas will significantly improve the welfare of Jambi Province's people as a whole.

Social welfare is a concept that always changes based on the social environment of a society and is related to economic stability, health, and education [13]. Increasing the welfare of poor households is related to coping strategies carried out by those households [2; 14; 15; 16]. In other words, coping strategies are a form of individual or family efforts to control and reduce the various demands or pressures of the problems faced [17; 18; 19]. Thus, coping strategies can be used to explore the impact of a crisis and get an insight into the savings policies of households [16; 18].

A family's poverty level determines the coping strategy that family chooses [20; 21; 22]. Mardiharini [18], Johan et al. [22], and Klostermann et al. [23] found that families more often use strategies to reduce expenditure than strategies to increase income when there is a decrease in family income. It seems reducing expenses is more manageable than increasing income. Increasing income requires increasing resources, such as multiple ownership [18; 24] – but when facing a short-term crisis, families adopt coping strategies to survive [14; 25–29]. Therefore, according to Knudsen [13], Ali [30], and Lindberg et al. [31], using of fewer coping strategies indicates increasing family welfare. Based on these studies, we can see that the coping strategy or strategies chosen by a family are determined by the resources and socio-economic characteristics of that family, which are vulnerable to impaired welfare and poverty [20].

The contribution of this research is a study approach that links household food

security with coping strategies and family socio-economic conditions. This approach aims to develop the concept / theory of increasing food security in poor households (especially in rural areas) based on the potential and real conditions of the households themselves, in order to formulated policies might be more effective and sustainable. Furthermore, this research explicitly conducts a comparative study of households farming food crops and those farming plantation crops, considering that these two are the rural Jambi Province population's primary livelihood commodities.

Food security entails the fulfillment of the food and nutritional needs of all family members in terms of number, quality, and variety, according to local culture and in a sustainable manner, so that the family can continue to live healthily [25; 32–38]. Based on this definition, food security is a multidimensional concept that is flexible in various ways [39], creating an integrated system of three main components: food availability, food distribution, and food consumption. It is in line with the statement of Prosekov & Ivanova [7] which states that ensuring food security is an integrated task between agriculture and political and it will be combined with logistics and product delivery.

At the household level, food security is the ability of households to meet their household members' food needs and adequacy [37]. The 2012 National Workshop on Food and Nutrition classified household food security into the categories of deficient, poor, moderate and good [40]. This category will also be used in measuring household food security in this study.

A coping strategy is defined as an individual or family effort to achieve the desired goal [41]. Maryam [42] states that a coping strategy is an effort or transaction carried out by individuals to overcome various demands (internal and external) that are burdensome or disrupt their survival. A coping strategy is therefore an active process on the part of individuals and families to manage, adapt, reduce the threat, face stressful situations, or keep the symptoms thereof manageable [23; 43–45]. Meanwhile, according to Mardiharini [18] and Parker et al. [43], a coping strategy entails the efforts of a family to maintain their welfare in conditions of economic crisis. In short, coping is defined as a response designed to prevent or minimize difficulties in a crisis [46]. According to Holahan & Moss [47], coping is closely related to two factors: contextual factors, such as past life circumstances, and sociodemographic factors, such as education, economic status, self-confidence, and simplicity.

There are two types of family coping strategies, according to Friedman in Puspitawati [21]: internal family coping strategies and external family coping strategies. Each household uses different policies and different coping strategies to solve their economic problems [20]. Coping strategies come in several forms, and an individual household member can flexibly use several of them [20; 48–49]. Sunarti [45] suggests that a personality determines its choice of coping strategies as well as the level of pressure it experiences to do so. According to Sunarti & Fitriani [50], too, the factors that determine which strategy is used often or most often depend on individual personality and the extent of experienced stress. The factors influencing

individual coping strategies include government policy, extended families, local institutions, physical health, positive beliefs or views, problem-solving skills, social skills, and available social support [18].

The chosen coping strategy is also determined by the available resources. Coping resources can be interpreted as everything the family owns, both physically and non-physically, which can be used to construct coping behavior [51–52]. Coping behavior always involves changing related cognitive and behavioral efforts to deal with external and internal requirements, which are thought to exceed human resources requirements [44]. Coping behaviors tend to lead to more positive outcomes because coping provides the means for overcoming obstacles successfully and adjusting to stressful situations, enabling individuals to grow and develop [43]. According to Higgins et al. [46], coping behaviors or strategies function are as follows: they (a) eliminate the causes of stress due to the vulnerability of a family to work conflicts; (b) protect individuals and families from damage; (c) reduce or eliminate stressful events; and (d) manipulate the individual and family's environment by attempting to change the state of society. Coping resources are subjective, so coping itself varies from person to person [53].

Coping mechanisms are a must when dealing with stress and its causes [17; 19; 54–56], including efforts to regulate emotions in response to stress [57]. Many things can cause stress: illness, workloads, loneliness, sadness, unfairness, conflict, depression, anxiety, guilt, disappointment, somatization, unpleasant behavior, unexpected events, internal and external conflicts, fear of unknown problems, culture, and a hostile environment [17; 55; 57–61]. Moreover, the incidence of stress in many professions can be explained by excessive activity accompanied by a lack of relaxation and motivation [59]. Folkman & Lazarus (1984) in Maryam [42] define eight coping strategies in dealing with various stressful or pressure situations. These strategies are confrontation, seeking social support, planning and problem solving, self-control, accepting responsibility, distance, positive judgment, and running away or avoiding. Of course, as Evans & Kim [62] state, both the chosen coping strategy and its impact depend on the type of faced pressure.

A better understanding of the main determinants of food security at the household level is important in designing interventions to ensure food security for food-insecure households [63]. This is because households are vulnerable when it comes to food [64]. Economic coping strategies are particularly used to meet food needs, according to Maxwell [65], and the strategies carried out by families are: (a) reducing favorite foods and buying cheaper food; (b) borrowing food or money to buy food; (c) buying food on debt; (d) asking relatives or friends for help; (e) limiting and dividing food at mealtimes; (f) setting aside a small amount of money from family members to buy food on the street; (g) limiting personal food consumption on the part of adults to ensure children are well fed; (h) reducing the types of food eaten on a given day; and (i) going whole days without eating. These various economic coping strategies can be grouped into the two categories that have already been mentioned: strategies for cutting back expenses, and strategies for generating income [21].

Various previous studies have examined the relationship between family characteristics and the choice of economic coping strategies. Research by Sugiharto, Hartoyo & Muflikhati [66] concerning the Special Region of Yogyakarta found that livelihood strategy is determined by the location of the village in which a household lives. The livelihood strategy chosen by households in villages far from the city is generally a single (agricultural) strategy. In contrast, households located in villages closer to the city generally choose a mixed livelihood strategy (agricultural and non-agricultural). Maryam's [67] research in Nanggroe Aceh Darussalam found that social support, the health problems, personality and age of the head of the family, and the number of family members influenced the choice of economic coping strategies. The same was found by Astuti et al. [68] in Central Java, who determined that the factors determining economic coping strategies were the husband's age, the husband's side job, and the wife's job.

The purpose of the article. This study aims to analyze economic coping strategies and their relationship to the food security of poor rural households.

Methodology. The main used data is primary data collected from respondents in a sample of urban poor households in Jambi Province (from which the whole population of this study was drawn). Secondary data on poverty and food security were also collected from related agencies. The study uses two types of sample frames: one for the first stage of sampling and one for the second stage of sampling. The former is the selection of villages in Jambi Province; the latter is the selection of poor rural households. The sampling method is stratified two-stage sampling:

1. The first stage involves selecting the sample village used as the research location. This is conducted by purposive sampling with the following considerations and approaches:

- a. Jambi Province has 11 districts / cities geographically divided into the West and East Jambi regions. Tanjung Jabung Timur Regency is the district with the highest poverty rate in the western region, while Merangin Regency is the district with the highest poverty rate in the eastern region.

- b. For each selected district / city, the food crop village and the plantation village with the highest poverty level are determined. Information about the villages is garnered from available secondary data information.

2. The second stage involves selecting a sample of 50 poor households in each of the selected villages. With four selected villages, this brings the sample size to 200 poor households, selected by random sampling.

- a. The poor households in each village are listed. The listing is based on family data collection conducted by National Family Planning Coordinating Board (BKKBN) in 2019, which contains information on family population based on welfare level

- b. Fifty poor households in each village are randomly selected using RNG (Random Number Generator) software.

The instrument for collecting data from a sample of poor households is a questionnaire. This questionnaire contains various questions related to the socio-

economic and demographic characteristics of the family, its level of food security, and the economic coping strategies carried out by the family. In addition to the questionnaire, an interview guide instrument is used for in-depth interviews with selected households. This obtains qualitative information to complement the quantitative information obtained from the questionnaire instrument. The questionnaire questions refer to two key strategies: cutting back expenses strategies and income-generating strategies. All statements and answers are scored: 1 = never, 2 = sometimes, 3 = often, and 4 = always. Furthermore, the data is analyzed using descriptive statistical tools and average difference tests (t-test and F test).

The analytical tools used to answer the problems and research objectives are descriptive statistical analysis and Structural Equation Modeling (SEM). Descriptive statistical analysis was conducted to analyze the socio-economic characteristics of a family, its economic coping strategies, and its level of food security. The Structural Equation Model is given in Fig. 1, followed by the model framework.

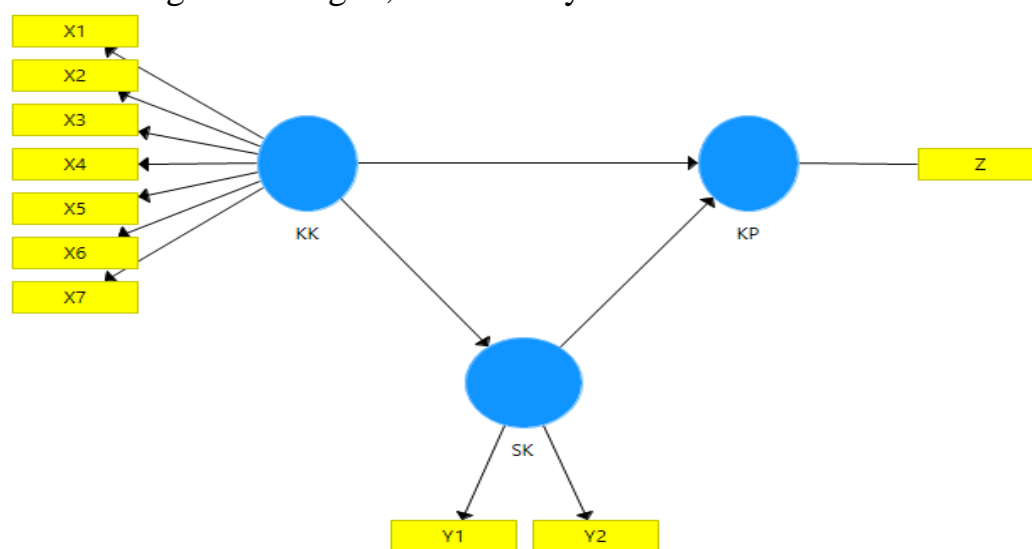


Fig. 1. Research model

Source: built by the authors.

The framework of the SEM (Fig. 1) can be formulated in the equation of the measurement model and the equation of the structural model as follows:

1) Equation of the measurement model for family characteristics:

$$\begin{aligned} X1 &= \lambda_1 KK + e_1; \\ X2 &= \lambda_2 KK + e_2; \\ X3 &= \lambda_3 KK + e_3; \\ X4 &= \lambda_4 KK + e_4; \\ X5 &= \lambda_5 KK + e_5; \\ X6 &= \lambda_6 KK + e_6; \\ X7 &= \lambda_7 KK + e_7. \end{aligned}$$

2) Equation of the measurement model for economic coping strategy:

$$\begin{aligned} Y1 &= \lambda_8 SK + e_8; \\ Y2 &= \lambda_9 SK + e_9. \end{aligned}$$

3) Equation of the measurement model for food security:

$$Z = \lambda_{13} KP + e_{13}.$$

4) Structural Model Equation:

$$SK = \gamma_1 KK + \gamma_2 MS + \zeta_1;$$

$$KP = \gamma_1 KK + \gamma_2 MS + \gamma_2 SK + \zeta_3,$$

where KK = Family characteristics;

SK = Economic coping strategy;

KP = Food security;

X1 = Education level of the head of the family;

X2 = Age of the head of the family;

X3 = Number of household members;

X4 = Proportion of household members working;

X5 = Proportion of household members under five years of age;

X6 = Proportion of household members of compulsory school age;

X7 = Family income per capita;

Y1 = Total score of income-generating strategies;

Y2 = Total score of cutting back expenses strategies;

Z = Level of food security.

Food security. The 2012 National Workshop on Food and Nutrition in Indonesia set the adequate standard of daily calorie and protein consumption per capita, measuring the satisfaction of daily energy and protein requirements, at 2150 kcal and 57 grams respectively. Thus, sufficient food consumption can be indicated by the fulfillment of energy and protein needs. Energy and protein consumption levels can moreover be divided into four classifications:

1. Deficient: if the nutritional adequacy level is less than 70 % of the standard nutritional adequacy rate

2. Poor: if the nutritional adequacy level is less than 70 % to <80 % of the standard nutritional adequacy rate

3. Moderate: if the nutritional adequacy level is less than 80 % to <90 % of the standard nutritional adequacy rate

4. Good: if the nutritional adequacy level is 90 % or more of the nutritional standard adequacy rate

Economic coping strategy. Families make an effort to overcome financial problems by reducing expenses (cutting back expenses) and increasing family income (generating additional income). The economic coping strategy is measured via a list of questions modified from various previous studies. All statements and answers per item are scored: 1 = never, 2 = sometimes, 3 = often, and 4 = always.

Education level of the head of the family. This is measured by the level of formal education in the family.

Age of the head of the family. This is measured in years based on age at last birthday.

Number of household members. The number of people in one household depends on the head of the family.

Proportion of household members working (%). The number of household

members who work is divided by the total number of people who live in the household.

Proportion of household members under five years of age (%). The number of household members under five years of age is divided by the total number of people who live in the household.

Proportion of household members of compulsory school age (%). The number of household members aged seven to 15 years old is divided by the total number of people who live in the household.

Family income per capita (Rp per year). The total family income is divided by the total number of people who live in the household.

Results and discussion. This section firstly discusses the food security of poor rural households, before discussing their economic coping strategies. Lastly, the Structural Equation Modelling is presented to analyze the effect of family characteristics and economic coping strategies on food security.

Food Security of Poor Rural Households in Jambi Province. The consumption of food crops households (Food HH) in Jambi Province is considered good – nutritional intake has reached 90 % or above of the expected nutritional adequacy standard (Table 1). More specifically, average energy consumption has reached 97.04 % of the standard adequacy of 2150 kcal per capita per day, and average protein consumption has reached 95.33 % of the standard adequacy of 57 grams per capita per day. However, consumption of plantation crops (Plantation HH) are still considered to be at “deficient” level. Their average energy consumption has only reached 66.84 % of the adequacy standard, and average protein consumption is at 66.67 % of the standard.

Table 1

Distribution of Poor Rural Households in Jambi Province according to the Adequacy of Energy and Protein Consumption in 2020

Description	Food HH		Plantation HH	
	Energy (kcal per capita per day)	Protein (grams per capita per day)	Energy (kcal per capita per day)	Protein (grams per capita per day)
Real consumption	2086	54	1437	38
Standard adequacy rate	2150	57	2150	57
Nutritional adequacy (%)	97.04	95.33	66.84	66.67

Source: authors' calculation.

Based on the adequacy of energy consumption, households are further classified based on the level of food security (Table 2).

Table 2

Distribution of Poor Rural Households in Jambi Province according to the Adequacy of Energy and Protein Consumption in 2020

Food Security Category	Food HH	Plantation HH
Deficient (%)	29.09	64.83
Poor (%)	10.91	4.14
Moderate (%)	10.91	8.28
Good (%)	49.09	22.76
Total (%)	100.00	100.00

Source: authors' calculation.

It is clear from Table 2, 49.09 % of food crop households are categorized as “good”. In contrast, for plantation households, this figure is only at 22.76 %. This shows that the level of food security in food crop households is generally better than in plantation households.

Economic Coping Strategy for Poor Rural Households in Jambi Province. An economic coping strategy can either be a passive strategy, namely a cutting back expenses strategy, or an active strategy, namely an income-generating strategy. Families who do not have sufficient income for their daily needs can reduce economic pressure by implementing one or more strategies. Thus, families can reduce needs or demands by restricting consumption and/or increasing family income through job changes. Individuals carry out one or several economic coping strategies they consider appropriate in solving problems.

Accordingly, various strategies are carried out by poor rural households in Jambi Province to fulfill their daily needs, generate additional income and cut back on expenses. The strategy analysis in this study was assessed based on scores on a scale of 1 to 4. The strategy is categorized as low in frequency if the average value is less than 2.00, moderate if it is between 2.00 and 3.00, and high if it is above 3.00.

Table 3 shows the scores from the generating additional income strategies for poor rural households in Jambi Province.

Table 3

**Strategies for Generating Additional Income in Poor Rural Households
in Jambi Province in 2020**

Strategy	Food HH	Plantation HH	Total
Head of the family works harder	3.87	3.86	3.86
Wife works harder	2.38	2.26	2.29
Food is received from relatives	2.22	2.18	2.19
Assistance is received from the government	2.33	2.14	2.19
A coupon for <i>Raskin</i> (the Rice for the Poor Programme) is received	2.37	2.07	2.15
Wild food is collected on the outskirts of rice fields /gardens	2.18	1.93	2.00
Head of the family looks for a side job	1.90	1.92	1.92
Livestock are relied on (chickens, goats, cows, fish, etc.)	2.00	1.81	1.86
Wife looks for a side job	1.71	1.33	1.44
Other family members work harder	1.31	1.32	1.32
A small business is started	1.36	1.26	1.29
School children are involved in work	1.29	1.20	1.22
Other family members look for second jobs	1.24	1.21	1.21
Migration is undertaken	1.02	1.08	1.06
Average score	1.93	1.82	1.85

Source: authors' calculation.

The average value for income-generating strategies is 1.85 – in the low category. There are five main strategies used for increasing income: 1) the head of family works even harder (this is seen in both food crop and plantation villages); 2) the wife works harder; 3) wild food is collected (although in plantation HH this is in the low category); 4) food is received from relatives; 5) assistance is received from the

government.

According to Sunarti, Johan & Haryati [69], family heads and housewives choosing to work harder to increase income shows that, fundamentally, there are still business and work opportunities for the poor rural in Jambi Province. Receiving food from relatives is an alternative strategy, and relates to the high importance of social capital in rural communities [70]. In addition to assistance from relatives, households receive assistance from the government, in the form of either direct cash assistance or rice subsidies for the poor (*Raskin*). Such strategies are chosen because of the large amount of widespread government assistance for poor households in Indonesia.

Average efforts made in the cutting back expenses category are also in the low region, with an average score of 1.86 (Table 4). This finding differs from the findings of previous studies [69; 71; 72] which showed a higher preference for cutting back expenses strategies on the part of poor people addressing food insecurity.

Table 4 shows the scores from the cutting back expenses strategies for poor rural households in Jambi Province.

Table 4

**Cutting Back Expenses Strategies for Poor Rural Households
in Jambi Province in 2020**

Strategy	Food HH	Plantation HH	Total
Repairing one's house or household items	2.22	2.57	2.48
Reducing purchases of household furniture	2.62	2.38	2.45
Reducing purchases of clothes	2.60	2.37	2.44
Buying cheaper food	2.45	2.41	2.43
Cutting back on travel	2.49	2.39	2.42
Reducing water / electricity / telephone usage	2.39	2.34	2.35
When sick, replacing expensive drugs with cheaper ones	2.29	2.32	2.31
When sick, choosing an inexpensive place of treatment	2.33	2.25	2.27
Reducing the types of food consumed	1.96	2.13	2.08
Buying food of a lower quality	1.69	1.99	1.91
Reducing children's daily pocket money	1.74	1.42	1.49
Deferring treatment when a family member is sick	1.65	1.41	1.48
Reducing food portions	1.29	1.52	1.46
Requesting / borrowing used school uniforms, shoes and / or books	1.83	1.29	1.41
Entrusting children to another family temporarily or permanently	1.28	1.40	1.37
Buying used uniforms, shoes, and books for school	1.44	1.15	1.22
Forcing children to skip school	1.26	1.18	1.20
Forcing children to quit school	1.19	1.05	1.08
Going through days without eating (fasting)	1.05	1.01	1.02
Average score	1.92	1.83	1.86

Source: authors' calculation.

There are five main strategies used by the poor rural households in cutting back expenses: 1) repairing one's house or household items; 2) reducing purchases of household furniture; 3) reducing purchases of clothes; 4) buying cheaper food; 5) cutting back on travel. It appears that four of the five main strategies to reduce expenditure relate to secondary and tertiary needs. This finding is also quite different

from the findings of previous studies, which showed that most of the main strategies focused on reducing food expenditure, either by replacing ingredients with cheaper ones or by reducing the portion sizes at family meals [73; 74].

The Food Security Model of Rural Households in Jambi Province. Plantation Household Model. Before conducting further analysis, the initial model is evaluated regarding the validity and reliability of the indicators on the latent variables (constructs). The validity test uses the convergent test and the discriminant validity of the indicators. The convergent validity test is carried out based on the correlation between the item and construct scores. The indicator is convergently valid if the correlation (loading value) is ≥ 0.5 . Furthermore, the discriminant validity indicator is assessed by paying attention to each construct's average variance extracted (AVE) value. The indicator has discriminant validity if the AVE value is > 0.5 .

The construct reliability test is conducted using two criteria, composite reliability and Cronbach's alpha. Both Cronbach's alpha and composite reliability must be above 0.7. Additionally, for Cronbach's alpha, 0.6 and above is still allowed.

Initial model testing finds that there are two indicators on the family characteristic variables that are not valid and reliable, namely indicators X1 (Education level of the head of the family) and X5 (Proportion of household members under five years of age). These two indicators are removed from the model.

The modified model is given in Fig. 2.

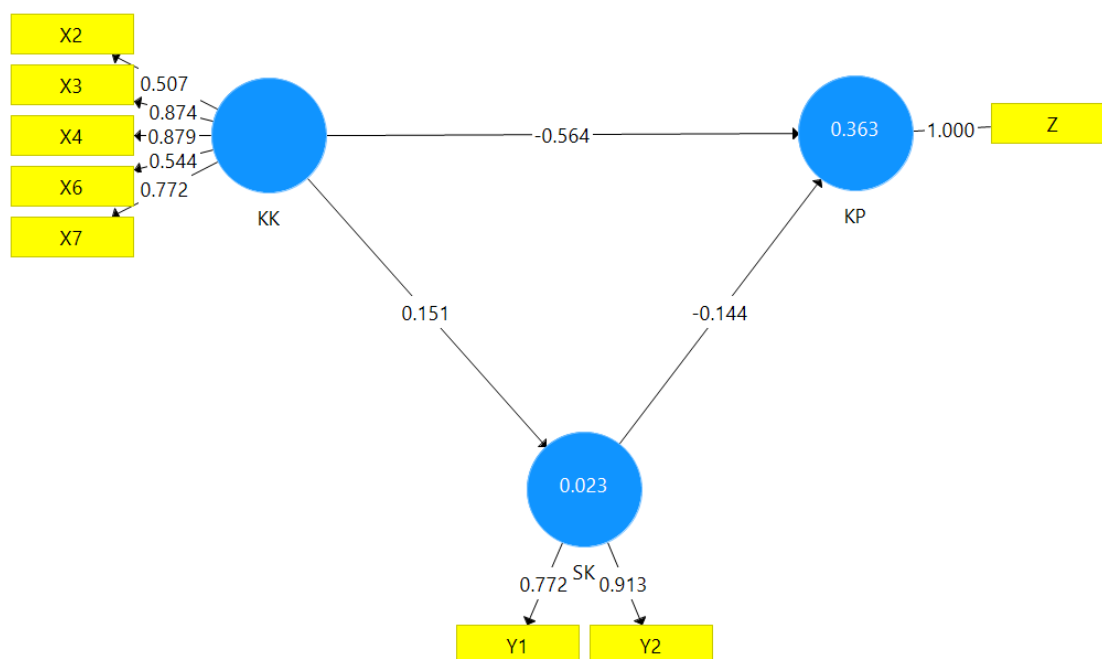


Fig. 2. Modified Plantation Household Model

Source: authors' calculation.

Fig. 2 shows that the correlation (factor loading) of all construct indicators is already above 0.5. The same thing is seen in the discriminant validity test (Table 5). The AVE value for each construct is greater than the correlation value between constructs.

The influence of variables on each other is demonstrated by the coefficient value

and the significance of the t-statistic. The effect is significant if the t-statistic of probability is smaller than 1 %, 5 %, or 10 %.

Table 5

Correlation Between Constructs, AVE, Cronbach's Alpha and Composite Reliability in the Plantation Household Model

Indicators	Correlation			Cronbach's Alpha	Composite Reliability
	KK	KP	SK		
KK	1.000	-	-	0.784	0.847
KP	-0.586	1.000	-	1.000	1.000
SK	0.151	-0.229	1.000	0.616	0.833
AVE	0.537	1.000	0.715	-	-

Source: authors' calculation.

Table 6 provides the t-statistic of probability for the plantation household model.

Table 6

Hypothesis Testing the Relationship Between Variables of the Plantation Household Model

Indicators	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T-statistics (O/STDEV)	P-Values
KK -> KP	-0.564	-0.569	0.051	11.14	0.000
KK -> SK	0.151	0.158	0.070	2.145	0.032
SK -> KP	-0.144	-0.144	0.068	2.121	0.034

Source: authors' calculation.

Table 6 shows that both family characteristics and economic coping strategies affect the food security of plantation households. Economic coping strategies also play a significant role as an intervening variable between family characteristics and food security.

Food Crops Household Model. Initial model testing finds that there are four indicators on the family characteristics variable that are not valid and reliable, namely indicators X1 (Education level of the head of the family), X2 (Age of the head of the family), X5 (Proportion of household members under five years of age) and X6 (Proportion of household members of compulsory school age). It means that only three indicators are valid and reliable, i.e. X3 (number of household members), X4 (proportion of household member working) and X7 (family income per capita). In testing the model for the plantation households, those three indicators are valid and reliable as well.

Fig. 3 (the modified model) shows that the correlation (factor loading) of all construct indicators is already above 0.5. The discriminant validity test shows the same thing (Table 7). The AVE value for each construct is greater than the correlation value between constructs.

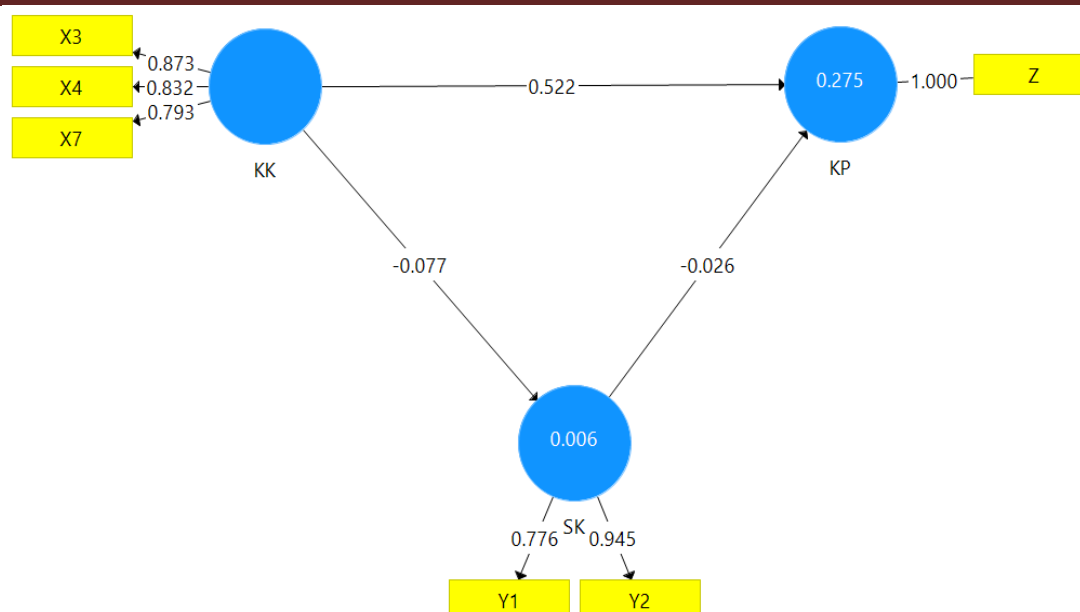


Fig. 3. Modified Food Crops Household Model

Source: authors' calculation.

Table 7

Correlation Between Constructs, AVE, Cronbach's Alpha and Composite Reliability in the Food Crops Household Model

Indicators	Correlation			Cronbach's Alpha	Composite Reliability
	KK	KP	SK		
KK	1.000	-	-	0.779	0.872
KP	0.524	1.000	-	1.000	1.000
SK	-0.077	-0.066	1.000	0.690	0.854
AVE	0.695	1.000	0.748	-	-

Source: authors' calculation.

The influence of the variables on each other is demonstrated by the coefficient value and the significance of the t-statistic. The effect is significant if the t-statistic of probability is smaller than 1 %, 5 %, or 10 %. Table 8 provides the t-statistic of probability for the food crops household model.

Table 8

Hypothesis Testing the Relationship Between Variables of the Food Crops Household Model

Indicators	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P-values
KK -> KP	0.522	0.525	0.102	5.104	0.000
KK -> SK	-0.077	-0.081	0.162	0.479	0.632
SK -> KP	-0.026	-0.030	0.139	0.187	0.852

Source: authors' calculation.

Table 8 shows that only family characteristics affect the food security of food crops households. However, family characteristics have no significant effect on family coping strategies. Finally, coping strategies have no significant effect on food security.

Family characteristics are a determining factor for food security in both families producing food crops and in those producing plantation crops. The three main family characteristics that determine food security in food crop households and plantation households are the number of family dependents, the proportion of household members who work, and the family's income per capita. These three characteristics are closely related to household income and expenditure. The more household members, the greater the costs – expenditures and consumption are both greater. Every increase in the number of family members increases the amount of household food consumption. In addition, it reduces the availability of food owned by the households. On the other hand, the more family members are working, the higher the income available to increase consumption. These observations are in line with the findings of Nanda et al. [75] in Central Lampung, Kifli et al. [76] in Riau Province, and Herdiana et al. [77] in Ciamis Regency.

In addition to these three characteristics, food security in plantation households is also determined by the proportion of household members of compulsory school age (seven to 15 years) and the age of the head of the household. This finding is in line with those of Devi et al. [78], Iram & Butt [79], and Abu & Soom [80], who state that the age of the head of the household has an important role to play in the provision of adequate food.

The education level of the head of the family, however, is not a determining factor in food security in both food crop and plantation families. This is due to the relative lack of variation in the education level of heads of poor families in rural areas. This is in line with the findings of Zani et al. [81], but different from the findings of Devi et al. [78], Nord [82], Rose et al. [83], Babatunde et al. [84], and Tajerin et al. [85].

In sum, there are differences between the food security models of plantation and food crop households (Fig. 1 and Fig. 2). Food security in plantation households is not only directly determined by family characteristics but also by the used economic coping strategies. In addition, family characteristics also affect food security indirectly through the economic coping strategies. Conversely, economic coping strategies do not affect family food security in food crop households. It demonstrates that food crop households' coping strategies are ineffective in increasing their food security.

Conclusions. Poor rural households' economic coping strategies, both the passive (cutting back expenses) and the active (generating income), are still, on average, in the low category in both food crops and plantation households in Jambi Province. This is likely to decrease the welfare of poor households who face economic pressures.

The level of food security in food crop households is relatively high compared to that in plantation crop households. Nearly half of food crop households are categorized as having good food security, while it is only around 20 % for plantation crop households.

Family characteristics and economic coping strategies significantly influence the

food security of plantation crop households. On the other hand, the level of food security for food crop households is not influenced by economic coping strategies, only by family characteristics. Number of household members, proportion of working household members, and family income per capita are the three main household characteristics that simultaneously influence food security in both food crops and plantation households.

The main finding of this study should contribute to develop strategies to improve food security for disadvantaged rural households. According to the findings, policies should be oriented toward decreasing the birth rate (that will impact on decreasing the average number of household members), improving the skills and entrepreneurship of disadvantaged rural households, and increasing the productive employment opportunities in rural areas (that will impact on increasing the number of working household members, and income per capita). Furthermore, less influencing coping strategies on food security in food crops households suggests that rural households are not entirely capable of developing effective and efficient strategies. It is unfortunate as the strategy is created to increase their wellbeing when faced with economic pressures. As a result, programs promoting resource and financial management for disadvantaged or poor rural households are required.

In the future, this study also suggests that other socio-economic factors that influence poor rural households' economic coping strategies, especially those related to social capital and household environment, will be examined.

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