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Poverty among Rural Communities in Kelantan and Terengganu: The Role of Institutions, Farmers' Risk Management and Coping Strategies

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Abstract: The wellbeing and livelihoods of people are two important aspects of poverty which in turn are dependent on the households' coping capabilities and their abilities to manage risks. The roles of institutions such as Non-Governmental Organizations (NGOs) and particularly the government are important in ensuring the welfare of the people. Empirically, little is known on the link between households' coping strategies, government policies and institutions. This study investigates and analyzes the role of people's risk management and coping strategies in building their capacities. Using a structured socio-economic questionnaire, 302 randomly selected farmers in both states were tested. Household income decreased by RM52, RM81 and RM102 due to illnesses, floods and economic recession respectively. In order to cope with these stressors, households implemented coping strategies rather than preparatory ones which can strengthen their capacities to manage against any unexpected threat. In some cases these strategies threatened households' welfare. Less risky production activities, spending saving and out-migration looking for job led to decrease households' monthly income by as high as RM123, RM139 and RM166, respectively. Although the results showed that institutions did not lead households to fall into poverty trap, their supports also made no difference. These institutions are active and provide the needed services to the communities only after a disaster has occurred. This observation is based on the positive relationship between households' coping strategies and institutional supports ($r = 0.310$, $p = 0.000$). The relationship between households' risk management and institutional support was not significant ($r = 0.087$, $p = 0.067$) based on this study.

Key words: Risks and shocks, poverty eradication, rural households, households' abilities

INTRODUCTION

It is widely acknowledged by economists that a household's welfare depends not only on their financial status but also on their vulnerability to risks and shocks (Jha *et al.*, 2010) and how they cope with the situation (White and Robinson, 2000). Household vulnerability to poverty and the related under-development could serve as an indicator to poverty. It is not only a more satisfactory measure of welfare but also a part of the factors which determine National Income in particular and Gross Domestic Product in general. Majority of the poor face the greatest risks which continues to impact negatively on their welfare due to substantial losses of their income, high consumption rates and weak wealth creation, when these shocks occur. Hanjra *et al.* (2009), Acosta-Michlik and Espaldon (2008) and Kapoor and Ojha (2006) opined that rural households are seen to be vulnerable because they are located in prone areas where there are less developed markets. In many developing

countries, formal mechanisms are poorly developed in the rural areas. In India for instance, formal credit facilities are more developed in low risk than in high risk areas (Holden and Bins Wanger, 1998). Furthermore, they experience lack access to different types of resources such as financial aids (Carter *et al.*, 2007; Osman-Elasha *et al.*, 2006; Kamruzzaman and Takeya, 2008).

The lack of formal mechanisms such as financial institutions (credit and insurance) reduces the capacity of rural households to invest in risk-coping technologies (Baez, 2006). Therefore, rural households fear to adopt technological innovations in the presence of risks or future risks associated with fluctuation and unknown return.

Households have different tools or behaviours to overcome these shocks and manage the onset and consequences of the risks. Households adopt both long-term and short-term coping strategies to handle with stressors (Mwang'ombe *et al.*, 2011). However, the

effectiveness of their performance is characterized by the availability of significant resources and entitlements as well as on their ability to cope with and manage the stressors (Alpizar, 2007). Formal strategies are important mechanisms which offer aid and risk-coping to rural households for dealing with various risks and shocks. When formal credit institutions are unavailable, rural households depends on the informal mechanisms as the next best alternative to deal with situation. Although these (informal) mechanisms are useful to increase the risk bearing capacities of households to idiosyncratic risks, they do not allow an efficient reallocation of covariate risks (Baez, 2006). These strategies are believed to be relatively expensive and do not achieve farm efficiency and in some cases exacerbate the extent of poverty of rural households (Rosenzweig, 1988; Townsend, 1994; Fafchamps and Lund, 2003).

The effectiveness of risk management and coping strategies of households in order to cope with and manage against adverse risks and shocks could be determined by many factors such as personal, cultural and social (Hinton and Earnest, 2010; Reid and Vogel, 2006), the nature (severity and frequency) of risks and shocks and people's socioeconomic conditions (Paul and Routray, 2010), the economic liberalization (Eriksen and Silva, 2009). These studies concluded that households' choice of strategies to manage adverse risks and shocks depended on the circumstances in which these strategies were employed and the purpose for which the strategies were intended.

While stressors such as natural disasters cause a serious threat to the wellbeing of households, only a few studies have quantitatively analysed this aspect (Van Der Berg, 2010). To fill this existing vacuum therefore, there is a need for more empirical analysis on the coping strategies of households, in relation to risks and shocks such as natural disasters. It would be crucial to investigate and analyse as to how people handle with risks to formulate a comprehensive understanding on the complexities and the dynamic of poverty (Liu *et al.*, 2008). Consequently, there is little known about the link between households' coping strategies, government policies and institutions such as NGOs (Miller, 2008). The present study adds to this limited information an insight analysis by investigating the dynamic interactions between households' coping and/or risk-management strategies, communities and institutions. It tries to answer the following questions: What determines households and communities resilience? How could institutional capacity

(support) affect household's responses to risks and shocks? Do these institutions lead households to fall into poverty traps?

MATERIALS AND METHODS

To investigate the impact of stressors on the wellbeing of households and their risk-management and coping strategies, the present study utilizes a quantitative research method. Data was collected using of a structured socio-economic questionnaire containing both open and close-ended items. The questionnaire administration was cross-sectional in nature. Before administering the questionnaires, a pilot test was carried out to test the validity and reliability of the instrument and to ensure that the questionnaire can be understood and accepted by farmers. The pilot study was conducted with 50 farmers in both Kelantan and Terengganu on November 2010. In this study, a multistage sampling technique was used for a representative number of households. The first stage was the selection of two local government states which are Terengganu and Kelantan. The reasons for choice is because the two states have been noted to have the highest poverty rate within peninsular Malaysia and are the areas with the most vulnerability and exposure to natural disasters such as flood (Ahmad, 2007). The second stage was the selection of three rural districts (strata). The areas selected include: Pasir Putih in Kelantan and Besut and Setiu in Terengganu. In the third stage, households of farmers were then randomly selected and surveyed as representatives of the two states. In order to obtain an accurate data and minimize bias, the questionnaire was distributed to the respondents face to face and in the local language (i.e., Bahasa Malaysia), where the researchers explained all the part of the questionnaire to the respondent properly. Between January and February 2011, 400 questionnaires were distributed to the respondents but only 302 were completed in the three communities as follows; 100 questionnaires were received in Pasir Putih, 102 in Besut and 100 in Setiu.

Measurement of variables: To measure the research variables a wide range of measuring scale and strategies are used. The items were adapted and adopted from previous studies, while some items were developed by the researchers. In this study, the dependent variable is the households' monthly income¹. The independent variables are exposure to risks and shocks², institutional capacity³ and the households' ability to cope⁴ with them.

¹Households' poverty is measured on the basis of people who do not have the minimum level of income that is deemed necessary to achieve the adequate standard of living in peninsular Malaysia. Household is considered poor if its income is less than RM194 per capita per month.

Statistical analysis: Data obtained was analysed using Statistical Package for Social Sciences (SSPS) for windows, version 17. A simultaneous model (Multiple regressions) was carried out to investigate and examine the impact of various types of risks and shocks, households' strategies and institutions on households' monthly income. Pearson correlation coefficients were calculated to determine the relationship between households' strategies and institutions support, poverty, age and educational level, respectively.

RESULTS

Demographic profile: Descriptive statistics (frequencies and percentages) were calculated and revealed the following (Appendix, Table A); 98.3% of the respondents were married, 96.7% were male. A large percentage of the subjects were less educated as 29.8% of the respondents reported to have no formal education, 24.5% finished their primary school, 15.6% completed secondary school while only 29.5% finished high school and 0.7% of the respondents continued studying to the university level. The data also indicated that poverty is widespread among farmers in these communities, as 9.9% of the respondents were found to live in hard-core poverty, 60.3% are poor and only 29.8% are non-poor (Appendix, Table A).

Risks, institutions and households' strategies: Households found to be prone to several covariate and idiosyncratic stressors (Appendix, Table B). The results showed that floods, economic recession and illness which prevented respondents from work were the most severe stressors which affected households' income. Idiosyncratic stressors were also present among these communities but in low percentages, compared to

covariate stressors. Although the results indicates that households use a variety of ex-ante and ex-post strategies to manage against and cope with unexpected stressors (Appendix, Table C), only few of these households in the communities evaluated were able to adopt these strategies. Access to assets and entitlements was another problem identified in these communities. Most of the respondents did not have access to facilities and programs provided by various institutions as the results (Appendix, Table E); indicated that over 46% of the respondents were not aware about the programs, 11.92% were not selected and 10.26% reported that no programs of such description existed in the area. Only 29.1% of the respondents had access to health care facilities, 11.9% had accesses to disaster risk-management training, 14.2% accessed climate change information and only 9.3% received food aids (Appendix, Table E). Access to other programs such as financial aids, market employment information and employment opportunities were very limited (less than 5%), nevertheless, a high percentage (66.55%) of those who attended these programs indicated to have benefited from these programs. Only 24.5% of these programs were provided by government institutions, 20.7% by Community-Based Organisations (CBOs) and 20.6% from Non-Government Organisations (NGOs) (Appendix, Table E). Households were found to be recovering, although slowly, from the shocks which they have experienced, where 82.4% indicated that they were able to recover (completely or partially) from experiencing threats and 48% of them took between 3 to 6 months to recover (Appendix, Table D).

The effects of stressors on households' income: Table 1 summaries the results of the impact of stressors, households' strategies and institutional supports on households' monthly income. Floods, low economic level

²This study defines risk (shock) as uncertain events which can damage the households' wellbeing. The uncertain event could be natural, health, social, economic and/or environmental. Furthermore, the present study measured risks and shocks first according to its nature; ranging from risks affecting individuals (i.e. idiosyncratic) to those affecting communities, regions or nations (i.e. covariate). Secondly, risks were measured according to the severity (i.e., whether the risk affecting households' wellbeing was severe).

³The role of these institutions is to provide a variety of support to disadvantaged individuals, households and groups such as health, education, training, etc. and to provide resources which would strengthen the capacities of those individuals, households and groups such as assets (human, physical, natural, financial and social). For example, households were asked to indicate from a given list, the programs which they attended, as well as answer from a given list of questions how the programs benefited their households if they attended it, or to state reasons why, if they did not attend.

⁴Households' ability to cope is measured as the social risk management which the households implements both before and after the risks occurs. Households' strategies were summarized in two categories; strategies which households implement before negative events occur or what is referred to as ex-ante or risk management strategies (risk reduction, risk mitigation) and strategies which households implement after the event had occurred, or ex-post or coping strategies. For example households were asked to indicate from a given list, the strategies they used and implemented in order to compensate or resolve the decrease or loss of their income and assets. In addition, households were also asked if they recovered from these losses in income and assets caused by stressors they had experienced.

Table 1: The effects of stressors, households' strategies and institutions on households' income

Independent variables	Coefficients	Std. Error	t	Sig.
Constant	1406.249*	515.0202.730	0.007	
Shocks and risks				
Floods	-81.850*	27.175	-3.012	0.003
Droughts	37.623	40.242	0.935	0.351
Strong winds	8.611	23.916	0.360	0.719
Pests diseases	-32.253	22.680	-1.422	0.156
Heavy rains	67.148*	24.942	2.692	0.008
Economic down	-102.857*	26.426	-3.892	0.000
Increase food prices	-12.482	21.734	-0.574	0.566
Illness	-51.932**	21.930	-2.368	0.019
Harvest failure	192.782*	62.240	3.097	0.002
Loss job or reduce salary	22.581	20.543	1.099	0.273
Ex-ante strategies: risk reduction				
Less risky production activities	-123.975**	52.530	-2.360	0.019
Adopt New technologies in production	45.330	63.184	0.717	0.474
Seasonal out-migration (before experiencing uncertainties)	-157.977	180.158	-0.877	0.381
Ex-ante strategies: risk mitigation				
Multiple job	-74.369	51.116	-1.455	0.147
Invest in assets	-63.937	64.721	-0.988	0.324
Get insurance	-26.627	74.699	-0.356	0.722
Ex-post or coping strategies				
Reduced diet	-34.248	45.740	-0.749	0.455
Decreased expenditure	-2.794	46.470	-0.060	0.952
Collect and sell natural resources	119.525*	40.468	2.954	0.003
Spend saving	-139.193*	50.509	-2.756	0.006
Loans	20.032	47.875	0.418	0.676
Work on relief programs	-50.618	58.597	-0.864	0.388
Get assistance	48.777	38.388	1.271	0.205
Sold non productive asset	76.630***	43.982	1.742	0.083
Sold productive asset	-32.874	62.458	-0.526	0.599
Seasonal out-migration (after experiencing uncertainties)	-166.769*	61.957	-2.692	0.008
Recovery from shocks				
Recovery	102.343*	35.917	2.849	0.005
Time for recovery	-72.123*	19.889	-3.626	0.000
Programs received				
Health care	-66.770	92.964	-0.718	0.473
Disaster risk management	29.370	77.723	0.378	0.706
Food aid	-72.345	81.275	-0.890	0.374
Climate change information	-112.638	87.941	-1.281	0.201
Financial aids	155.316***	90.158	1.723	0.086
Market employment information	-57.557	100.685	-0.572	0.568
Employment opportunities	-51.626	107.971	-0.478	0.633
Benefit from the programs received				
Access to health care	56.026	93.574	0.599	0.550
Access to market	129.646	115.328	1.124	0.262
Access to food	19.536	76.648	0.255	0.799
Reduce expenditure	-93.726	84.521	-1.109	0.269
Access to employment	-37.441	73.306	-0.511	0.610
Access to drinking water	-157.814	99.383	-1.588	0.114
Access to irrigation	24.113	101.795	0.237	0.813
Increase production	197.593**	79.534	2.484	0.014

r²: 0.772, Adjusted r²: 0.595, F: 8.791, Sig.: p<0.01*, **, *** -indicate the significance level at 1, 5 and 10%, respectively. 1USD = 3RM, Dependent Variable: Households' monthly income

and illness were found to significantly reduce households' monthly income at 1% significance level. The statistical results indicated that these three stressors are the major threats which households suffer from. The results of Table 1 showed that if a household experienced flood, low economic level and illness, then its monthly income reduces by RM81, RM102 and RM52, respectively. Surprisingly however, harvest failure and

heavy rain positively affected households' monthly income at 1% significance level. The results of Table 1 showed that if a household experienced heavy rain or harvest failure threats, its monthly income increased by as much as RM67 and RM192, respectively. Other stressors such as droughts, strong winds, pest and diseases, increase food prices and loss of job or reduce salary found not to have any effect on farmers' income.

The majority of households recovered from the stressors which they experienced. Data showed that when a household recovers from stressors, its monthly income increased by RM102. The time of recovery is an important factor which could enhance households' living. The longer the recovery time, the higher the reduction in monthly income occur. The results showed that when a household took one more period longer to recover, then its monthly income decreased by RM72.

The impact of households' strategies on their income:

Although households implemented a variety of risk-management and coping strategies in their daily lives in order to manage against and cope with unexpected threats, only few of these strategies were significantly effective and efficient. Some of the strategies were found to have negative impact on their income. The results of the survey on this aspect indicated that risk reduction strategies (less risky production activities) and coping strategies (spending saving and out-migration looking for job) threaten households' income, as the results showed that by implementing these strategies, households' monthly income decreased by as high as RM123, RM139 and RM166, respectively.

Collection and selling of natural resources (from the forest) and selling of non-productive assets have positive effects on households' monthly income (Table 1). The results indicated that these variables have the positive sign at 1 and 10% significance level, respectively. Collection and selling of natural resources lead to an increase in households' monthly income by RM119, while the selling of non-productive assets increase the monthly income by RM76 (Table 1).

Other strategies that farmers had implemented such as adopting new technologies in production, doing multiple jobs, investing in assets, getting insurance, reducing diet, decreasing expenditure, getting loans, working in relief programs, getting assistance and selling productive assets found not to have any impact on farmers' income.

The impact of institutional support on households' income:

The role of government and non-governmental institutions did not significantly contribute to the enhancement of households' wellbeing in the communities studied. Data showed that households were able to participate in only 7 of the 13 types of programs which were listed to them. Only one type of these programs (Financial Aids) recorded a significant impact on households' monthly income. Households' monthly income increases by RM155 when it benefits from financial aids (Table 1). The benefits from the programs

Table 2: Pearson correlation test

Variables	Coping strategies	Risk management strategies
Programs provided by Institutions		
r	0.310*	0.087
p	0.000	0.067
Benefit from programs		
r	0.298*	0.095
p	0.000	0.055
Poverty		
r	-0.125**	-0.272*
p	0.015	0.000
Age		
r	0.117**	0.006
p	0.021	0.458
Educational level		
r	-0.053	0.151*
p	0.177	0.004
Gender		
r	-0.025	0.019
p	-0.336	0.371

r denote Pearson correlation, *, ** -indicate the significance level at 1 and 5%, respectively

which households attended were found to be limited. Households increased their production by investing the financial aids which they accessed from these programs. The results (Table 1) reveal that those households which benefited from financial aids and as such, increasing their production are able to boost their monthly income by RM197.

The relationship between institutions' supports, age, education, gender, poverty and households' strategies:

In order to investigate the relationship between households' strategies and the institutions' support, Pearson correlation coefficient was calculated. Table 2 show, that there exists a positive relationship between households' coping strategies and institutions' supports.

The more supports households obtained from institutions, the more their coping strategies are ($r = 0.31$, $p = 0.000$). In contrast, no relationship was found between programs received by institutions and households' risk management strategies ($r = 0.087$, $p = 0.067$). Benefits from the programs were found to have positive relationship with coping strategies ($r = 0.298$, $p = 0.000$), while no relationship was found with risk management strategies ($r = 0.095$, $p = 0.055$). The Pearson correlation coefficients test also indicated that there exists a negative relationship between poverty and households' coping strategies ($r = -0.125$, $p = 0.015$) and between poverty and households' risk management strategies ($r = -0.272$, $p = 0.000$). Those who are poor are unable to use the strategies efficiently.

There exists a positive relationship between age and coping strategies ($r = 0.117$, $p = 0.021$) and no relationship between age and risk management strategies ($r = 0.006$,

$p = 0.458$). Older household have better experience and skills to deal with risks and shocks. However, older households are skillful and can only significantly deal with stressors after the shocks occur.

The educational level also seem to have a positive relationship with risk management strategies ($r = 0.151$, $p = 0.004$) but no relationship was found to exist between educational level and coping strategies ($r = -0.053$, $p = 0.177$). In a similar manner, no relationship is found to exist between gender and coping strategies ($r = -0.025$, $p = 0.336$) and between gender and risk management strategies ($r = 0.019$, $p = 0.371$).

DISCUSSION

In summary, this study investigated the impact of stressors, households' strategies and institutions' support on the wellbeing (income) of households in rural communities in Kelantan and Terengganu states of Malaysia.

The results of this study confirmed the findings of Chan (1995) where stressors such as floods were noted to ruin rural households' income, making them vulnerable to poverty in Malaysia. The present study confirmed that floods, low economic level and illness have disastrous impacts on households' livelihoods. It is observed that farmers' livelihood (productive and non-productive assets) is drastically destroyed by floods and this caused a steady decline in their monthly income. The lost of livestock and damages in mechanical tractors, fertilizers and pesticides resulted in under production. Consequently, farmers are unable to produce surpluses that can be marketed domestically. Moreover, low economic level led to decrease people's purchasing power. As a result, farmers found difficulties in marketing their agricultural products locally. Marketable surplus lead to higher income generation thereby makes farmers refraining away from vulnerability (Omolehin *et al.*, 2007). It is evident that idiosyncratic shocks do not significantly affect the wellbeing of households in rural communities of Kelantan and Terengganu. Only illness was found to be disastrous to the welfare of these communities. These results substantiate to Wie (2001) and Mia *et al.* (2011) findings. The co-relation between number of times households fall as ill or receive medical attention and their monthly income is significant and negative. The healthy situation of households contributed to increase their monthly income directly and indirectly. Directly impacted to increase households' working hours and mounts their productivity and production in both in-farm and off-farm activities. Indirectly, resulted in reducing the cost bared for medical purposes and also reduced the opportunity

cost that is occurred as households are being jobless during the period of being sick.

On the other hand, heavy rainfall and harvest failure were found to encourage households to increase their monthly income. Households adopted and implemented various strategies to cope with and manage against stressors. While some of the coping strategies were effective in reducing the impact of the threats experienced; risk management strategies were found not to be effective but rather, to be destructive to the wellbeing of households.

Households who experienced harvest failure succeeded in gaining from this experience. By collecting natural resources and selling them in the market, they increased their monthly incomes. Heavy rain was found to be a useful resource for the communities, as they use the water made available during droughts. However, these strategies were not effective to those households which experienced floods, economic recession and illness. The reason is could be that households who got sick were unable to do extra work to enhance the family welfare. Households are also, not able to collect and sell natural resources from the forest when the economic level is down, as many of them suffer from shortage of money, therefore making the purchasing power of the communities to decrease. In the case of floods, households were even not able to enter into the forest and collect these natural resources due to the climatic situation and also due to the damage which occurs while experiencing the flooding.

Doing multiple jobs (off-farms), investing in assets, getting insurance and work in relief (off-farm) programs have no significant impact on farmers' income. This is due the fact that majority of farmers in these communities only depend on farming activities and seldom involved in off-farm activities. Many studies such as Babatunde (2008), Onduru *et al.* (2007) and Owuor *et al.* (2007) confirmed that farmers derive income from both in-farm and off-farm activities. While selling non productive assets found to be beneficial for farmers, selling productive assets is neither increasing nor decreasing farmers' monthly income. These findings are not similar to Hoddinott (2006) results which indicated households who sold their productive assets dramatically reduced their capabilities and are being vulnerable to chronic poverty. Also Bokosi (2007) and Owuor *et al.* (2007) stated that productive assets such as livestock significantly contribute to the reduction of the probability of being chronically poor.

Therefore selling these assets might ruin households' capacities. The reason that selling productive assets found not to have negative impact on farmers' income (in the present study) is that, in these communities

majority of the farmers do not have access to such type of assets. Therefore, the impact of selling these assets is marginal. Nevertheless, adopting such type of strategy could severely affect the welfare of household members who need to increase their working hours in order to generate more income to fulfil the needs of their families for better nutrition. Poor households who sell their productive assets (such as cattle, land) as an intervention to face adverse risks may solve an immediate problem but this would lead to severe poverty in future as the only sources of income has been diminished.

Engaging in less risky production activities, spend saving and out migration looking for jobs are disparaging strategies adopted by these communities towards reducing the effects of shocks. Households were responsible for the reduction in their monthly incomes. Due to the lack of access to assets and entitlements provided by various institutions, households are left with little options other than to engage in less risky production activities which, in most cases, are less profitable. Farmers loose the opportunity to venture into high return and more profitable but also more risky activities.. Furthermore, poor households are discouraged from taking high return on investment opportunities due to the fear of the consequences of failure (Dercon, 2000).

Farmers with saving in banks or with cash kept at homes were periodically able to help themselves when experiencing negative events and are therefore, less vulnerable to income fluctuations. However, instead of using the savings in adopting new technologies in their production, households spend these savings to compensate for the decrease in their monthly income. Although such action could solve an immediate problem, it severely ruin their welfare in the short term, as the last resort is demolished. Getting loans from institutions was found not to have any significant impact on the farmers' revenues as majority of farmers do not access these resources as they lack of properties and possessions that can be used a mortgages. Other studies such as Jehangir *et al.* (2002) and Owuor *et al.* (2007) found that there exist a significant and positive relationship between agricultural credit and farmers' income.

Those farmers which could not find any means to cope with risks and shocks but had to migrate (temporarily) to another area looking for jobs exacerbate their vulnerability to poverty. These results are similar to Gandhi *et al.* (2009) findings which demonstrated that in India, households which chose migration as a favored strategy to mitigate drought, actually exposed migrants to a higher risk of contracting HIV which deepened the households' vulnerability to poverty. By out migrating to another area, households prone to another risk as they

had to liquidate their very few assets and savings in order to survive while looking for new jobs. Furthermore, since they have no formal education or are less educated, members of poor households find difficulties to access employment opportunities. Even when offered the chance to access employment; their salaries are very low, usually below the income poverty line. This makes them more vulnerable to income fluctuations. Fluctuations in income imply relatively high levels of transient poverty. Rural households could run into transient poverty when they are exposed to adverse shocks and may fall into chronic poverty if exposed to adverse shocks and having limited long term income generating capacity.

In the communities studied, institutions do not play significant roles in strengthening households' capacities. In spite of the fact that there exist a number of programs provided by these institutions, only few households have access to these facilities (Appendix, Table E). Except for financial aids which significantly increase households' revenues, all other programs did not contribute in building up capacities of the rural communities. Households used the financial aids to invest in productive assets. Results of the study indicated that by investing these financial aids in productive assets, households increase their productions and this led to an increase in their monthly income. The provision of material and non-material assistance and supports which could enhance the productivity of rural communities such as access to new technologies and training on how to use these technologies; are vital and a priority. Adoption of new technologies is low as farmers lack adequate knowledge on how to use it.

Relying on their own resources and attending limited programs were most commonly reported among the rural households. Therefore, households implemented coping strategies rather than preparatory ones which could enhance farmers to manage better against next unexpected threats. Poor and less educated households therefore are unable to utilise facilities provided by the relevant institutions. This is evidenced by the negative relationship between households coping strategies and poverty. The study also confirmed the existence of positive relationship between the level of education and risk management strategies. This could be a reliable reason to explain why households' risk management and coping strategies are disparaging to their livelihoods. The poorer the households, the more vulnerable they are. The more educated households, the less vulnerable they are. Where as institutions in these communities did not lead rural households to fall into poverty trap, their support also made no difference. Human capital in terms of better health of the households was demonstrated to contribute

as the key factor for recovering from threats. The time taken to partial or complete recovery from the threat was found to be a vital factor in speeding the recovery process. In this case, external supports and assistance such as financial aids at the proper time, plays an essential role in determining the effectiveness and the efficiency of households' strategies, thus leading to swift recovery from the stressors.

Institutions are found to be active and to provide their services to the rural households in these communities but only after disasters occur. This is confirmed by the existence of a positive relationship between institutions' supports and households' coping strategies, while this relationship was found not to exist between the programs provided by institutions and households' risk management strategies. It is very important to guarantee assistance and supports from government's institutions, NGOs, CBOs and international partners before, during and after unexpected events occur, in order to curtail the negative impacts which affect rural households, particularly the poor.

CONCLUSION AND IMPLICATIONS

The results of the present study highlights some important implications for policy makers, donors and professionals involved in poverty eradication in Malaysia. Based on the results of this study, interventions should be focused on two different levels: first at community level and secondly, at the household level. At the community level, there is the need to establish an effective supportive centres and agencies which can provide training, advice and guidance on agricultural matters, market information and flood awareness. Support services from centres and agencies must be made available all the time and not only after the households experience stressors.

Second, there is the need to develop a financial system in these communities which allows poor people to be able to access loans, financial resources and aids without paying high interest rates or any unaffordable charges. The analysis of this study confirmed that financial aids has a positive impact on households livelihoods as those who had access to it invest the financial resources to increase their production, thereby increasing their monthly incomes.

Thirdly, the results of the study has indicated that the most serious threats which the rural households experience are covariate shocks such as floods and low economic level, where households were unable to manage against and cope with these stressors. Therefore, there is

a need to develop an effective and practical frameworks, policies and programs which could help to enhance the capacities of rural communities, in order to reduce the negative outcomes of floods and economic recession. These frameworks and policies should be planned to be proactive before the threats occurs.

At the level of the households, government institutions, NGOs, CBOs and any other institution involved in poverty alleviation should facilitate the access of rural households to assets and entitlements, particularly the poor and most vulnerable people to threats. Although the results indicate that most of the programs provided by the institutions made no difference in enhancing households' livelihoods, the study confirmed the existence of positive relationship between the programs provided by the institutions and households strategies. The higher the supports from institutions towards the households, the more their strategies are and therefore, the less vulnerable to threats they are.

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APPENDIX

Appendix: Frequencies and percentage of stressors, households' strategies and institutions supports.

Table A: Households' characteristics

Variables	Scale	Freq.	%
Marital status	Married	297	98.3
	Single	1	0.3
	Divorce	3	1.0
	Widow	1	0.3
Gender	Male	292	96.7
	Female	10	3.3
Educational level	No formal education	90	29.8
	STD 5/6	74	24.5
	PMR/LCE	47	15.6
	SPM/MCE	89	29.5
	University	2	0.7
Level of poverty	Hardcore poverty	30	9.9
	poor	182	60.3
	Non poor	90	29.8
Region	Besut	102	33.8
	Setiu	100	33.1
	Pasir Putih	100	33.1

Table B: Exposure to shocks and risks

Variables	Scale	Freq.	%
Floods	Low severity	14	4.6
	Medium severity	48	15.9
	High severity	159	52.6
	Not experienced	81	26.8
Droughts	Low severity	3	1.0
	Medium severity	4	1.3
	High severity	17	5.6
	Not experienced	278	92.1
Strong winds	Low severity	7	2.3
	Medium severity	30	9.9
	High severity	117	38.7
	Not experienced	148	49.0
Pests and diseases	Low severity	7	2.3
	Medium severity	37	12.3
	High severity	78	25.8
	Not experienced	180	59.6
Heavy rains	Low severity	8	2.6
	Medium severity	22	7.3
	High severity	47	15.6
	Not experienced	225	74.5
Economic down	Low severity	16	5.3
	Medium severity	39	12.9
	High severity	192	63.6
	Not experienced	55	18.2
Increase food prices	Low severity	11	3.6
	Medium severity	21	7.0
	High severity	24	7.9
	Not experienced	246	81.5
Illness	Low severity	14	4.6
	Medium severity	64	21.2
	High severity	31	10.3
	Not experienced	193	63.9
Harvest failure	Low severity	0	0
	Medium severity	2	0.7
	High severity	27	8.9
	Not experienced	273	90.4
Loss of job or reduce salary	Low severity	22	7.3
	Medium severity	59	19.5
	High severity	40	13.2
	Not experienced	181	59.9

Table C: Households' coping and risk management strategies

Variables	Scale	Freq.	%
Ex-ante risk reduction strategies	Less risky production activities	84	27.0
	Adopt new technologies migration	52	17.2
		3	1.0
Ex-ante risk mitigation strategies	Multiple job	109	36.1
	Invest in assets	33	10.9
	Get insurance	30	9.9
Ex-post coping strategies	Reduced diet	144	47.7
	Decrease expenditure	189	62.6
	Sale natural resources	81	26.8
	Spent saving	124	41.1
	Loans	136	45.0
	Worked on relief program	38	12.6
	Rented out land or house	93	30.8
	Sold productive assets	62	20.5
	Sold non-productive assets	28	9.3
Out migrated to look for job	27	8.9	

Table D: Recovery from shocks and risks

Variables	Scale	Freq.	%
Recovery	Not recovered at all	53	17.5
	Partially recovered	178	58.9

Table D: Continued

Variables	Scale	Freq.	%
Time of recovery	Completely recovered	71	23.5
	Partially + Completely recovered	249	82.4
	1-2 weeks	50	16.6
	3-4 weeks	57	18.9
	1-2 months	50	16.6
	3-6 months	145	48.0

Table E: Programs received

Variables	Scale	Freq.	%	
Programs received	Health care	88	29.1.0	
	Disaster risk management	36	11.9.0	
	Water, sanitation and hygiene	15	5.0	
	Food aid	28	9.3.0	
	Climate change information	43	14.2.0	
	Financial aids	15	5.00	
	Market and employment information	13	4.3.0	
	Employment opportunities	13	4.3.0	
	Reason why not received the above programs	Do not know	139	46.03
		Households member do not want to participate	4	1.32
Households' members were not selected		36	11.92	
No program in area		31	10.26	
Institutions provided these programs	NGOs	59	20.6.0	
	Government and public institutions	79	24.5.0	
	CBOs	63	20.7.0	
Households benefited from these programs	Benefited from the programs	201	66.55	
	Not-benefited from the programs	101	33.45	
The benefit from the above programs	Access to health facilities	95	35.5.0	
	Access to markets	11	36.6.0	
	Access to electricity	8	2.6.0	
	Increased the quality and quantity of food	55	18.2.0	
	Reduce food expenditure	34	11.3.0	
	Access to employment opportunities	39	12.9.0	
	Access to safe drinking water	19	6.3.0	
Access to irrigation water	15	5.00		
Increased agricultural production	33	10.9.0		

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