

Short Communication

**PERCEPTIONS OF MALAYSIAN FARMERS REGARDING THEIR KNOWLEDGE IN
AGRICULTURAL RISK MANAGEMENT**

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ABSTRACT

Climate change in the form of natural disasters affects farmers and their agricultural activities. The negative impacts stem from natural disasters influence perception of farmers to manage risks in agriculture on the basis of their knowledge. Therefore, the study was planned to assess perceptions of farming community towards knowledge in agricultural risk management. In order to fulfill the objective, multi stage cluster sampling technique was used. The data were collected from 360 farmers through pre-designed and pre-tested interview schedule in which likert scale items ranging from 5 (strongly disagree) to 1 (strongly agree) were used. The empirical findings revealed that farmers had knowledge about socio-economic impacts, how to manage, plan and crop risk management. However, farmers' knowledge was inadequate about cost, at which stage, and concept and procedure to manage their risks in agriculture sector. Importantly, the knowledge level of farmers was also medium which could affect socio-economic fabric and food security of the country. Thus, the study recommends that knowledge of farmers should be improved through capacity building initiatives by public and private sectors particularly by agricultural extension agencies to tackle risks originating from climate changes and natural disasters.

Keywords: Perceptions, Knowledge, Agricultural risk management, Agricultural extension, Malaysia

INTRODUCTION

Knowledge of farmers regarding agricultural risk management on account of climate change is improving in Malaysia and other parts of the world. It is obvious that climate change is getting attention of farmers to resist through various agricultural risk management strategies. According to Hansen *et al.* (2019), shortage of awareness by farmers and particularly resource poor farmers regarding agricultural risk management push farming community towards poverty and food insecurity which consequently lead to problems like food insecurity and socio-economic disturbance at the national level. Similarly, Drollette (2009) highlighted that farming is main source of bread and butter for farmers, so they are required to recognize and timely address risks in the agricultural sector. Akhtar *et al.* (2017) added that agricultural risk information possess by farmers should be seen in the local context as it might be different in other areas and locations. The authors maintained that literacy, current knowledge in the form of information (Chaudhary and Aryal, 2009) and education (Dadzie and Acquah, 2012) impact perceptions and attitudes of farming community.

According to Akcaoz and Ozkan (2005), evaluation of farmers' perceptions and their attitude is necessary as these shape their decision making process in the context of unexpected catastrophes. Likewise, Lucas and Pabuayon (2011) held an opinion that insufficient

information regarding risk perception and attitude possess by farmers also inhibit policy developers and even researchers to formulate apt risk management frameworks. Additionally, Arce (2010) stressed that extension service providers are also instrumental in adoption, understanding and appropriate management of agricultural risk, which are fruitful for the farming community. Therefore, awareness, knowledge and rural advisory services are important as other agronomic practices for farmers in the domain of agricultural risk management.

According to Šūmane *et al.* (2018), formal and informal knowledge is becoming important in the lives of farmers as the both type of knowledge are helpful in addressing issues like food insecurity, climate change, resource diminution as well as useful in advancing agricultural sector as sustainable and resilient. According to Ding *et al.* (2011) and Lopez-Nicolas *et al.* (2017), natural disasters in the form of droughts not only have been adversely impacting farming sector but also socio-economic fabric of countries. Similarly, Gerkenmeier and Ratter (2018) opined that risk management is a social issue in which integrated approach is urgently needed as it may be difficult to tackle by individual player so, involvement of all stakeholders to tackle risk collectively is the need of the hour. Otherwise, climate change and natural catastrophes may bring fatal negative consequences on agricultural sector.

Previous studies have focused on different aspects of risk and/or agricultural risk management like

attitude and perceptions of farmers about specific crops such as maize, (Akhtar *et al.*, 2017), cotton (Iqbal *et al.*, 2016), conservation practices (Greiner *et al.*, 2009), dairy farming (Flaten *et al.*, 2005; Amamou *et al.*, 2018), organic farming (Williams and Hammitt, 2001; Koesling *et al.*, 2004; Toma and Mathijs, 2007) and shrimp farming (Joffre *et al.*, 2018). However, there is dire need to pay attention on perceptions of farmers (particularly farmers who have experienced or victims of natural disasters) regarding their knowledge in agricultural risk management. So, present study was formulated to fill the gaps in the body of literature.

MATERIALS AND METHODS

The research was conducted in disaster affected or prone to natural shocks in Malaysia. Multistage cluster sampling was used in which 360 farmers were randomly chosen. Pre designed questionnaire was used as research instrument which was pre-tested and later amended for refinement. There were 50 farmers who were randomly selected for pre-testing and not incorporated in the final administration of research. The research instrument was also fine tuned by experts in the field. The respondents (farmers) were asked to rate their perceptions on five point likert scale items ranging from 5 (strongly disagree) to 1 (strongly agree). The research was collected with the assistance of local enumerators who were pre-trained for data collection. The questionnaire was developed into English language however it was translated into Malay language for clarity. Daily session of feed back was held to get suggestions and recommendations for similar kind of research in the future purposes. Furthermore, data analysis was accomplished by the help of SPSS (version 21) to generate statistical results.

RESULTS AND DISCUSSION

Climate change in the form of natural disasters have adversely affected farming community and other stakeholders not only in Malaysia and overall Asia but also other countries. According to Antón *et al.* (2013), management of risk on account of climate changes is an adaptation measure commonly taken by farming community. The knowledge of a person about agricultural risk management holds prime position in decision making process. The findings in the Table 1 show that most of the farming community (76.1%) had knowledge about socio-economic impacts of agricultural risk management. This kind of knowledge is important for farmers as they directly experience the shocks and manage accordingly. Most of the farmers are aware that natural disasters on account of climate changes have been affecting their economic status and driving them towards poverty and other social traps. Some of the farmers may

disconnect socially as their help in decision making might not have worked or a farmer was failed due to received piece of advice to manage their risks. Farmers also keep distance from extension workers whose advise could not become valuable in timely management of agricultural risk.

Traditional or advance knowledge for timely and result oriented risk management is becoming popular naturally among farming community and allied stakeholders. Farmers are becoming inclined towards knowledge management and knowledge creation. They are trying their level best to gather knowledge and apply in their respective fields. Consequently, the fellow farmers also getting informed and motivated about good risk management strategies. In this regard, 72.8% of the farmers were agreed that they had knowledge about agricultural risk management. The farmers who timely decided to manage risk may become successful farmers and it could heavily rely on their knowledge about risk management. It also reveal the personal capacity and competency of farmers to manage accordingly. However, resource poor and less knowledgeable farmers might not sustain if the risk intensity is severe.

The cost for pooling knowledge regarding appropriate risk management may be high. Like, farmers may get paid agricultural advisory services however, due to heavy cost they might become reluctant. That is why, 59.7% of the farmers were uncertain and only 25% of the targeted population were agreed that they know the cost of agricultural risk management. Importantly, some of the farmers may think that the cost for advisory services may be high but in term of saving their agricultural losses could be low. Therefore, it should be duty of advisory service providers to inform farmers about the importance of their valuable advise and motivate farmers to avail services. The public sector also need to formulate mechanism for free agricultural risk management services particularly for resource poor farmers. For this purpose, service providers are required to advance themselves before giving any piece of advice to the farmers or other stakeholders through regular capacity building programmes.

Farmers need to manage risk at various stages of agriculture ranging from sowing to marketing of their products. Only 15.8% of the farmers in the study area had knowledge about managing risk (s) at different stages of agriculture and remaining farmers were either uncertain (34.4%) or disagree (35.8%) in this regard. Even, almost similar percentage (15%) of the farmers knew about concept and procedure in agricultural risk management. Whereas, farmers comprising 38.6% showed disagreement and 31.9% of the farmers were uncertain. So, it revealed that still farmers were lacking proper knowledge about concept and procedures of suitable agricultural risk management techniques. Thus, mostly farmers needed apt knowledge of risk management at

various stages of agriculture along with concept and procedures and service providers are required to guide and facilitate farmers to manage risk properly at various crucial stages of agriculture.

Planning of agricultural risk management is equal important as other factors of agricultural development. The results in this regard are mixed as 44.4% of the farmers had knowledge and 36.7% of the farming community pronounced strongly disagree. Importantly, 10% of the farmers revealed strongly agree that they had knowledge about planning of agricultural risk management. Thus, it can be easily swallowed that still half of the research population were lacking knowledge about proper planning for agricultural risk management. Likewise, farmers containing 28.1% were agreed that they had knowledge about specific crop related risk management. However, 37.5% of the farmers were strongly disagreed about knowledge of crop risk management. Overall, it shows that most of the farmers were less known about planning and specific crop related risk management measures. These issues could adversely

affect food security and malnutrition of the country, if not addressed timely and properly.

The value (3.28) of aggregate average mean depicts that most of the farmers were uncertain as their knowledge regarding management of agricultural risk (s) were not at satisfactory level. Although farmers had knowledge about socio-economic impacts but their knowledge about planning, cost estimation and procedural mechanism were less adequate. Thus, capacity and competency based programmes should be initiated by interested stakeholders exclusively agricultural advisory providers to update knowledge of farmers and even knowledge of their field staff.

The results about knowledge level in the Table 2 reflect that overall, farmers had moderate level (3.28) of knowledge about agricultural risk management. Only 34.7% of the farmers had high level of knowledge while, 4.4% possessed low level of knowledge in the field of agricultural risk management. In conclusion, farmers had somehow moderate level of knowledge but still they need to update their knowledge level regularly on account of unexpected disasters in the agricultural sector.

Table 1. Knowledge of Respondents toward Agriculture Risks Management

| Statements | Scale (Frequency/Percentage) | | | | | Mean | S. D. |
|--|------------------------------|---------------|---------------|---------------|--------------|-------------|--------------|
| | SD | D | U | A | SA | | |
| Knowledge | | | | | | | |
| I know about social and economic impacts of agricultural risk management | 1 (0.3) | 2 (0.6) | 21 (5.8) | 274 (76.1) | 62 (17.2) | 4.09 | 0.519 |
| I know how to manage agriculture risks | 08 (2.2) | 14 (3.9) | 19 (5.3) | 262 (72.8) | 57 (15.8) | 3.96 | 0.753 |
| I know the cost of agricultural risk management | 3 (0.8) | 17 (4.7) | 215 (59.7) | 90 (25.0) | 35 (9.7) | 3.38 | 0.759 |
| I know at which stage I have to manage my agriculture risk | 3 (0.8) | 129 (35.8) | 124 (34.4) | 57 (15.8) | 47 (13.1) | 3.04 | 1.036 |
| I know the concept and procedure within agricultural risk management | 10 (2.8) | 139 (38.6) | 115 (31.9) | 54 (15.0) | 42 (11.7) | 2.94 | 1.055 |
| I know how to plan about agricultural risk management | 132 (36.7) | 11 (3.1) | 21 (5.8) | 160 (44.4) | 36 (10.0) | 2.88 | 1.528 |
| I have knowledge about crop risk management | 135 (37.5) | 6 (1.7) | 80 (22.2) | 101 (28.1) | 38 (10.6) | 2.73 | 1.466 |
| | Total Average Mean | | | | | 3.28 | 1.016 |

*Scale: SD=Strongly Disagree, D=Disagree; U=Uncertain, A=Agree, SA=Strongly Agree

Table 2. Perception of Farmers about their Knowledge Level in Agricultural Risk Management (n=360).

| Level | Frequency | Percentage | Mean | SD |
|-----------------------------|------------|--------------|------|-------|
| High (3.67-5.00) | 125 | 34.7 | 3.28 | 0.548 |
| Moderate (2.34-3.66) | 219 | 60.8 | | |
| Low (1.00-2.33) | 16 | 4.4 | | |
| Total | 360 | 100.0 | | |

Conclusion and Recommendations: It can be gathered that farmers of the research area had knowledge regarding social and economic impacts of agricultural

risk management however, their knowledge were limited about proper planning, cost analysis and concept and procedure for agricultural risk management. Additionally,

level of farmers' knowledge were moderate about agricultural risk management. Thus, the study recommends that service providers are required to graft technical competencies of their staff through various technical development programmes regarding agricultural risk management and then enhance knowledge of farming community.

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