Research Article

Perceptions of Farmers about their Motivation to Manage Agricultural Risk in Malaysia

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Abstract | Climate change affects not only livelihood but also the motivation of farmers. Perceptions of farmers could be influenced by a risky environment to become either risk averse or risk neutral. Indeed, less attention has been paid by researchers to empirically examine the motivation of farmers to manage their agricultural risks exclusively from the lens of Malaysia. Thus, the research was formulated to assess the motivation of farming community towards agricultural risk management in Malaysia. The research data were gathered through pre designed interview schedule from 360 randomly selected farmers through multistage cluster sampling technique. In order to measure motivation of respondents, likert scale items comprising 1 as strongly disagree to 5 as strongly agree were used. The research findings reveal that farmers were motivated to manage their agricultural risks and overall their motivation level was high. Nevertheless, still efforts are required by all stakeholders to keep the motivation level high of farming community at local, regional and international level. Agricultural extension workers as change agents are required to keep the motivation level high otherwise, food security and bread and butter of farmers would become jeopardized by climate changes at the national and global level.

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Introduction

Climate change and other disasters are not only decreasing farm production but also influencing the motivation of farmers. Farmers have also started managing agricultural risks to minimize the losses but natural disasters have negatively affected their perceptions. Farmers are supposed to be motivated, as they have been attached to the agriculture profession since ages. Choosing and adopting a new enterprise could be difficult particularly for resource poor farmers especially when climate change has made farming business as risky. However, according to Lebel and Lebel (2016), a person's perception and attitude are different from each other about risk and small landholding farmers usually avoid high kind of risk (Trujillo-Barrera et al., 2016; Ullah et al., 2015). Similarly, perception and motivation to prevent hazards could influence by severe past experience along with personal emotions. Thus, Siegrist and Gutscher (2008) hold the opinion that people should be motivated to take advance measures in order to reduce personal and economic losses.

Rougoor et al. (1998) and Nuthall (2001) argued that a farmer's management capacity is comprised of two important aspects, personal characteristics (drives, motivations, abilities and biographical factors) and

the decision making process. The previous research disclosed that factors, which affect the decision of farmers, are socio-economic and psychological characteristics (Willock et al., 1999) and there is a strong association between characteristics of the farmer and farm decisions (Ondersteijn et al., 2003). In this regard, Breakwell (2010) also highlighted that decisions about risk are sturdily influenced by an individual's emotions. Likewise, Tinning (2011) stated that motivation is an important personal factor, which could influence the overall behavior of the person. Importantly, Frank et al. (2011) and Church et al. (2018) stated that any rational decision to undertake measures like adaptation needs the element of motivation. Therefore, motivation is an important element for decision making process and complements the personal behavior.

Although various kinds of behavioral and perception based studies have been conducted regarding agricultural risk management still there is a need in the body of literature to assess perception of farmers about their motivations to manage agricultural risks particularly from the lens of Malaysia. The management of agricultural risk is perceived as an important issue as unpredicted weather conditions and irregular rainfall pattern in Malaysia is grabbing attention of all stakeholders (Tang, 2019). Even farmers have also realized the adverse impacts of climate change in Malaysia as the climate changes are negatively influencing agricultural production, along with socio-economic conditions of the farmers (Masud et al., 2017). Plus, Alam et al. (2013) cautioned that Malaysian farmers also lack knowledge, low adaptive capacity and understanding to tackle climate issue for their crops. Thus, agricultural risk management is considered as an important issue for farmers, researchers, academia and policy makers. According to McCarthy and Schurmann (2018), the risk is adheres to the agricultural sector and previous studies were seen either from the perspective of agricultural economics or attack of pest and diseases. Therefore, such type of study is required to grab the attention of all stakeholders involved in the agricultural sector in order to formulate present and future programmes, development projects and refine policies in Malaysia and other parts of the world.

Materials and Methods

The study was carried out in three zones namely East, South and North Zones of Malaysia in which 360 farmers were randomly selected. The sample was drawn by following Krejcie and Morgan (1970) sample size estimation. So, if the farmers' population in Malaysia is more than 1 million, the suitable sample size could be 384 which are sufficient to represent the population. In order to measure the motivation of farmers, a five point likert scale ranging from 1 as strongly disagree to 5 as strongly disagree were used. Reliability analysis was also performed on SPSS. Moreover, the levels of motivation were transformed into an ordinal basis by following class interval formula as high, moderate and low. The questionnaire was tested on 50 farmers. After pre-testing, expert opinion was sought for modifications in the survey instrument. For pre-testing and final execution of the research, the assistance of local enumerators was received. Farmers consent was obtained and research aim was briefly explained before the final execution of the research interview. Lastly, SPSS version 21 was used to generate the statistical results.

Results and Discussion

Reliability is perceived as an important and necessary element while the formulation of the research instrument. It also bolsters confidence of a researcher that efforts are not going to be diluted if and when executed in the actual field conditions. Thus, this analysis was carried out to examine the internal consistency of the research statements. Moreover, a rule of thumb is that the value accepted in Cronbach alpha should be 0.7 or higher (Hair et al., 1998). So, the result of Cronbach alpha depicted that the internal consistency of research items is good/acceptable (0.757) and hence statements pertaining to motivation were assumed as reliable. Additionally, the validity of the research instrument was also confirmed by the consultation of field experts. In conclusion, the research instrument was valid and reliable.

Perceptions of respondents toward their motivation for agricultural risks management

The motivation of farmers toward agricultural risk management was assessed through different perception based likert scale items which are given in Table 1. The findings reveal that approximately half of the respondents (49.7%) agreed that they used risk management techniques at a suitable time. This reflects that farmers were conscious about their livelihood and whenever needed, used risk management techniques.

Table 1: *Perceptions of respondents toward their motivation in agricultural risks management.*

Statements	Scale (Frequency/Percentage)					Mean	S. D.
	1	2	3	4	5		
Motivation towards agricultural risk management							
I am motivated to use risk management techniques at appropriate time	10(2.8)	5(1.4)	35(9.7)	179(49.7)	131(36.4)	4.16	0.863
I want to be successful in using adaptation techniques to manage agriculture risk	12(3.3)	7(1.9)	33(9.2)	188(52.2)	120(33.3)	4.10	0.891
I use risk management techniques to facilitate my farm business	5(1.4)	11(3.1)	40(11.1)	211(58.6)	93(25.8)	4.04	0.785
I am motivated to update my existing knowledge about agricultural risk management for better production	18(5.0)	19(5.3)	44(12.2)	202(56.1)	77(21.4)	3.84	0.986
I have purpose to apply agricultural risk management	28(7.8)	22(6.1)	50(13.9)	182(50.6)	78(21.7)	3.72	1.107
I am confident to try new techniques in agricultural risk management	24(6.7)	44(12.2)	52(14.4)	153(42.5)	87(24.2)	3.65	1.165
Total average mean						3.91	0.966

***Scale: 1:** *Strongly Disagree;* **2:** *Disagree;* **3:** *Uncertain;* **4:** *Agree;* **5:** *Strongly Agree.*

In fact, farmers who use risk management techniques at an apt time do not face much loss in terms of production. Their timely management attitude also mirrors their confidence and positive behavior. This all could be due to peer pressure or efforts of agricultural extension field staff as well. Moreover, there were 36.4% of the farmers who showed strongly agree on this point. However, 9.7% of the farmers were uncertain and 2.8% were strongly disagreed. Thus, most of the farmers were motivated to use agricultural risk management techniques at the appropriate time.

Moreover, there were more than half of the research population (farmers) agreed (52.2%) that they were using various adaptation techniques because they want to be successful in managing agricultural risks. It may be due to the fact that farmers want to ensure that they were using the right adaptation practices to win a risky situation. However, 9.2% of the respondents were uncertain and only 3.3% of the respondents opined strongly disagree with the statement. Nevertheless, the majority of the farmers were agreed and strongly agreed to become successful in practicing numerous adaptation techniques. Thus, this reflects their motivation to become the winner on account of tackling climate changes. Roesch-McNally (2018) conducted a study in the United States and found that farmers were already willing to reduce their risks through various adaptation measures on account of climate changes. So, it reflects that farmers around the globe are quite a concern and motivated to adopt and adapt from present and future perspective. Similarly, farmers are naturally inclined to facilitate their farm business and use risk management techniques. So, facilitating their farm business is one of the important motivational factors for vulnerable farmers. In this regard, an overwhelming majority of the farmers responded agree and strongly agree (58.6% and 25.8%). Whereas, 11.1% of the farmers were uncertain and only negligible percentage of farmers (3.1%) demonstrated disagreement. All in all, the majority of the farming community were motivated to facilitate their farming business for managing risks.

There were 56.1% of the farmers who showed agreement that they are motivated to update their existing knowledge about risk management in agriculture for better production. While 12.2% of the farmers were uncertain and only 5% demonstrated strongly disagree in this regard. Therefore, updating personal knowledge motivated them to manage agricultural risks for ultimate better production. It is quite natural that farmers face climate variations and sudden happening of uneven events so they are mostly motivated to update their knowledge to manage agricultural risks.

Farmers have mostly purpose in their mind to manage agricultural risks and their ultimate goal is to manage their farming and business successfully. So, from the field based results, it can be seen that 50.6% of the farmers declared agreement along with 21.7% demonstrated strongly agree. Meanwhile, 13.9% of the farmers were uncertain and 7.8% of the farmers showed strong disagreement in this context. Nevertheless, more than half of the respondents

agreed that they had a purpose to apply agricultural risk management and thus personal motivation is instrumental in fulfilling their purpose.

There were 42.5% of the farmers who agreed that they are confident to try new agricultural risk management techniques and 14.4% of the farmers were uncertain in this regard. Whereas, 12.2% of the farmers showed disagreement and 6.7% of the respondents demonstrated strongly agree with the statement. Although, results are somewhat encouraging that farmers were motivated to try new techniques still efforts are needed to boost up the confidence of farmers to manage agricultural risks in the area.

It can be gathered from the overall mean (3.91) in Table 2 that farmers motivation level was close to the next scale. It means that farmers were getting motivated as day by day the uncertain climatic variations are changing rapidly and ultimately affecting their motivation level. Additionally, the motivation level of the farming community was higher based on the percentage (68.06%) and frequency (245). It reflects that tackling day to day challenges such as rise of temperature, attack of insect and pest diseases, the occurrence of severe floods and land sliding affect their motivation level to handle accordingly. Furthermore, it also affects the behaviour of farmers to manage risk properly (Keshavarz and Karami, 2016; Lane et al., 2018). Similarly, Menapace et al. (2015) pointed out that observation and knowledge of the farming community regarding climate changes are helpful in the adoption of risk adaptation techniques. Thus, it should be the role of agriculture extension service providers and allied stakeholders to keep the motivation level high for proper agricultural risk management.

Table 2: *Motivation level of farmers about agricultural risk management (n=360).*

Level	Frequency	Percentage	Mean	SD
Low (1.00-2.33)	11	3.06	3.91	0.655
Moderate (2.34-3.66)	104	28.89		
High (3.67-5.00)	245	68.06		
Total	360	100.0		

Conclusions and Recommendations

Motivation to take the risk (s) is getting higher among farmers on account of frequent climate variations however, this could be reverse in severe conditions to risk exposure. The study was designed to examine motivation of farmers towards agricultiural risk management as motivation of farmers were unclear from the field lens. The overall findings reveal that the motivation level of farmers in the study area was high which is an encouraging factor for the concerned agricultural players. However, unpredictable climatic conditions could negatively influence the motivation of farmers. Therefore, the momentum of progress to combat climate changes should be kept high otherwise, it could be either very difficult or even impossible to spark again the motivation of farmers to adhere with the agricultural sector. Public and private advisory services providers are required to remain in contact with farmers to solve their problems and need to offer more robust agricultural risk management programmes from the future perspective.

Author's Contribution

The findings are from PhD research work of Muhammad Ali. Muhammad Ali, Norsida Man and Farrah Melissa Muharram discussed the theme and agreed to include in the thesis. Later, questionnaire was designed and initially assessed by all the authors for validity. Muhammad Ali gathered the data, written the manuscript and reviewed the literature. Norsida Man supervised the research, helped in data analysis and proofreading of the manuscript. Farrah Melissa Muharram also assisted in proofreading, editing and value addition of the manuscipt.

References

Alam, M., C. Siwar, A.H. Jaafar, B. Talib and K. Salleh. 2013. Agricultural vulnerability and adaptation to climatic changes in Malaysia: Review on paddy sector. Curr. World Environ. 8(1): 01-12. https://doi.org/10.12944/CWE.8.1.01

Breakwell, G.M. 2010. Models of risk construction: some applications to climate change. Wiley Interdisciplinary Reviews: Clim. Change. 1(6): 857-870. https://doi.org/10.1002/wcc.74

Church, S.P., M. Dunn, N. Babin, A.S. Mase, T. Haigh and L.S. Prokopy. 2018. Do advisors perceive climate change as an agricultural risk? An in-depth examination of Midwestern US Ag advisors' views on drought, climate change and risk management. Agric. Human Values. 35(2): 349-365. https://doi.org/10.1007/

s10460-017-9827-3

Frank, E., H. Eakin and D López-Carr. 2011. Social identity, perception and motivation in adaptation to climate risk in the coffee sector of Chiapas, Mexico. Glob. Environ. Change. 21(1): 66–76. https://doi.org/10.1016/j.gloenvcha.2010.11.001

Hair, J.F., R.E. Anderson, R.L. Tatham and W.C. Black. 1998. Multivariate data analysis, Prentice Hall Int. Upper Saddle River, NJ.

Keshavarz, M. and E. Karami. 2016. Farmers' pro-environmental behavior under drought: Application of protection motivation theory. J. Arid Environ. 127: 128-136. https://doi.org/10.1016/j.jaridenv.2015.11.010

Krejcie, R.V. and D.W. Morgan. 1970. Determining sample size for research activities. Educ. Psychol. Meas. J., 30(3): 607-610. https://doi.org/10.1177/001316447003000308

Lane, D., A. Chatrchyan, D. Tobin, K. Thorn, S. Allred and R. Radhakrishna. 2018. Climate change and agriculture in New York and Pennsylvania: risk perceptions, vulnerability and adaptation among farmers. Renewable Agriculture and Food Systems, 33(3): 197-205.

Lebel, L. and P. Lebel. 2016. Emotions, attitudes and appraisal in the management of climate-related risks by fish farmers in Northern Thailand. J. Risk Res. 1-19.

Masud, M.M., M.N. Azam, M. Mohiuddin, H. Banna, R. Akhtar, A.F. Alam and H. Begum. 2017. Adaptation barriers and strategies towards climate change: Challenges in the agricultural sector. J. Cleaner Prod. 156: 698-706. https://doi.org/10.1016/j.jclepro.2017.04.060

Menapace, L., G. Colson and R. Raffaelli. 2015. Climate change beliefs and perceptions of agricultural risks: an application of the exchangeability method. Glob. Environ. Chang. 35: 70-81. https://doi.org/10.1016/j.gloenvcha.2015.07.005

McCarthy, B. and A. Schurmann. 2018. Risky business: growers' perceptions of organic and biodynamic farming in the tropics. Rural Soc. 27(3): 177-191. https://doi.org/10.1080/10371656.2018.1504734

Nuthall, P.L. 2001. Managerial ability-a review of its basis and potential improvement using psychological concepts. Agric. Econ. 24(3): 247-262. https://doi.org/10.1111/j.1574-0862.2001.tb00028.x

Ondersteijn, C.J.M., G.W.J. Giesen and R.B.M. Huirne. 2003. Identification of farmer characteristics and farm strategies explaining changes in environmental management and environmental and economic performance of dairy farms. Agric. Sys. 78(1): 31-55. https://doi.org/10.1016/S0308-521X(03)00031-3

Roesch-McNally, G.E. 2018. US inland pacific Northwest wheat farmers' perceived risks: Motivating intentions to adapt to climate change? Environ. 5(4): 49.

Rougoor, C.W., G. Trip, R.B. Huirne and J.A Renkema. 1998. How to define and study farmers' management capacity: theory and use in agricultural economics. Agric. Econ. 18(3): 261-272. https://doi.org/10.1016/S0169-5150(98)00021-8

Siegrist, M. and H. Gutscher. 2008. Natural hazards and motivation for mitigation behavior: People cannot predict the affect evoked by a severe flood. Risk Anal. 28: 771-778. https://doi.org/10.1111/j.1539-6924.2008.01049.x

Tang, K.H.D. 2019. Climate change in Malaysia: Trends, contributors, impacts, mitigation and adaptations. Sci. Total Environ. 650(2): 1858-1871.

Tinning, G. 2011. The role of agriculture in recovery following natural disasters: A focus on post-tsunami recovery in Aceh, Indonesia. Asian J. Agric. Dev. 8(1): 19.

Trujillo-Barrera, A., J. Pennings and D. Hofek. 2016. Understanding producers' motives for adopting sustainable practices: The role of expected rewards, risk perception and risk tolerance. Eur. Rev. Agric. Econ. 43(2): 1–24. https://doi.org/10.1093/erae/jbv038

Ullah, R., G.P. Shivakoti and G. Ali. 2015. Factors effecting farmers' risk attitude and risk perceptions: the case of Khyber Pakhtunkhwa, Pakistan. Int. J. Disaster Risk Reduction. 13: 151-157. https://doi.org/10.1016/j.ijdrr.2015.05.005

Willock, J., I.J. Deary, G. Edwards-Jones, G.J. Gibson, M.J. McGregor, A. Sutherland and R. Grieve. 1999. The role of attitudes and objectives in farmer decision making: business and environmentally-oriented behaviour in Scotland. J. Agric. Econ. 50(2): 286-303. https://doi.org/10.1111/j.1477-9552.1999.tb00814.x