Factors of Development Skills Contribute to the Readiness of Extension Agents during the Pandemic Outbreak in Malaysia

Khairisyahmie Khairisham, Nur Bahiah Mohamed Haris, Jasmin Arif Shah and Jihan Abd Wahab

Factors of Development Skills Contribute to the Readiness of Extension Agents during the Pandemic Outbreak in Malaysia

Khairisyahmie Khairisham[1], Nur Bahiah Mohamed Haris[1*], Jasmin Arif Shah[1,2] and Jihan Abd Wahab[1]

[1*]Department of Agriculture Technology, Faculty of Agriculture, Universiti Putra Malaysia (UPM), 43000 Serdang, Selangor, Malaysia, [2]Institute of Social Science Studies, Universiti Putra Malaysia (UPM), Putra Infoport, 43400 Serdang, Selangor, Malaysia
Email: khairisyahmie97@gmail.com, nurbahiah@upm.edu.my, jasmin.arifshah@upm.edu.my, jie.jihan111@gmail.com
Corresponding Author's Email: nurbahiah@upm.edu.my

Abstract

Covid-19 was found in Wuhan, China in October 2019 where the disease was expected from wildlife and started to spread in other regions including Malaysia. The first case Covid-19 in Malaysia was found in February 2020 when it was detected by tourists who came back from China. On 18th March 2020, Malaysia's government announced the Movement Control Order (MCO), in which all of the sectors were interrupted including the agriculture sector. Thus, extension agents need to come out with a solution to help farmers and entrepreneurs during this hard time, to transfer the information, and increase their confidence and knowledge in agriculture during this pandemic. Therefore, this research is aiming to determine the relationship between Program Development Skills; Planning, Implementing, Monitoring and Evaluation towards their readiness to face the pandemic of Covid-19. From the results, monitoring and evaluating skills significantly contributed towards the readiness of extension agents. These two skills explained about 68.7% of the variance in the readiness of the extension agent to face challenges. Therefore, from this study most of the extension agents were ready to prepare or altered their program development skills based on the pandemic outbreak situation. The research would be important as an indicator of the readiness of extension agents and whether they are well prepared for the adjustment during the post-pandemic.

Keywords: Extension Agent, Program Development Skills, Readiness, Pandemic, Covid-19

Introduction

During the end of the year 2019, there were hundreds of cases reported for novel coronavirus (2019nCoV). According to World Health Organization (WHO), (2020), there were 846 cases of confirmed infected humans, which has caused many fatal cases for 2019-nCoV globally until 24th January 2020, with 25 deaths have been reported. This virus was found by stallholders at the South China Seafood Market in the city of Wuhan province, China. The 2019-nCoV can be

transmitted from one individual to another through droplets, physical contact and any physical objects that have been touched by the infected person.

In Malaysia, the cumulative cases were reported first from 10th January 2020 until 28th January 2020 with 78 cases, 39 of it from Malaysians, and another 36 were among foreigners who came back from China, Jordan, Brazil, and Thailand (Ministry of Health Malaysia, 2020). Nevertheless, the existing information about cumulative cases was changing every day. The fastest-rising number of cases has impacted mental health and has caused panic and anxiety among the community.

In order to prevent the transmission of this virus from spreading among the community and infected more people, the government of Malaysia announced a Movement Control Order (MCO) on 18th March 2020. Since then, Malaysia has been through several phases of MCO with strict rules recommended by the World Health Organization (WHO). As the result, Malaysia has the highest rate of recovery in the ASEAN region. There were currently 7 phases of MCO that Malaysian have been through from 18th March 2020 until 9th June 2020. The 7th phase is known as the Recovery Movement Control Order (RMCO) from 10th June and was assumed to be ended on 31st December 2020.

During this period, the agriculture sector was one of the most affected sectors in this pandemic other than the other sector. The obvious impact during the MCO is the agricultural products were dumped in Cameron Highland, Pahang, which happened due to the fewer buyers. In fact, 2300 farmers experienced losses of RM 1 million per day due to the several hundred tons of harvested products being unsold and discarded (News Straits Times, 5th May 2020). Also, the restriction on transportation and movement of the products to other places was affected due to MCO rules. Some farms might have a shortage of labour workers, where the immigrant is unable to work during the harvest seasons due to the MCO restriction. For farmers, this pandemic affects their operation farm as it is difficult to get the source inputs that come from other countries. From the buyer's side, the price of vegetables and fruits was highly increased due to the limited supplies. Thus, there must be an alternative way that might help the agriculture sector to become more sustained even if this pandemic continuously happened in famine conditions.

Furthermore, the extension agents also were affected by this pandemic. Since the main role of extension agents' is to assist farmers by delivering new information and relevant technology effectively, this situation limits their work. They were hard and unable to meet the client (farmers) thus affecting their work schedule and program that has been planned earlier. In fact, farmers also need to provide a letter of concern or request approval from the district officer if they need to meet the extension agent or run agriculture activities. This situation impacts both parties and a lot of programs that have been planned earlier need to behold due to the pandemic. Therefore, they need to adjust their program development, in terms of their program planning, implementing, monitoring and evaluation, to suites with the pandemic situation without neglecting the SOPs that should be implemented.

Thus, because of the reliance on extension agents' capabilities in transferring new knowledge and technologies to the farmers, this study is aiming to determine their program development skills in adjusting their Planning, Implementing, Monitoring and Evaluation (PIME) activities,

and the level of readiness of extension agent during the pandemic in Peninsular Malaysia. The objectives of this study were to determine the level of Program Development Skills (PIME) and their readiness to face challenges during the pandemic outbreak, to determine the relationships between Program Development Skills (PIME) and the readiness of extension agents to face challenges during pandemic outbreaks and to determine which strongest Program Development Skill contributes the readiness of the extension agent to face challenges during the pandemic outbreak in Peninsular Malaysia.

The extension agents need to be able to adapt to the new norm by applying online application tools like Whatsapp and online meetings which make things easier for both parties during this pandemic. The extension agent is an important person that can improve the knowledge and skills of the smallholders and farmers through extension activities and planning is a crucial step that must be met the beginning for determining the extension agent's performance (Rosnita et al., 2017). During the pandemic outbreak, the extension agents need to carry out their activities differently from the usual basis because they cannot meet up with their clients face-to-face as they used to before. Therefore, the planning of the programme with the client will be difficult but this possibly happens with an alternative method such as online sources.

Besides, implementing is the other skill that needs to be competent by the extension agent. They must constantly work and adapt the programme to suit or enhance the current situation. The study indicates that the implementation skill of the extension agent can be imposed by the farmers' achievement (Rosnita et al., 2017). In order to be subsistent during MCO, the innovation process, practices, and services must be implemented by the extension agent. A study has shown that communication between extension agents and clients will succeed if the communication technology is practised and also can improve farmers' plantation and their productivity even though it is not in the MCO period (Mahamood et al., 2017).

Next, an extension agent should monitor and evaluate their client's activities or performance to make sure that every activity that they had planned and implemented works for them. This skill is important to give the result that can determine the achievement of the extension agent development program as a whole. Monitoring also is a vital skill in order to make sure knowledge about the progress, and the effect on outcomes whether it is implemented effectively or not (Yusuf et al., 2017).

Research Methodology
In this research, the targeted population for this sampling is 177 respondents, consisting of extension agents in Peninsular Malaysia. All the individual contact information of extension agents, for instance, their phone number and email were provided by the Department of Agriculture (DOA), Head Quarters in Putrajaya, by states. The number of extension agents are varying from each state depending on the size of the states.

The data was collected using a quantitative approach: a questionnaire survey that was distributed to the respondent through Google Forms. Before the actual test was distributed among the extension officers, the pilot test has been done to assure that the question was understandable to them. The result of the pilot test has shown that program development skills and readiness are all above 0.7. Based on Kaiser Meyer Olkin (KMO) test and Bartlestt's test are convenient options to measure sampling adequacy, 0.7 are acceptable and sufficient

for running the actual survey (Barret & Morgan Jr, 2005). The question was drafted in the Malay language because it is an understandable language for the respondents. The designs of the questions are easy to interpret. The questionnaire survey was adapted from Sail (2010) and Motolani et al (2017) which contains three parts. The first part (section A) is a closed-end statement answer that asks about the demographic questions. The second part (section B until section F) it consists of independent variables that cover program development skills (planning, implementing, monitoring and evaluation). The last part (section G) will measure the readiness of extension to face challenges during the pandemic. Those skills become the main reference used for constructing the question sets in order to achieve the objectives of this research. A six-point Likert-scale option (1=strongly disagree to 6=strongly agree) was used to measure the respondents' perceptions towards the given statements in the questionnaire.

All data was completely collected using Google Forms and distributed to agricultural extension agents in Peninsular Malaysia from June 2020 until July 2020. The researchers collaborate with the Department of Agriculture (DOA) to get all information needed related to the extension agent's data.
It was a self-administered questionnaire where the survey was distributed directly to the respondent. This research is using SPSS Version 25 to analyse the data collected according to the research objectives. All data that have been collected were extracted from Google Forms into IBM SPSS Version 25 to be analysed.

The statistical analyses used in this study were descriptive analyses; which answer the first objective (to determine the skill level of extension agents in PIME and readiness). Descriptive analysis was used to analyse the respondent socio-demographic profile of the respondents. According to Woodrow (2014), this is the right technique to break the numerous data into a simpler order. Obtained data were interpreted into mean, frequency, percentage and standard deviation. The Pearson Correlation Coefficient analysis was obtained to answer the next objective, which is to determine the relationship between the program development skills (PIME) and the extension agent's readiness during the pandemic outbreak. This analysis is also used because the respondents are homogenous where they have the same job scope. Next, the Multiple Linear Regression method has been done to determine the 3rd objectives, which is to identify which PIME skills that might contribute (the most) to the readiness of extension agents during the pandemic outbreak in Peninsular Malaysia.

Results
Demographic Profiles of Respondents
Based on the result in Table 1 most of the extension agent respondents were from the age category of 31 to 40 years old, making up 47.5% of the total respondents. The second category of respondents was from the category age of 20 until 30 years old with 28.8%, continuing with 12.4% from 41 until 50 years old. Meanwhile, the lowest age group of extension agents was in a category between 51 to 60 years old with a count of 11.3%. The mean age of this study was 36 years old. In terms of gender, men were more than women with a frequency of 127 men (71%) over 50 women (28.2%). This data also represents the whole data from the DOA where the majority of the extension agents are aged between 31 to 40 years and mostly men.

Table 1
Respondents' Demographic by Age and Gender (n=177)

Items	Peninsular Malaysia	
Age	**Frequency**	**Percent (%)**
20 - 30	51	28.8
31 - 40	**84**	**47.5**
41 - 50	22	12.4
51 - 60	20	11.3
Total	177	100.0
Gender		
Male	**127**	**71.8**
Female	50	28.2
Total	177	100.0

The research was conducted in Peninsular Malaysia where the states were divided into four (4) different regions; Southern Region (Negeri Sembilan, Melaka, and Johor), Central Region (Perak and Selangor), East Coast Region (Pahang, Terengganu, and Kelantan) and Northern Region (Kedah and Pulau Pinang). Table 2 the number of respondents from the East Coast Region was the highest among the three (3) zone with 89 respondents (50.3%), followed by Central Region with 46 respondents (26%). For the Southern Region and Northern Region, the respondents were between 25 (14.1%) and 17 (9.6). In terms of the state distribution, most of the respondents were from Pahang with 38 respondents (21.5%) followed by Perak (19.8%), while the lowest respondents were from Kedah with only 7 respondents (4%).

Table 2
Respondents' Demographic by Region and States (n=177)

Items	Peninsular Malaysia	
Regions	Frequency	Percent (%)
Southern Region	25	14.1
Central Region	46	26.0
East Coast Region	89	50.3
Northern Region	17	9.6
Total	177	100.0
States		
Johor	16	9.0
Kedah	7	4.0
Kelantan	23	13.0
Melaka	4	2.3
Negeri Sembilan	5	2.8
Pahang	38	21.5
Perak	35	19.8
Pulau Pinang	9	5.1
Selangor	12	6.8
Terengganu	28	15.8
Total	177	100.0

The respondent's education was classified into four (4) categories which were Secondary school, Certificates, Diploma, and Bachelor as shown in Table 3. Most of the extension agents qualify for Agriculture Certificates with a percentage of 79.7%, followed by Diplomas with 7.3%, Bachelor which counts 7.3% and only 1.1% from secondary school. This is in line with the eligibility of extension agents' requirement where they need to have at least a certificate in agriculture education-based. This also shows that the majority of extension agents are educated and qualified to guide the farmers.

Table 3
Distribution of Respondent's Education (n=177)

Itmes	Peninsular Malaysia	
Level of Education	Frequency	Percent (%)
Degree	13	7.3
Diploma	21	11.9
Certificate	**141**	**79.7**
Completed Secondary School (SRP/SPM/STP)	2	1.1
Total	177	100.0

In term of working experience, most of the extension agents had been working between 0 to 5 years which represent 33.3%, while the least extension agents had been working for 21 to 25 years and 31 to 36 years which both categorize is 1.1% (as shown in Figure 1). The mean experience of respondents in this study was 9.63 years.
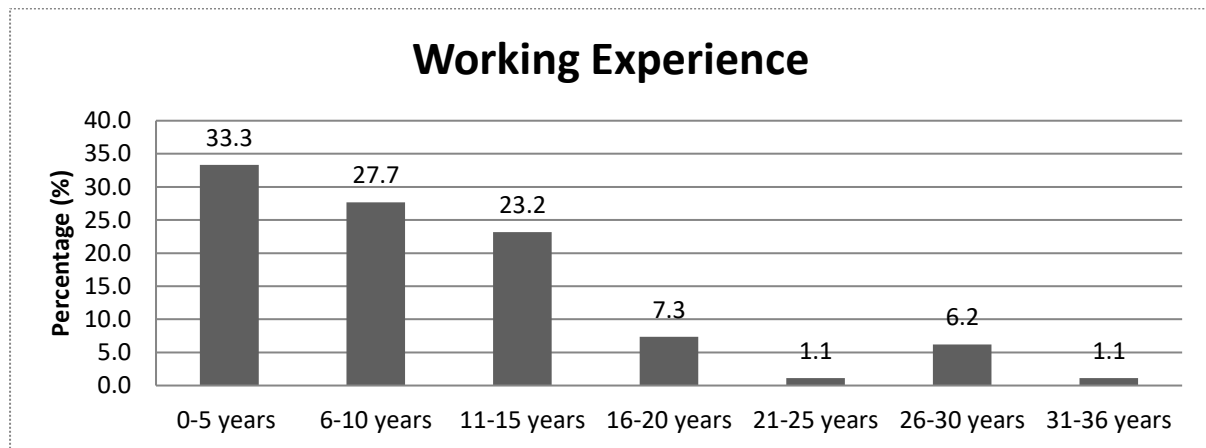

Figure 1. Distribution of Respondents' Working Experience (n=177)

The level of Development Skills (PIME) and the Readiness of Extension Agents
The level of development skill and readiness of extension agent in Peninsular Malaysia to face pandemic were presented in Table 4. Planning skill shows the highest frequency in high level among other skills, which was 111 out of 177 respondents (62.7%). The mean for planning skill was 4.58 (SD = 0.67), also indicating a high level (categorised between 4.34 to 6.00). While for implementing and monitoring skills, the mean score was 4.54 (SD = 0.72). The majority were rated at a high level (59.0%), followed by 39.0% for moderate and 1.1% for low level for implementing skill.

Monitoring skill were also noted as a high percentage which is 60.5% while the low level has the lowest percentage which was 2.3%. The mean for competency level in evaluation skills was 4.53, indicating a high level. From the results, it shows that the extension agents rated their evaluating skills at a high level with 56.5%, followed by 41.2% for moderate and 2.3% rated at low level of evaluation skill.

Table 4
Level of Program Development skills among Extension Agent (n=177)

Skill	Level	Frequency	Percentage (%)	Mean	SD
Planning skill	Low (1.00–2.669)	1	0.6		
	Moderate (2.67–4.339)	65	36.7	4.58	0.67
	High (4.34–6.00)	**111**	**62.7**		
Implementing skill	Low (1.00–2.669)	2	1.1		
	Moderate (2.67–4.339)	69	39	4.54	0.72
	High (4.34–6.00)	**106**	**59**		
Monitoring skill	Low (1.00–2.669)	4	2.3		
	Moderate (2.67–4.339)	66	37.3	4.54	0.76
	High (4.34–6.00)	**107**	**60.5**		
Evaluating skill	Low (1.00–2.669)	4	2.3		
	Moderate (2.67–4.339)	73	41.2	4.53	0.77
	High (4.34–6.00)	**100**	**56.5**		

In terms of the readiness of extension agents to face challenges during the pandemic, the overall mean score is 4.68 with a standard deviation of 0.71. Table 5, shows that the majority of extension agents have a high level of readiness (65.5%), followed by moderate with 33.9% and only 0.6% show a low level of readiness of extension agents.

Table 5
Level of readiness among extension agent (n=177)

Level	Frequency(%)	Percentage	Mean	SD
Level of				
Readiness of Extension Agent				
Low (1.00–2.669)	1	0.6		
Moderate (2.67–4.339)	60	33.9	4.68	0.71
High (4.34–6.00)	**116**	**65.5**		

Relationships between Program Development Skills (PIME) and the Readiness of Extension Agents during the pandemic outbreak in Peninsular Malaysia
The relationships between program development skills and the readiness of extension agents during the pandemic are indicated in Table 6. The result shows that all the PIME skills correlate significantly to their readiness at the level of 0.01%. Based on Guildford Rule of Thumb (1973), these findings show a positive and high result with the level of readiness of extension agents.

Table 6
Relationship between PIME Skills towards the Readiness of Extension Agent

	Readiness (Y)	Planning (X1)	Implementing (X2)	Monitoring (X3)	Evaluation (X4)
Readiness (Y)	1				
Planning (X1)	0.885**	1			
Evaluation (X2)	0.844**	0.911**	1		
Monitoring (X3)	0.837**	0.891**	0.916**	1	
Evaluation (X4)	0.748**	0.779**	0.810**	0.804**	1

**. Correlation is significant at the level of $p < 0.01$

Strongest independent variables influencing the readiness of Extension Agent when facing pandemic outbreak
Among four independent variables (PIME), the monitoring and evaluation skills are the skills that significant with the readiness of the extension agent (where $p < 0.01$) as the p-value is 0.004 and 0.006 respectively. Of these two, the highest is monitoring skills (0.342) followed by evaluation skills (0.291) (as depicted in Table 7). This indicates that monitoring skills, followed by evaluation skill contribute to the readiness of extension agents to face challenges during the pandemic in Peninsular Malaysia.

Table 7
Multiple Regression Analysis for the Readiness of Extension Agent in Peninsular Malaysia

Coefficients	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta(β)		
(Constant)	0.949	0.211		4.492	0.000
Planning	0.143	0.101	0.134	1.416	0.159
Implementing	0.047	0.123	0.047	0.381	0.704
Monitoring	**0.342**	0.117	0.365	2.925	**0.004**
Evaluation	0.291	0.106	0.315	2.755	**0.006**

**. *Correlation is significant at the level of $p < 0.01$*

The contribution of all variables towards the readiness is measured by adjusted R Square. The value of adjusted R Square is 0.679 (as in Table 8), which further indicates that 67.9% variance of the level of readiness is explained by monitoring and evaluation, and the balance of 32.1% is explained by other factors.

Several studies have found that there is a significant relationship between competency of monitoring and employee performance (Latifah, 2017). Based on the past studies that relate to program development in a specific crop pertaining to work performance, not all type of crop gives the same significant results, because there some research in technology transfer based on rice check technology showed that monitoring and evaluation are not significant with the work performance. This could be explained that studies in granary areas were not performed in terms of monitoring farmers' activities (Athilia, 2015). Thus, this study needs to ensure the extension agents' is competent in all aspects of program development, particularly during this pandemic outbreak.

Table 8
Adjusted R Square of the Readiness of Extension Agent in Peninsular Malaysia

Level of Readiness			
R	R Square	Adjusted R Square	Std. Error of the Estimate
.829[a]	0.687	0.679	0.40701

Discussion
From the results obtained, monitoring and evaluation skills plays a vital role, towards the readiness of extension agent during pandemic outbreak. This is also in line with other studies that have proven that monitoring and evaluation are very important, particularly to increase the level of readiness of extension agents (Tiraieyari, 2010). This study proves that even during the pandemic, the program development skills need to be sustained and the extension agent has to be ready. It is known that during this time, when most activities were restricted not only Malaysian but all people around the world need to adapt to the new norm such as meetings and activities being done remotely. Through the online platform, monitoring and evaluation activity can be done compared to implementing skills during the pandemic situation. This is best describing the situation that happens and might support the results of this study. However, even though monitoring contributes a moderate level towards the level of readiness, it is still a vital skill to make sure all the information and knowledge can be transferred to the farmers effectively (Yusuf et al., 2017).

Monitoring can be done in various ways through online and application platforms, including WhatsApp, message and other applications that suitable. This study also has shown that mass media technology has given an impact on the farming community to improve good communication between the extension agent and farmers. This is also supported by Listiana et al (2019) where the smartphones and laptops have now become important devices that connected with the extension agent and farmers, and that could help both parties to interact with each other, particularly during the pandemic. These 'gadgets' becoming more engaging nowadays and even senior farmers are using this in their own ways.

All the program development skills (particularly monitoring and evaluation) influence the readiness of the extension agent to face challenges during the pandemic. According to Purnomo et al (2020), readiness was a condition for someone to be mentally and physically prepared to achieve the target in a certain situation. This study shows that most of the extension agents had the least readiness for planning and implementing skills probably during the early stage of the pandemic outbreak. They were unsure what action to be taken because

this pandemic is so sudden and needed more extra care due to everyone's health condition. However, their readiness becomes stronger for monitoring and evaluation skills along the journey, in order to help clients (farmers) during the pandemic outbreak in Peninsular Malaysia. This is probably because they can communicate through online mediums, which is very helpful for farmers to assist them, particularly during the famine.

In a nutshell, extension agents need to develop their development skills to increase their competency particularly to face challenges during the endemic phase or even any circumstances that might come in the future. The extension agent needs to provide full support and assistance to the farmers and clients as this is the main role of working as an extension agent. As program development skills are one of the core elements in the competencies, this becomes essential to prepare the extension agent with skills that enable them to assist the farmers even during hard situations (like pandemic) in the future.

References
Athilia, A. (2015). Perception on Competency of Extension Agents among Farmers in North Seberang Perai, Penang (Unpublished Final Year Project thesis). Universiti Putra Malaysia.

Barrett, K. C., & Morgan Jr, G. A. (2005). SPSS for intermediate statistics: Use and interpretation: Psychology Press
Guilford, J. P. (1973). Fundamental Statistic in Psychology and Education (5th ed.). New York: McGrew-Hill

Latifah, M. H. (2017). The Involvement of Extension Agents in Planning, Implementing and Monitoring Activities Based on The Rice Check at IADA Pekan, Pahang (Unpublished Final Year Project thesis). Universiti Putra Malaysia.

Listiana, I., Efendi, I., Mutolib, A., & Rahmat, A. (2019). The behavior of Extension Agents in Utilizing Information and Technology to Improve the Performance of Extension Agents in Lampung Province. Journal of Physics: Conference Series, 1155(1).

Motolani, M. M., Hassan, S., Olagunju, O., & Ramle, K. (2017). ToT and HRD competencies and its relationship to extension agents' performance among cocoa smallholders. Journal of Agriculture and Veterinary Science (IOSR-JAVS),; 10, 14-21.

Purnomo, S. H., Sari, A. I., Emawati, S., Rahayu, E. T., & Triaswati, R. P. (2020). Agriculture Extension Officer's Attitude and Readiness in Using Information and Communication Technology in Indonesia. Russian Journal of Agricultural and Socio-Economic Sciences, 100(4), 3–9.

Tiraieyari, N., Idris, K., Jegak, J., & Hamzah, A. (2010). Competencies Influencing Extension Workers.

Sail, R. M. (2010). Human resources development and transfer of technologies and their relationship to extension agents' job performance. Akademika 79, 79(10),127–137

Shah, J. A., Asmuni, A., & Ismail, A. (2013). Roles of Extension Agents towards Agricultural Practice in Malaysia. International Journal on Advanced Science, Engineering and Information Technology, 3(1), 59–63.

Spencer, L., & Spencer, S. (1993). Competence at Work: Model for Superior Performance. New York: John Wiley & Sons.

Woodrow, L. (2014). Writing about quantitative research in applied linguistics. London, UK: Springer.

Yusuf, M., Hassan, S., Olagunju, O., and Hanif, M. N. L. (2017). "The Involvement Level of Extension Agent in Activities Based on Rice Check Technology at IADA PEKAN Pahang, Malaysia." IOSR Journal of Agriculture and Veterinary Science, 10(07):81–85.