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Seeking of Agriculture Information through Mobile Phone among Paddy Farmers in Selangor

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Abstract

Introduction: Mobile phone is one of the communication tools that have always mattered in many fields included agriculture. The development of the agriculture sector in the rural area is significant to diminish poverty among farmers. Agricultural activities are known to provide opportunities for employment and generating income in the rural area. Poverty can be reduced through adequate investment and improvement in the agriculture sector. Enhancing the use of mobile phone will empower farmers with relevant agriculture information. Thus, agriculture production and profits as well as farmers' food security and livelihood will increase. **Methodology:** This study uses a quantitative approach, where an adopted and adapted questionnaire was employed to obtain the data needed. Through purposive sampling, 400 respondents were surveyed. The respondents selected were those who are involved in paddy farming in Selangor. **Results**: The finding of the study reveals that paddy farmers in Selangor are comfortable using mobile phones in seeking agricultural information. The result for communication apps indicates that WhatsApp is the best choice to get information using a mobile phone as 279 respondents responded they were comfortable using WhatsApp to get and share information through a mobile phone. Whereas, the highest agriculture information the farmers sought are information on pest control, farm safety information, and information on pesticide/weed**. Conclusion/Recommendation:** Due to the well-received mobile phones usage among farmers, it is recommended that organizations such as the Department of Agriculture and Barat Laut Selangor Integrated Agriculture Development Area (IADA) to improve strategies in distributing information on paddy farming using mobile phones.

Keywords: Information and Communication Technology, Mobile Phone, Poverty, Agricultural Sector

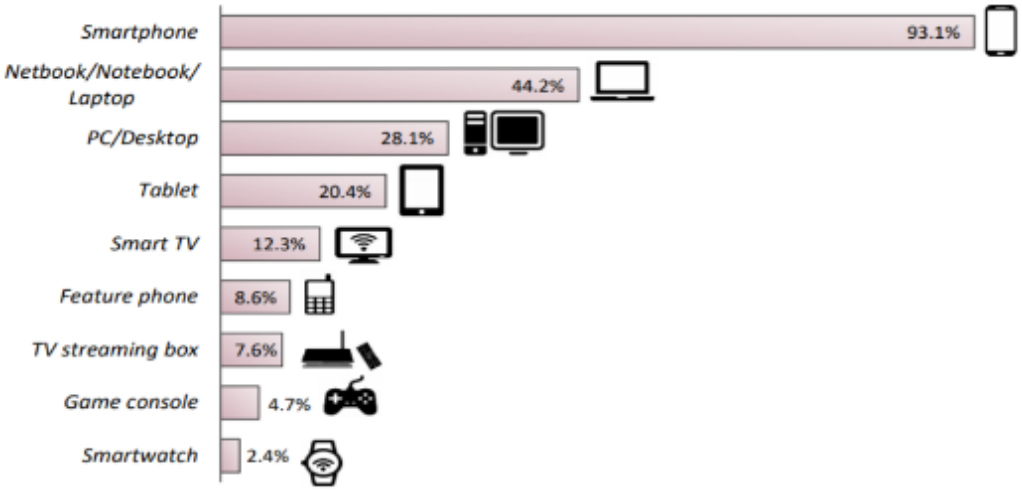
Introduction

Mobile phone has become an important need for everyone regardless of whether they from the urban or rural areas. The importance of mobile phones is undeniable. For farmers, efficiency in using mobile phones has significantly influenced the way they work and improve their living standards. A mobile phone helps to disseminate information with no time limit. According to Community Development (HRCA, 2001), the efficient use of mobile phones contributes to a positive impact on poor farmers, surrounding communities, and strengthens their position in the market chain. Efficient use of the mobile phones also encourages active participation to enhance the farmers' social and economic development. Yet, the rural community, especially the farmers, are challenged with many obstacles to using a mobile phone. Hosseini et al. (2009) indicated financial, organizational, technical, social, and illiteracy are the some of challenges.

Mobile phone usage among farmers in Malaysia

A report by Malaysian Communication and Multimedia Commission (2018) proved that our citizens prefer to use a smartphone the most to access the Internet compared to other devices (Figure 1.0). The increasing percentage of smartphones usage every year indicates that smartphones are one of the necessary tools to access the Internet. Smartphones are the most preferred device opted by Malaysians (93.1%) to be connected to the Internet in 2018 compared to other devices. This is followed by using laptop/netbook (44.2%), PC/ desktop (28.1%), and tablet (20.4%).

Figure 1.0: Device to access the Internet



Source: Malaysian Communication and Multimedia Commission (MCMC), 2018

Agriculture Information Distribution Through Mobile Phones in Malaysia

Information is crucial in increasing agricultural production and improving marketing and it is one of the distribution strategies (Oladele, 2006). The significance to expanding agricultural production eventually lies with the country's capacity to disseminate important information to the farming community to facilitate effective adoption of new production techniques, use of farming information sources, decision-making on markets, costs, and techniques of conserving water, soil, and vegetable resources (Kiplagat, 1998).

Besides, mobile phones can distribute information through calls, text messages, WhatsApp, E-Mobile and search engines. Another benefit of mobile phones is that farmers can search for information at any time within twenty-four hours per day without feeling guilty of disturbing agriculture officers (AO) outside of the office hours. From past research, there are nine important agriculture information sought by farmers, namely: Information on pest control, Farm safety information, Information on pesticide/weed, Information on paddy varieties, Information on agricultural practices, Crop production information, Information on loan/subsidy, Weather information, and Marketing information.

Based on a survey by MCMC (2018) (Figure 2.0), the most popular communication application is WhatsApp (98.1%), followed by Facebook Messenger (55.6%), WeChat (36.8%), and Telegram (25.0%). The result showed, the WhatsApp application can help our community to spread and share news extensively.

Figure 2.0: Communication apps account ownership

Source: Malaysian Communication and Multimedia Commission (MCMC), 2018

Literature Review

Nowadays, 95% of the people worldwide live in an area with mobile network coverage and over 90% of expected new phone subscriptions in 2020 are situated in the developing countries. Previous studies on the development of mobile phone often presented a debate that ICTs have the potential to aid in rural growth and poverty reduction (Donner, 2008; Duncombe & Heeks, 2002; Hudson, 2006; Saunders et al., 1994). Furthermore, Richardson et al. (1998) stated that information requirements of farmers change from time to time due to the change in agricultural technologies, environmental changes, agricultural policies, and the emergence of agricultural innovations. Likewise, the literature surveyed highlight a fast growth of mobile phones in the emerging developing countries of Asia and their key role in reducing information search costs and increasing market efficiencies.

Moreover, the ability of mobile phones can bring a refreshed momentum to the field of agriculture. According to Yunus (2011), the speediest way to get out of poverty right now is

to have one mobile telephone. One example which shows the prosperous usage of ICT in agriculture is "mobile telephony". It has been used to access information on market price, weather, and many other aspects (Pickernell et al., 2004). However, issues such as lack of connectivity and poor quality of services, especially in rural areas, should be addressed by relevant bodies to enable farmers enjoy the perceived benefits of mobile phones. Rural farmers often face a knowledge gap in regard to the best practices in agriculture. Mobile phone services can contribute to bridging the knowledge gap, thus increasing agricultural production and profitability.

Methodology

The study area chosen for this research is Selangor, Malaysia. Selangor is located in the central region of Peninsular Malaysia which consists of several paddy growing areas. A quantitative study was undertaken to validate the dissemination of information via mobile phone usage with a sample of 400 paddy farmers from Barat Laut Selangor Integrated Agriculture Development Area (IADA) Selangor. To identify the sample, purposive sampling approach was used. Respondents were selected from eight areas (refer Table 1.0) which are: Sawah Sempadan, Sungai Burong, Sekinchan, Sungai Leman, Pasir Panjang, Sungai Nipah, Pancang Bedena, Bagan Terap and Sungai Panjang who currently use mobile phones.

Table 1.0
Sampling technique

No.	Area	Number of farmers (people)	Sampling (%)	Actual Collection
1.	Sawah Sempadan	1139	12.1	48
2.	Sungai Burong	1651	17.5	70
3.	Sekinchan	784	8.3	33
4.	Sungai Leman	1289	13.7	55
5.	Pasir Panjang	643	6.8	27
6.	Sungai Nipah	987	10.4	42
7.	Pancang Bedena	1684	17.8	71
8.	Bagan Terap	1268	13.4	54
9.	Sungai Panjang			
	Total	**9445**	**100**	**400**

$$\text{Sampling (\%)} = \frac{\chi}{\text{Total farmers}} \times 100$$

Based on the calculation, this study selected 400 samples because according to Najib (1999), a bigger sample size will strengthen the reliability and validity of the study.

Results and Discussion

To analyse the data, SPSS software was used with which analyses such as mean and standard deviation were employed to describe the general data of the study. Table 2.0 shows the importance of agriculture information among paddy farmers. The research instrument examined the frequency of the agriculture information received by sources listed. There were

five different degrees of frequency to be chosen by the respondents, where 1=not very important; 2=not important; 3=sometimes important; 4=important; and 5=very important.

Table 2.0
Mean and Standard Deviation for items of importance agriculture Information

Items	Mean	S.D
Information on pest control	4.53	.529
Farm safety information	4.52	.515
Information on pesticide / weed	4.50	.530
Information of paddy varieties	4.46	.533
Information on agricultural practices	4.45	.555
Crop production information	4.39	.659
Information on loan / subsidy	4.39	.565
Weather information	4.02	.873
Marketing Information	3.71	1.222

The data were analysed using descriptive statistics such as mean and standard deviation (SD). Results reveal that the information on pest control (M=4.53) is the most important information for farmers, followed by farm safety information (M=4.52). This is because crucial information on pest control will save the paddy crops from catastrophic diseases. This finding is in line with Alibuet et al. (2016) where required information on pest control is ranked first due to production constraint, information about diseases ranked second, and information about weeds ranked third. Furthermore, Babu et al., (2012) found that the important information needs for rice farmers were pest and disease management, pesticide, and fertilizer application. However, this finding contradicts the findings of Diagne et al. (2013) who found weed infestation to be the most important biotic constraint, followed by insect pests, and then birds. This inconsistency may be due to the enormous differences between the 18 major rice-producing countries that were studied by Diagne et al., (2013).
The results also indicate that marketing information is the lowest (M=3.71) because, in Malaysia, the marketing for rice is arranged by Padiberas Nasional Berhad (BERNAS). Bernas is a government organization that aims to facilitate farmers in marketing their yields. Thus, farmers do not need to worry about yield marketing. Besides, information on pest control is a major concern among farmers because pests have the potential to destroy all their crops if they are not careful to handle it. Thus, private companies can always send their messages and promotions to farmers personally to create their marketing chain. These findings contradict Benard et al., (2014) who found that the majority of the farmers in their study need information on marketing.

The importance of agricultural information and application using mobile phones is presented in Table 3.0. This item used five different degrees of frequency to be chosen by the respondents, where 1=Never; 2=Slightly Often; 3=Sometimes; 4=Frequent; and 5=Most Often. Additionally, Table 3.0 also discusses the applications used to obtain information, where a=Never used; b=Call; c=Message; d=WhatsApp; and e=E-Mobile.

Information about pests such as weeds and insects and how to cope (82%) shows the highest percentage followed by fertilizer or pesticides information (89.8%). Both the information are

essential to every farmer to better prepare and equip themselves with knowledge before any agricultural disaster occurs in their paddy farm. Apart from that, the table also reveals that the WhatsApp application is the most used application by the respondents to get information using a mobile phone. However, mobile phone call is highlighted to get information if they want to know an urgent situation.

Table 3.0
Frequency for Items of Importance Agriculture Information and Application Usage

No.	Agricultural information	Scale (%)					Applications used (%)				
		1	2	3	4	5	a	b	c	d	e
1.	Crops information that have high potential (eg: Type of varieties)	18.3	2.5	22.5	55.8	1.0	18.3	21.8	0.3	59.8	0.0
2.	Preparatory agricultural land information	37.0	8.8	16.8	37.0	0.5	37.0	15.5	0.3	47.3	0.0
3.	How to care for plants (Example: Method of preparation of seeds/care tips)	20.8	4.3	24.5	49.3	1.3	20.8	20.5	0.0	58.8	0.0
4.	Agricultural equipment information (Example: Machinery)	34.5	6.8	23.5	34.0	1.3	34.5	14.2	0.5	50.7	0.0
5.	Opportunities for online marketing	30.8	0.8	6.8	58.8	3.0	3.0	30.8	0.3	65.8	0.3
6.	Price of crops	31.8	2.0	4.0	61.8	0.5	0.5	30.5	0.5	68.3	0.3
7.	Harvesting techniques	10.3	4.3	63.5	19.5	2.5	26.8	9.3	0.3	63.5	0.3
8.	Fertilizers / pesticides information	2.0	1.0	6.5	89.8	0.8	0.0	0.8	10.0	89.3	0.0
9.	Information about pests and how to cope (Example: Weeds, insects)	5.3	3.8	8.8	82.0	0.3	0.5	1.3	16.5	81.8	0.0
10.	Financial / capital / loan information	11.3	4.0	56.5	26.8	1.5	35.5	7.2	0.8	56.3	0.3
11.	Weather information	10.8	3.8	72.8	12.0	0.8	22.8	4.0	0.3	72.8	0.3

1= Never; 2= Slightly Often; 3=Slightly Sometimes; 4= Frequent; 5= Most Often
a= Never used; b= Call; c= Message (SMS); d=WhatsApp; e= E-mobile

Based on the results in Table 3.0, paddy farmers are more inclined to using mobile phones than contacting the agricultural officers or extension agents in order to get information about agriculture. These findings show differences with past researchers such as Hassan et al. (2010); Odiaka and Obinna (2010); Shaffril et al. (2009); and Umeh (2008). The past researchers stressed that the rural community prefer to obtain information about agriculture through different media such as television and newspaper.

The main challenge among older farmers in using a mobile phone is that the keypad is too small which can make it difficult for them to identify the alphabets. Furthermore, their fingers are big and rough, making it harder for them to use the keypad which is suitable for the younger generation. Albeit, a few successful farmers use Android mobile phones that are equipped with big screen. But, for some older farmers, they like to use classic mobile phones because the screen of an Android mobile phone is more sensitive which becomes a challenge for them to use the mobile phone. Another problem in using mobile phones among farmers is that it requires a high cost for continuous usage. Based on their income, it may become a burden for them to continuously use mobile phones actively due to the telco-charge. The results shown in Table 4.0 prove that problems subsisted are caused by cost (M=3.40).

Table 4.0
Mean and Standard Deviation for items problems of mobile phone usage

Items	Likert Scale (% of frequency)					Mean	SD
	1	2	3	4	5		
It is difficult to send a message (keypad too small)	14.8	10.3	13.3	20.5	41.3	3.63	1.467
It is easily broken/damaged	12.3	14.0	13.5	25.5	34.8	3.57	1.400
Screen size is too small	14.0	12.8	16.0	17.3	40.0	3.56	1.465
The battery life is too short	14.2	12.0	18.3	17.8	37.8	3.53	1.451
Access to the internet is slow	20.3	7.5	10.5	26.8	35.0	3.49	1.523
Phone signal is weak and inconsistent	13.0	8.8	22.5	32.3	23.5	3.45	1.295
It requires a high cost for continuous usage	9.8	13.0	20.3	41.5	15.5	3.40	1.183
It does not have the characteristics to access the internet (Prepaid users)	28.0	13.0	4.0	21.5	33.5	3.20	1.666
The memory space is too limited	17.3	18.3	19.8	27.0	17.8	3.10	1.359
It is not user-friendly	19.0	18.3	10.5	40.5	11.8	3.08	1.348
Rapidly changing phone model	21.5	15.8	11.3	38.8	12.8	3.05	1.384

It is difficult to use the features on your mobile phone	16.8	29.8	15.5	31.8	6.3	2.81	1.226
Too much time spent on call so addictive	73.0	16.5	3.8	3.8	3.0	1.47	.955

Thus, to overcome these problems, farmers nowadays are using an application known as 'WhatsApp' that can be installed through the application store in the mobile phones that have access to the Internet. Through this app, the farmers can create groups among them including Agriculture Officer (AO) as their knowledge expert. For example, IADA paddy farmers have their own WhatsApp group. Through this group, they can ask, share, debate, and learn about paddy farming. For any technical discussion, the AO will guide and give explanation to the farmers in this group.

Conclusion and Recommendation

As a conclusion, mobile phones are the best choice for paddy farmers in seeking agricultural information. Thus, this is the suitable time for our government to take action and follow our neighbouring countries to develop mobile apps intended for the use of paddy farmers. For example, the Philippines has developed NMRice Mobile app and Myanmar has Green Way mobile app. Applications such as these will help our farmers to get information through a mobile phone with increased efficiency. Furthermore, the extension agent needs to conduct adequate workshops, training, and awareness in order to educate the farmers on how to learn and use mobile phone technology. Babu et al., (2012) stated that a better understanding of farmers' agricultural information needs and information sources could help guide the extension and other agricultural programs to better target specific groups of farmers.

Moreover, the study emphasizes the vital importance of complementary skills and other organizations to realize the full potential of better access to telecommunications. There is no advantage in access to better information if it cannot be leveraged (Mittal et al., 2010).

Thus, mobile phones are worthwhile for farmers to save their time, decrease price disparity, and reduction in transportation and information costs. The results of this research show that mobile phones have tremendous potential to help our farmers to become E-farmers when they know how to search for information using a mobile phone. Knowledge will empower the farming communities to improve their livelihoods and build a more sustainable and resilient agriculture.

Contribution

This study has highlighted several novel contributions. The first contribution of this study is proved by several studies such as Hellstrom (2010), Souter et al. (2005), and Sife et al. (2010). They agreed that mobile phones can contribute to the development of agriculture and rural areas. Mobile phones can enhance the opportunities for increased income for farmers and are a tool for reducing vulnerabilities for smallholder crop farmers in rural areas of the least developed countries. The second contribution of this study is verified by studies such as Katengeza, et al. (2011) and Lwasa et al. (2011). The two empirical studies based on mobile phone users have proved that a greater distance of farmers from markets (i.e., greater remoteness) implied a greater intensity of phone use. The advent of mobile phones is stimulating a revolution in rural connectivity for smallholder farmers and other small-scale rural producers in developing countries.

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