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Level of Agro-based Website Surfing Among Malaysian Agricultural Entreprenuers: A Case of Malaysia

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ABSTRACT

The main objective of this study was to identify the level of agro-based website surfing among Malaysian agro-based entrepreneurs and factors affecting it. A total of 450 respondents were selected for this study from six fields of agro-based industry namely food processing, non-food processing, farming, plantation, fisheries and animal rearing. The sample list was gained from three agencies including Department of Agriculture Malaysia (DOA), Farmers Organization Authority (FOA) and Agro Bank of Malaysia. Data were collected using face to face interview method. Results revealed that level of agro-based website surfing among Malaysian agricultural entreprenuers was at low level, while the official website of Department of Agriculture Malaysia (DOA) (www.agrolink.moa.my/doa) was the most surfed website followed by the official website of Malaysian Agriculture Research and Development Institute (MARDI) (www.mardi.my) and the official website of Federal Agriculture Marketing Authority (FAMA) (www.agrolink.moa.my/fama). Based on the t-test and ANOVA test done there was significance difference in agro-based website surfing in respondent's gender, level of education and age.

Key Words: Agro-based website; Agricultural entreprenuer's age; Level of education; Gender

INTRODUCTION

Agriculture sector as been planned in the 9th Malaysia Plan (9MP) will be developed as third income generator for Malaysia. Export for this industry had recorded slighty more than 10 million US dollar in 2005 and it is expected that it will increase to 27 million US dollar in 2010. This fact signals a big potential this sector has and supposedly it must be furthermore developed. One of the alternatives that can be taken to expand this sector is to cultivate agro-based website surfing interest among agro-based entrepreuers. According to Ince (2001), a website is a related collection of World Wide Web (WWW) files that includes a beginning file called a home page. A company or an individual are informing on how to get to their website by giving the address of their home page. From the home page, access to all the other pages on their site also can be gained. Agro-based website is very helpful, local agro-based websites for example, such as websites of Ministry of Agriculture and Agro-Based Industry provides lot of information needed by agriculture community. In this websites lot of online services are provided such as sending complaints online and searching information through their online library.

According to Gakuru *et al*. (2009), the ability of ICT including website surifng in helping agricultutre sector cannot be denied. Through the website, agro-based entrepreneurs are able to search information for products and services online such as buying seed before making the purchases. The website therefore will become a resource of information for the public generally and agro-based entrepreneurs specifically. By supplying helpful tips and articles that are relevant to the agriculture industry, agro-based entrepreneurs will become more educated, will have more confidence in conducting their agro-business project and will become more educated about agriculture and get answers to many of their questions. Despite great advantages, website can provide, agriculture community seems still relying on traditional ways of getting information. Sadaf *et al*. (2006) in his research stressed that encouragement to utilize ICT is important due to fact that some agriculture community still rely to traditional ways by relying to their neighbours, family and fellow farmers in getting agriculture information.

According to Barton (2003), the website provides farmers with the ability to communicate over long distances with other farmers, agribusiness and universities. In fact, website considered to be one of the most popular online services for farmers, considering that it is often cheaper than the telephone. Based on the facts given, there is a lot of website surfing advantages, but do agro-based entrepreneurs in Malaysia utilize these advantages for the profits of their agro-based business, thus one of the aims of this study is to identify the level of agro-based website surfing among Malaysian agro-based entrepreneurs.

According to Burke and Sewake (2008), a total of 78% agro-based entrepreneurs used internet for agro-

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business purposes. Moreover they stated that more than 54% have their own websites and the website owner agreed that their website will bring profits to their agro-business. According to Muske *et al*. (2004), agro-based entrepreneurs agreed that possessing and surfing website will increase their agro-business profits. Surfing website is a great advantage, but according to Ohmart (2002), some challenges to surf website identified are the safety and reliability of using the website, some of them found to have concern to conduct transactions through the website. Some of them also claim that surfing the website is not cost effective.

Mishra and Williams (2006), suggested that adoption of computers with internet access allowed website surfing activity and it is positively related to age and educational level of the operator, off-farm business income, presence of a spouse and regional location of the farm and this is supported by a research done by Burke and Sewake (2008), who claimed that those with higher education level prefer to own and surf website for their agro-business. Referring to Arokoyo (2008), factor of ICT readiness of the country and the major stakeholders in the agricultural sector, was found to be a limiting factor for effective ICT use. Despite the facts stated are those situations also can be found in Malaysia? Thus, the main objectives of this study is to reveal Malaysian agro-based entrepreneurs level of agro-based website surfing and factors that affecting it.

MATERIALS AND METHODS

Respondents for this study were chosen from all states in Peninsular Malaysia. A total of 450 respondents who were agro-based entrepreneurs were interviewed. The population for this sample is 3580. According to Krejcie and Morgan (1970), if the population is between 3500 and 3999 the appropriate number of sample is 346. This study tends to have bigger sample, because according to Mohammad Najib (1999), bigger sample size will strengthen the reliability and validate the study. The respondents were sampled based on the list gathered form three sources, which were Farmers Authority Organization (FAO), Agro Bank Malaysia and Department of Agriculture Malaysia (DOA). The respondents selected were entrepreneurs who involved in food processing, farming, plantation, fisheries, non-food processing and animal rearing. Data for this research was collected using questionnaire through face to face interview. Trained enumerators were employed to administer the questionnaires. Researchers and enumerators went to the respondent's house, farm or factory to conduct the data collection based on the address given. On average, the enumerators took about 30 min to complete the face to face interview. The questionnaire was pre-tested and improved prior to actual data collection.

RESULTS AND DISCUSSION

The respondent's profile. Referring to Table I, it proves that male agro-based entrepreneurs were still dominant in agriculture sector. Slightly more than two thirds (67.9%) of the respondents were male. A large majority of the respondents (99.1%) were Malays. Malaysia is still lacking of future agro-based entrepreneurs based on the score mean of respondent age, which was 45.4 years (Table I). This was parallel with a study done by Ezhar *et al*. (2007), who claimed that the average of agro-based entrepreneur's age in Malaysia was 46.7 years. Most of the respondents (36.2%) were between 41-49 years, followed by those whose age $\geq$50 years. Respondents whose age $\leq$40 years was the minority group (28.8%). In term of highest education received, 45.1% of the respondents had SPM certificate (Malaysia Education Certificate), while 31.8% had primary education, while only 13.8% of the respondents had university level of education (diploma, degree, master science & PhD) thus gives an early indication that majority of the respondents were among those who had lower income. For agriculture education, most of the respondents interviewed had no formal education in agriculture (88.2%). For the purpose of this study, 12 states in Peninsular Malaysia had been divided into four zones. Perlis, Kedah and P. Pinang had been included in northern zone, while Kelantan, Terengganu and Pahang were included in east coast zone. States such as Selangor, Perak and Kuala Lumpur were included in central zone and Negeri Sembilan, Malacca and Johor were included in southern zone. Majority of the respondents were from east coast zone (37.8%), followed by central zone (26.0%), southern zone (23.8%) and northern zone (12.4%).

Over two fifths (41.6%) of the respondents were food processing entrepreneurs followed by farming (27.1%) and animal rearing (21.3%). Only small number of respondents was involved in fisheries (8.4%), plantation (3.3%) and non-food processing (2.4%); thus promotion activity should be strengthened by the related agencies to double its number. Majority of the respondents had been involved in this sector for a period of 6-10 years (26.9%) and $\geq$15 years (26.2%). For starting investment in agro-business, 35.4% respondents invested more than RM11, 001, while majority of respondents gained between RM28, 001 to RM60, 000 per year. Based on the mean score of respondents income gained per year (RM114, 373.33), agro-business proved to benefit them. The result rejected the early indication that majority of the respondent were among those who had lower income (Table II).

What are the most possessed ICT tools, which has internet connection within it among the respondents? To answer this querry, four devices that have internet connection within it had been selected and respondents were asked to indicate whether they had the devices or not. The data presented concludes that mobile phone was the most owned device by the respondents (Table III). More than four fifths (97.3%) of the respondents owned it and this is pertinent with the study done by Munyua *et al*. (2007) and Tolero *et al*. (2006), where they found mobile found was the

Table I. Profile of respondents included in the study (n=450)

Profile	Frequency (n=450)	Percentage	Mean
Age (years)			**45.4**
≤40 years	134	29.8	
41-49 years	163	36.2	
≥50 years	153	34.0	
Gender			
Male	302	67.1	
Female	148	32.9	
Ethnic			
Malay	446	99.1	
Chinese	3	0.7	
Indian	1	0.2	
Education Level			
Primary School	143	31.8	
SPM/SPMV	203	45.1	
STPM/Matriculation	42	9.3	
Diploma	39	8.7	
Degree/ Master/PhD	23	5.1	
Education Level in Agriculture			
No formal education in agriculture	397	88.2	
Certificate in agriculture	39	8.7	
Diploma in agriculture	11	2.4	
Degree in agriculture	3	0.7	
Zone			
East coast	170	37.8	
Central	117	26.0	
Southern	107	23.8	
Northern	56	12.4	

Table II. Business characteristics of respondents interviewed (n=450)

Variables	Frequency	Percentage	Mean
Type of agro-business			
Food processing	181	40.2	
Farming	109	24.2	
Animal rearing	87	19.3	
Fisheries	30	6.9	
More than one agro-business	17	3.8	
Plantation Non-food processing	14	3.1	
(Ex: seed, fertilizer)	11	2.4	
Involvement in agro-business (years)			**11.5**
≤2	41	9.1	
3 – 5	102	22.7	
6 – 10	121	26.9	
11 – 15	68	15.1	
≥15	118	26.2	
Starting investment			**18,486.03**
<RM4000	150	33.3	
RM4001-11,000	141	31.3	
>RM11, 001	159	35.4	
Income gained per year			**114,373.33**
<RM28, 000	147	32.7	
RM28, 001-60,000	163	36.2	
>RM60, 001	140	31.1	

Table III. Internet devices possession (n=450)

Internet devices possesion	Having it	Percentage
Mobile phone	438	97.3
Computer	243	54.0
PDA	25	5.6
Web Site	8	1.6

popular tools among the agriculture community. This was followed by computer (54.0%) and PDA (5.6%). Respondents should be encouraged to have their own website based on the small percentage recorded on those who have their own website (1.6%).

For the purpose of knowing the level of agro-based website surfing, respondents were asked to indicate the level of their agro-based website surfing using scale of 0 (never), 1 (seldom) and 2 (always). Descriptive analysis for each website showed in Table IV. Instead of showing percentage distribution for each website, this table also shows value of mean score for each website. Generally, level of agro-based website surfing among Malaysia agro-based entrepreneurs was at low level based on the low mean score (between 0.01 to 0.37 from maximum 2.0 mean score) recorded for 36 agro-based websites listed.

Three most surfed agro-based websites were Department of Agriculture Malaysia website (www.agrolink.moa.my/doa) with the mean of 0.38, followed by website of Malaysian Agricultural Research and Development Institute (MARDI) (www.mardi.my) with the mean of 0.28 and website of Federal Agriculture Marketing Authority (FAMA) (www.agrolink.moa.my/fama) with the mean score of 0.26. Even though that the level of agro-based website surfing among the respondents was at low level, these three websites can be developed in order to attract more agro-based entrepreuers to use it. E-dagang website for squeal rearing (www.us.geocities.com/puyuhemas06/) recorded the lowest mean score of 0.01.

Is there any significant difference between selected independent variables with the level of agro-based website surfing? Table V and VI concluded this question. For the purpose of comparisons, independent t-test and ANOVA test were conducted.

Independent t-test was used to know the different between the level of agro-based website surfing and respondents level of education. For analysis, respondent level of education and gender were categorized into two types. First category was on secondary school and below, which included those who never go to school, primary school and those who received PMR (Lower Malaysia Education Certificate), SPM (Malaysia Education Certificate) and SPMV (Malaysia Vocational Education Certificate) education. While for the second category, which was Pre University and above, it included STPM (Higher Malaysia Education Certificate), Matriculation, diploma, degree, master science and Ph. D. There was significant difference found on the level of agro-based website surfing among the two groups studied (Table V). For secondary school and below ($\underline{M}$= 0.674, $\underline{S.D}$= 0.075) and for those who received education of Pre university and University [$\underline{M}$=0.741, $\underline{S.D}$=0.156; t (450) = -6.000, p=0.000]. Based on the result gained, there was a possibility that those who received Pre University and University level of education had better agro-based website level of surfing compared to

Table IV. Level of agro-based website surfing among respondents (n=450)

Name of agro-based website	Percentage			Mean
	0	1	2	
Department of Agriculture Malaysia www.agrolink.moa.my/doa	70.0	22.9	7.1	0.37
Malaysian Agriculture Research and Development Institute www.mardi.my	76.9	18.4	4.7	0.28
Federal Agriculture Marketing Authority (FAMA) www.agrolink.moa.my/fama	79.3	15.6	5.1	0.26
Farmers Organization Authority (FOA) www.agrolink.moa/lpp	84.2	10.7	5.1	0.21
Agriculture Bank of Malaysia www.agrobank.com.my	84.2	13.6	2.2	0.18
Department of Fisheries Malaysia www.agrolink.moa.my.dof	85.6	11.6	2.9	0.17
Malaysia Palm Oil Board (MPOB) www.mpob.gov.my	89.3	8.7	2.0	0.13
University Putra Malaysia (Agriculture Based University) www.upm.edu.my	89.1	9.3	1.6	0.12
Department of Veterinary Services www.agrolink.moa.my.jph	90.2	7.1	2.7	0.12
Federal Land Consolidation and Rehabilitation Authority (FELCRA) www.felcra.com.my	88.9	10.2	0.9	0.12
Rubber Industry Smallholder Development Authority (RISDA) www.risda.gov.my	91.1	7.8	1.1	0.10
Agro-Based Entrepreneurs Association(KUAT) www.kuat.com.my	92.9	5.3	1.8	0.09
Federal Land Development Authority (FELDA) www.felda.net.my	92.7	6.9	0.05	0.08
Tani.net.my www.tani.net.my	93.8	4.9	1.3	0.08
National Farmer Association (NAFAS) www.nafas.com.my	94.4	3.8	1.8	0.07
Padi Beras Nasional Berhad (BERNAS) www.bernas.com.my	94.7	4.6	0.7	0.06
Muda Agriculture Development Board www.mada.gov.my	95.3	3.8	0.9	0.06
E-Dagang Websites for Farming www.agribazaar.com,my	95.1	3.8	1.1	.06
Malaysia Rubber Board www.lgm.gov.my	95.1	4.4	0.4	0.05
Malaysia Pineapple Industry Board www.mpib.gov.my	95.8	3.3	0.9	0.05
National Fishermen Association (NEKMAT) www.nekmat.com	96.0	2.9	1.1	0.05
Malaysia Cocoa Board www.koko.gov.my	96.7	2.7	0.6	0.04
National Tobacco Board www.ltn.gov.my	96.4	2.9	0.7	0.04
Malaysian Rubber Development Council (MARDEC) www.mardec.com.my	96.9	2.4	0.7	0.04
Padinet.com.my www.padinet.com.my	97.8	.9	1.3	0.04
E-dagang Web Sites for Catfish Rearing www.ikankeli1.tripod.com	97.1	2.0	0.9	0.04
Malaysia Pepper Board www.sarawak.jaring pepper.	97.6	1.8	0.6	.03
Malaysia Palm Oil Promotion Council www.mpopc.org.my	97.6	1.8	0.6	0.03
Kemubu Agriculture Development Board www.kada.moa.gov.my	97.6	1.8	0.6	0.03
Department of Agriculture Sabah www.doa.sabah.gov.my/tani	97.6	2.0	0.4	0.03
Department of Agriculture Sarawak www.doa.sarawak.gov.my/tani	98.0	1.6	0.4	0.02
Orchid Association of Malaysia www.posociety.com	8.0	1.8	0.2	0.02
Thlaquatics.com www.thlaquatics.com	98.7	.9	0.4	0.02
E-dagang Web Sites for Farming and Rearing www.sevenseven.com	97.8	2.0	0.2	0.02
Malaysia Timber Industry Board (MTIB) www.mtib.gov.my	98.2	1.6	0.2	0.02
E-dagang Web Sites for Squeal Rearing www.us.geocities.com/puyuhemas	98.7	1.3	-	0.01

Table V. Comparison in agro-based website surfing between level of education and gender using independent t-test (n=450)

Variables	n	Min	S.D	t	p
Level of education received				-6.000	0.000
Secondary school and below	341	0.674	0.075		
Pre university and university	109	0.741	0.156		
Gender				2.300	0.000
Male	302	0.698	0.121		
Female	148	0.674	0.055		

Table VI. Comparison in agro-based websites surfing between selected independent variables using ANOVA (n=450)

Variables	n	Mean	S.D	F	p
Zone				**2.440**	**0.064**
East coast	170	0.673	0.106		
Central	117	0.701	0.094		
Southern	107	0.702	0.089		
Northern	56	0.696	0.140		
Age				**3.649**	**0.027**
≤40	134	0.710	0.141		
41-49	163	0.686	0.101		
≥50	153	0.678	0.061		
Involvement Period				**1.224**	**0.300**
≤2 years	40	0.704	0.192		
3-5 years	102	0.684	0.113		
6-10 years	122	0.695	0.100		
11-15 years	68	0.706	0.103		
≥16 years	118	0.676	0.043		
Amount of starting investment				**1.466**	**0.232**
≤RM4,000	150	0.681	0.067		
RM4, 001-RM11, 000	141	0.688	0.122		
≥RM11, 001	159	0.701	0.116		
Income gained per year				**1.874**	**0.155**
<RM28, 000	147	0.681	0.085		
RM28, 001- RM60, 000	163	0.703	0.120		
>RM60, 001	140	0.685	0.104		

those who received education level of secondary school and below. These results is closely related with those of Daramola (2005) and Papzan and Yaghoubi (2007), who claimed that those with higher education level prefer to own and surf website for their agro-busines compared to people who only with lower education.

Are men and women having any different in term of agro-based website surfing? Based on the independent t-test done, it was found that there was significance different in agro-based website surfing between male (M=0.698, S.D=.121) and female respondent [M=0.674, S.D=0.055; t (450) = 2.300, p=0.000]. This suit with the findings of Nakabugu (2001), Gye-Heui (2008) and Agneta Broos (2005) stressed that ICT usage including internet usage and website surfing is different between male and female. They stressed that female is the group who less benefited from ICT usage and this can effect the female agro-entreprenuers productivity as stressed by Javed *et al.* (2006) who claimed that female agro-based productivity can decrease due to the less of usage in ICT. This study was also keen to know whether factors such as zone where respondent stayed, age, involvement period, starting investment and income gained

per year are affecting their level of agro-based website surfing. For this purpose ANOVA test was conducted.

Zone. Zone, where the respondents stayed may not affect their level of agro-based website surfing. Based on the ANOVA test done, F Value (4,450) = 2.240, *p>0.05*, there was no significance different in agro-based website surfing between the four zones studied. There was a possibility that respondents from the four zones had equal level of agro-based website surfing among them. The highest mean score recorded for those who lived in southern zone (0.702), followed by those who lived in central zone (0.701), those who lived in northern zone (0.696) and the lowest mean score recorded by those who lived in east coast zone (0.673). This result was not surprising as it parallel with study conducted by Salleh *et al.* (2008a) and Musa *et al*. (2008) who claimed that zone or regions people living in will not affected their level of website surfing.

Age. Is the level of agro-based website surfing among the older and younger agro-based entrepreneurs had any difference? Table VI had the answer for the question. Based on the results presented, F Value (3, 450) = 3.649, p <0.05, there was no significance different between the three age groups studied, thus indicates that age plays an important role in determining the level of agro-based website surfing among respondents. There is possibility that older group of respondents were the group who surfed the agro-based website less compared to the younger group based on what have been done by Md. Salleh *et al*. (2008b) and Ndubisi and Kahraman (2005), who claimed that older entrepreneurs had less interest in website surfing compared to the younger agro-based entrepreneurs and this is strengthened by Irfan *et al.* (2006), said that agriculture community prefer to have agricultural information from mass media such as television as their first choice, radio as their second choice and print media as their third choice.

Post Hoc test done reveals that level of agro-based website surfing of respondents age from 50 years and above had significance difference with group age of 40 years and below. There was a possibility that respondents age from 50 years and above recorded the lowest level of agro-based website surfing based on the lowest mean score recorded by this group (0.678) compared to other two groups.

Involvement period. This study also tends to know whether period of involvement in agro-business project affecting respondent's level of agro-based website surfing or not. For this purpose ANOVA test was done and from the results gained shows that F Value (5,450) = 1.224, *p > 0.05*. This signals that there was no significance difference in level agro-based websites surfing among the five groups of involvement period studied thus concluded that the level of agro-based websites surfing between the three groups is same and this is in line with what have been done by Siti Zobidah *et al*. (2008).

There was a possibility that those who involved in agro-business project for 11-15 years had the highest level agro-based website surfing among the five groups studied based on the highest mean score recorded (0.706). Second highest mean score recorded was the respondents with period of involvement $\leq$2 years (0.704).

Starting investment. Money invested by the respondents to start their agro-business projects was not affecting the level of agro-based website surfing among the respondents. Based on the results presented in Table VI, F Value (3,450) = 1.466, *p>0.05*, thus indicated that there was no significance difference in level of agro-based website surfing between the three groups studied and this is not suprising as it is in line with what have been done by Basu *et al.* (2003) and Southern and Tilly (2009).

The highest mean score recorded by group who invested $\geq$ RM11, 000 (0.701) followed by group who invested RM4, 000–RM11, 000 (0.688). The lowest mean score recorded by those who invested $\leq$4, 000 (0.681).

Income gained per year. This study also had interest in looking at financial factor. Are those with larger financial capability able to have a computer and internet connection thus increasing their level of agro-based website surfing? From the ANOVA test done reveals that F Value (3,450) = 1.874, *p>0.05*, thus signalled that there was no significance difference in level of agro-based website surfing between the three groups studied. This is in line with Tiwaah Frimpong (2008) and Flores (2006) who claimed one would expect the effect of income on ICT to be positive in the relatively richer regions. One could argue that even though poorer households spend a higher proportion of income on food, their interest in obtaining information to 'kick' out of poverty may encourage them to be willing to pay for ICT information. In essence, there are no statistically significant differences in households' willingness to have internet connection tools thus allowing them to surf the website.

The highest mean score recorded by respondents who gained between RM28, 000 to RM60, 000 a year (0.703) followed by those who gained RM60, 001 and more (0.685) and those who gained RM28, 000 and less (0.681).

CONCLUSION

Overall, it can be concluded that level of agro-based website surfing among respondents was low. The most possessed internet devices were mobile phone and computer. This study found that the most surfed agro-based websites was Department of Agriculture Malaysia website (www.agrolink.moa.my/doa). Findings reveal that there was difference in agro-based website surfing in factors such as level of education, gender and age factor. Results reveal that only a quarter of the respondents were among women. Department of Women Development can play their roles more effectively in encouraging women involvement in agro-based industry. ANOVA test concluded that there was significance different in agro-based website surfing and level of education. There is big possibility that those with Pre University and University level of education get more profits, because of their better level of agro-based websites surfing.

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