

Age and Education Level as Indicators in Acquiring ICT Skills Among Rural Entrepreneurs in Samarahan, Sarawak

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Abstract

The ability to capitalize on the digital economy by agro-based entrepreneurs greatly depends on their ability to acquire sufficient ICT knowledge and apply ICT in the running of their businesses. While the development of digital infrastructure is aggressively planned and implemented, awareness, knowledge, and skills to support its usage may still be lacking among the rural population. This paper reports preliminary studies on the knowledge and extent of ICT usage among rural entrepreneurs in Samarahan Division of Sarawak. Data collected from questionnaires were analyzed by descriptive and inferential statistics using ANOVA. There are correlations between ICT learning ability and age, as well as education background. Although 65.2% of respondents were positive about learning ICT, the mean value, the minimum and maximum values indicated that item scores decreased as the respondent's age was higher, suggesting that older respondents felt learning ICT is not easy. The findings also show a significant difference in the ability in learning ICT with respect to age groups (p -value = 0.015) and varying levels of education (p -value = 0.008) among the sampled population.

Keywords: Samarahan, entrepreneurs, ICT, age, education

Umur dan Tahap Pendidikan Sebagai Penunjuk Aras di dalam Memperolehi Kemahiran ICT di Kalangan Usahawan Luar Bandar di Samarahan, Sarawak

Abstrak

Keupayaan usahawan asas tani untuk memanfaatkan ekonomi digital adalah sangat bergantung pada kebolehan mereka untuk memperolehi pengetahuan teknologi maklumat dan komunikasi (ICT) yang mencukupi dan mengaplikasikan ICT dalam menjalankan operasi perniagaan. Walaupun pembangunan infrastruktur digital telah dirancang dan sedang giat dilaksanakan, namun tahap kesedaran, pengetahuan, dan kemahiran berkaitan penggunaan ICT masih rendah di kalangan penduduk luar bandar. Artikel jurnal ini melaporkan dapatan awal kajian berkenaan pengetahuan dan tahap penggunaan ICT di kalangan usahawan luar bandar di bahagian Kota Samarahan, Sarawak. Data yang dikumpul dari borang kaji selidik telah dianalisa dengan statistik deskriptif, dan statistik inferensi menggunakan ANOVA. Analisa yang diperolehi menunjukkan ada hubung kait di antara kebolehan pembelajaran ICT dengan umur dan latarbelakang pendidikan. Walaupun 65.2% jumlah responden mempunyai persepsi positif tentang pembelajaran ICT, nilai tertinggi dan terendah bagi skor min yang diperolehi mempamerkan bahawa skor item ini berkurangan apabila umur responden meningkat, yang mana menunjukkan responden yang lebih berumur merasakan bahawa pembelajaran ICT adalah tidak mudah. Dapatan kajian juga menunjukkan perbezaan yang signifikan dalam keupayaan pembelajaran ICT, berdasarkan kumpulan umur (nilai-p = 0,015) dan tahap pendidikan yang berbeza (nilai-p = 0,008) di kalangan populasi sampel.

Kata Kunci: *Samarahan, usahawan, ICT, umur, pendidikan*

1. INTRODUCTION

In line with technology advancement and realizing the great potential of the digital economy, the state government of Sarawak had taken initiatives to encourage entrepreneurs in the state, including rural entrepreneurs, to embrace the digital economy. To achieve the objectives, one of the initial steps taken is to equip entrepreneurs, particularly those in rural areas, with Information and Communication Technology (ICT) skills so that they can pursue bigger opportunities in e-commerce. ICT development is rapidly changing and evolving. Hence, rural entrepreneurs' ability to capitalize on the digital economy greatly depends on their ability to acquire sufficient ICT knowledge and apply ICT in the running of their businesses. One initiative is to design specific ICT training modules that can assist these entrepreneurs in acquiring the relevant knowledge and skills.

While the development of digital infrastructure is aggressively planned and implemented, awareness, knowledge, and skills to support its usage may still be lacking among the rural population. Thus, it is vital to gauge the current knowledge and the extent of ICT that the entrepreneurs are applying in their present business, to determine their level of training needs. Such project is aimed to complement the government's efforts by identifying the problems and obstacles faced by rural communities; devise and provide ICT training modules and continuous support that may raise awareness and usage of ICT. The division of Samarahan was chosen due to its proximity to the Higher Institutions of Learning, such as Universiti Teknologi MARA (UiTM) Cawangan Sarawak, Universiti Malaysia Sarawak (UNIMAS) and Teachers Training Colleges, where it is believed that the location may facilitate knowledge transfers to the communities to upgrade further their standard of living via e-commerce or digitalized economy from agro-based industries.

This current work addresses Samarahan rural entrepreneurs' ability to learn ICT, prior to designing suitable ICT and entrepreneurship training modules for them. This paper reports on findings pertaining to the ability in learning ICT by age group, as well as by level of education among rural entrepreneurs in Samarahan Division of Sarawak.

2. LITERATURE REVIEW

ICT has progressively enhanced the digital revolution through the development of various devices, applications, digital platforms, computer networks, as well as services associated with the usage of the internet and advanced communication technologies (Iwu& Ike, 2009; Iwu&Nzeako, 2012). ICT is also a tool in teaching and learning processes in various education levels and fields, including entrepreneurship (Ministry of Education, Malaysia, 2013; Fu, 2013; Duruamaku-Dim et al., 2014). Individuals with technical or vocational skills and good knowledge of ICT are considered to be self-reliant, self-employed and can fit properly into today's technological, entrepreneurial and business world (Mkposi, 1996). Adopting the Technology Acceptance Model (TAM) (Davis, 1986), Lee, Korzar and Larsen (2003) described an individual's acceptance towards technology can be determined by two main indicators namely, the perceived usefulness, and the perceived ease of use.

The perceived usefulness indicator covers the perception on how using technology helps in improving an individual's performance in his/her work, productivity, and work productivity enhancement. The perception on the ease on learning to operate the technology, its practicality and skills enhancement is indicated by the technology perceived ease of use. The model also explores the user's attitude and behavioural intentions to summarize the overall acceptance on technology. Over the years, the model was enhanced and improvized covering other relevant variables to represent users acceptance towards technology. In developing countries, there may still be the influencing factors of age and education background, in efforts to pursue a fully digitalized economy.

According to Hawthorn (2000), the influences of age start to become obvious from the mid-forties onwards, so that aging people are not just another minority group but an important segment of the population. Hernes, Hestman and Haeland (2000) reported that even among teachers who declare that they have a reasonable command of the internet is negatively correlated with age. According to their study, about 77% of those 25 years or younger agreed that they have a good command of the internet, while 25% of those 56 years or older did not. This is also coherent with the findings of Liang and Chao (2002), who found that younger Taiwanese teachers were more technology literate than their older colleagues. As a nation progressing towards becoming a technologically developed country, the government of Malaysia is very aware of the significance of ICT, the positive impact it will bring

to Malaysia. Thus, numerous ICT programmes have been introduced within the current education system (Umar et al., 2014). The major objective of inculcating ICT in the education curriculum is to assist students in improving their knowledge, skills, and applications of ICT. In other words, to head start the education at a young age. To achieve this, educators themselves must be well competent in ICT, as the younger generation of students are mostly '*Digital Natives*' and comfortable using ICT devices. This could also be influenced by education level, as an earlier report by Erdogdu and Erdogdu (2015) suggested that there is a positive relationship between education level and the impact of ICT knowledge on students' academic performance.

Abdul Rashid (2016) reported on an analysis of the capability of ICT among rural women entrepreneurs in Malaysia, where the respondents were young people aged between 21 to 40 years. The findings showed that the young age range influences the use of ICT among respondents. Most of the respondents own computers, which indicated that the rural communities are aware of the benefits and importance of technology for their businesses. However, most of them do not fully apply the use of internet technology in their lives. They prefer simple and easy technologies compared to advanced technologies that are perceived as difficult but could be beneficial. Zulkarnain et al. (2019), in their study on the level of ICT usage among SME entrepreneurs in Malacca, found that the use of e-commerce among them is still at a moderate level, although most of them have high ICT skills and accessibility to the internet.

Irrespective of the situation and condition to move forward, entrepreneurs in Malaysia should be exposed to the opportunities and advantages of ICT, especially among rural communities that might not have ICT facilities. Providing the right trainings using properly designed modules is significant to avoid meaningless efforts in educating rural entrepreneurs. Therefore, this study is crucial in identifying the ICT ability of rural entrepreneurs in Samarahan, Sarawak, which could subsequently assist in customizing training modules to meet their specific needs. For the present study, the TAM model was used to determine how age and education level influence the acceptance towards acquiring ICT skills among rural entrepreneurs. Data obtained were analyzed using descriptive and inferential statistics.

3. METHODOLOGY

The population of the study consisted of agro-based entrepreneurs registered with Pejabat Pertanian Bahagian Samarahan (PPBS). A random sampling method was used whereby invitations were sent to 78 agro-based entrepreneurs within Samarahan Division to attend a briefing and survey at Universiti Teknologi MARA (UiTM), Kampus Samarahan 2 on 13 August 2019. Samarahan division comprises of the sub-divisions Kota Samarahan, Simunjan, and Asajaya. A total of 46 entrepreneurs from the three sub-divisions attended the session. All those attended the session were selected as sample for the study. The participants were divided into groups, with one enumerator assigned to each group. The survey was conducted using a self-administered questionnaire with the assistance of the enumerators. The enumerators were tasked to provide clarifications on the questionnaire items. Enumerators also conducted informal discussions and interviewed the participants to ensure that the data collected were valid and reflective of the actual situation.

The self-administrated questionnaire was adopted from Technology Acceptance Model (TAM) instrument from Davis (1989) and Adams, Nelson, & Todd (1992). The questionnaire consisted of five sections. The first section is on the background of the respondents. The second section is on the background of the products, and the third section is on knowledge and skills in ICT. This is followed by the fourth section, which covers information technology awareness and the final section is on the technology acceptance model. The questionnaires were pilot tested on and vetted by a group of individuals who were then appointed as enumerators to assist in the data collection. Based on the data collected, the reliabilities of the last three sections were analyzed using SPSS, and the results are presented in Table 1.

Table 1: Reliability Analyses of the Survey Questionnaires

Section in questionnaire	Number of items	Cronbach's Alpha
Knowledge and skills in ICT	18	0.959
Information technology awareness	19	0.893
Technology acceptance model (TAM)	20	0.901

Data collected were analyzed using SPSS and only focused on one aspect related to the technology acceptance model, specifically on the respondents' ability to learn ICT. The study employed both descriptive and inferential statistics. Descriptive statistics, which include mean, median and mode, standard deviation and measure of skewness,

were used. For inferential statistics, Analysis of Variance (ANOVA) was used to determine whether there is a significant difference in the mean item score by age group and level of education. ANOVA tests were conducted at a 5 % significance level ($\alpha = 0.05$).

4. FINDINGS

The background study of the sample population shows that the respondents were mostly in the 30s and 40s age groups, as shown by the distribution of respondents by age in Table 2. In terms of education level, the majority of the respondents are Sijil Pelajaran Malaysia (SPM) leavers. This distribution is depicted by the frequency and percentage of respondents according to their academic qualifications in Table 3.

Table 2: Age of Respondents

Age Range	Frequency	Percent
20-29	5	10.9
30-39	18	39.1
40-49	18	39.1
>50	5	10.9
Total	46	100.0

Table 3: Level of Education of Respondents

Academic Qualification	Frequency	Percent
UPSR & PMR	8	17.4
SPM	33	71.7
Certificate & Diploma	5	10.8
Total	46	100.0

Respondents were asked to state their degree of agreement on a 5-Likert scale (5-Strongly agree, 4-Agree, 3-Unsure, 2-Disagree & 1-Strongly disagree) on the statement 'Learning how to use ICT is easy for me'. The results in Table 4 shows that the majority of them agree that learning ICT is easy for them with 8.7% choosing 'Strongly agree' and another 66.2% chose 'Agree'. The remaining 19.8% choose 'Unsure', 4.3% chose 'Disagree' and only 2.2% indicated that they 'Strongly disagree'.

Table 4: Frequency Distribution on Response to ‘Learning How to Use ICT is Easy for Me’

Response	Frequency	Percent
Strongly disagree	1	2.2
Disagree	2	4.3
Unsure	9	19.6
Agree	30	65.2
Strongly agree	4	8.7
Total	46	100.0

The descriptive statistics for the responses in Table 5 were found to be consistent with the results presented in Table 4. The median and mode of 4.0000 showed the majority of respondents agreed that learning ICT is easy to them. However, the mean value of 3.7391, which is less than the mode and median, and the skewness of -1.317 (negative value) indicated that the distribution is skewed to the left. This implies that while the majority agreed that learning ICT is easy, a segment of respondents felt otherwise. Thus, it is necessary to analyze this segment to see any significant difference in the ability in learning ICT by age groups and education levels.

Table 5: Descriptive Statistics on Response to ‘Learning How to Use ICT is Easy For Me’

Mean	3.7391
Median	4.0000
Mode	4.00
Std. Deviation	.77272
Skewness	-1.317
Minimum	1.00
Maximum	5.00

Table 6 shows the descriptive statistics for responses to the item ‘Learning how to use ICT is easy for me’ by age groups. The mean value, the minimum and maximum values indicated that as the age of the respondents increases, the item scores decrease. This suggested that older respondents felt learning ICT is not that easy. The mean item

scores for the 20-29 age group is 4.200 ('Agree' to 'Strongly agree'). On the other hand, the corresponding mean score for the 50 and above age group is only 2.800 ('Disagree' to 'Unsure'). Similarly, the minimum score for the 20-29 age group is 4.00 ('Agree') as compared to 1.00 ('Strongly disagree') for the 50 and above age group. The results in Table 6 clearly shows there is a difference in the perception on the respondents ability to learn ICT by age group. To determine whether the difference in ability in learning ICT by age group is significant or not, an ANOVA test was conducted at a 5% ($\alpha = 0.05$) significance level. The results are shown in Table 7. The p-value is 0.015 which is less than $\alpha = 0.05$. This shows there is a significant difference in the ability to learn ICT by age group, whereby older respondents felt that learning ICT is not that easy, compared to the younger respondents.

Table 6: Descriptive Statistics on the Response to Item 'Learning How to Use ICT is Easy for Me' by Age Group

Age group (yrs)	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
20-29	5	4.2000	.44721	.20000	4.00	5.00
30-39	18	3.8889	.58298	.13741	3.00	5.00
40-49	18	3.7222	.66911	.15771	2.00	5.00
50 and above	5	2.8000	1.30384	.58310	1.00	4.00
Total	46	3.7391	.77272	.11393	1.00	5.00

Table 7: ANOVA for Mean Score for Item 'Learning How to Use ICT is Easy for Me' by Age Group

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.881	3	1.960	3.923	.015
Within Groups	20.989	42	.500		
Total	26.870	45			

The responses to the same item is further analyzed according to the level of education of the respondents. Table 8 shows the descriptive statistics for the item response by the level of education of respondents. The mean value, the minimum and maximum values indicated that respondents with a lower level of education have a lower score. The mean score for respondents with Diploma & Certificates level of education is 4.0000 ('Agree'). On the other hand, the mean score for respondents with PMR and UPSR level of education is 3.0000 ('Unsure'). This indicated that respondents with lower level of education perceived learning ICT is not easy as compared with those with higher level of education.

Table 8: Descriptive Statistics on the Response to Item ‘Learning How to Use ICT is Easy for Me’ by Level of Education

Level of Education	N	Mean	Std. Deviation	Std. Error	Minimum	Maximum
PMR & UPSR	8	3.0000	1.06904	.37796	1.00	4.00
SPM	33	3.8788	.59987	.10442	2.00	5.00
Diploma & Certificates	5	4.0000	.70711	.31623	3.00	5.00
Total	46	3.7391	.77272	.11393	1.00	5.00

To determine whether there is a significant difference in the perception on the ability to learn ICT by the respondents’ level of education, an ANOVA test was conducted at a 5% significance level. The results are depicted in Table 9. The p-value in the ANOVA test is 0.008, which is less than $\alpha = 0.05$. This suggests that there is a significant difference in the ability in learning ICT by level of education. Those with lower education levels felt that learning ICT is not that easy as compared to those with higher level of education.

Table 9: ANOVA for Mean Score for Item ‘Learning How to Use ICT is Easy for Me’ by Level of Education

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.354	2	2.677	5.351	.008
Within Groups	21.515	43	.500		
Total	26.870	45			

5. DISCUSSION AND CONCLUSIONS

The findings and analyses from this present work show that majority of the Samarahan rural entrepreneurs in the sampled population indicated that learning ICT is easy for them. However, analyses on mean, median and mode indicated the distribution is skewed to the left. This implies that while the majority agreed that learning ICT is easy, a segment of respondents felt otherwise. Further descriptive statistics on the data indicated no training might be required for respondents in 20-29 age groups. ANOVA analysis indicated that there is a significant difference

in the ability in learning ICT in terms of age groups, whereby older respondents felt that learning ICT is not that easy. In addition, there is also a significant difference in the ability in learning ICT by level of education. Those with lower education levels felt that learning ICT is not that easy.

The correlations between ICT learning ability and age, as well as education background reported in this study, are consistent with those reported by Hernes et al. (2000), Liang and Chao (2002), and Erdogdu and Erdogdu (2015). Based on the analyses from data collected in the present study, it can be concluded that the older and less educated entrepreneurs find learning ICT not easy. These findings also provided significant contributions in understanding the factors of age and education level as the indicators in the TAM model. Among the rural entrepreneurs in Samarahan, the older entrepreneurs perceive the ease of use of technology least, although they agree on the usefulness of the technology in their businesses. In terms of education level, the effect of the behavioral intentions is also described by the findings where the likeliness of the rural entrepreneurs to engage in learning ICT is dependent on their education level. Those with higher education level perceive better intentions to use technology in their business operations. Considering these findings, ICT training for rural entrepreneurs should focus on those above 30 years old and less educated. Training modules designed in the future stage of this project would need to have courses catering for entrepreneurs of lower education backgrounds and delivery acceptable to those aged 30 years and above.

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