

Factors Influences Consumers Adopting ICT in Agriculture Market: A Case Study at Miri Sarawak

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Abstract

The use of information and communication technology (ICT) has great potential to provide services in accessing data in the business and agricultural sectors. A study found that the main barriers to accessing ICT were geographical landscape, language barriers, lack of knowledge and skills and support infrastructures. Due to the ICT being a pillar of improvement in the agriculture market, this study investigated the factor influencing consumers adopting ICT in the agriculture Market in Miri Sarawak. This study analyses the types of tools of information and communication technology (ICT) that were preferable to determine the factor that influences consumer access to ICT in the agriculture market and to identify the effectiveness of ICT systems in the agriculture market. This study used descriptive analysis, Pearson correlation and multiple linear regression for the ICT's measured influence factor. Most respondents prefer smartphones to use a smartphone to access the agriculture market. The results also reveal a strong relationship between perceived ease to use, perceived usefulness and facilitating conditions with the use of ICT. However, only perceived ease to use influences the adoption of ICT in Miri's agriculture market. For the recommendation, the government should strengthen the agriculture information platform technology and encourage more entrepreneurs and the private sector to use ICT to present more promotions to consumers.

Keywords: Information of Communication and Technology (ICT), Perceived Ease to Use, Perceived Usefulness, Facilitating Condition

Introduction

Information and Communication Technology (ICT) in agriculture has contributed significantly to agricultural communities' and rural areas' growth and socio-economic development. Nowadays, the application of ICT in agriculture has upgraded. ICT use in agricultural production allows for more market and technical information access, improving productivity and efficiency throughout the agricultural value chain (Mwantimwa, 2019). It creates a good interaction connection between farmer, supplier, and customer. It makes it easier for them to process transactions and reduce costs. Thus, the application of ICT in agriculture is referred

to as electronic agriculture or e- agricultural. The primary ICT tools include computers, the internet, radio, television, and mobile phones.

During the Covid-19 pandemic, the Malaysian government recognized that ICT growth was essential to enhance economic recovery. According to the (Department of Statistics Malaysia Official, 2021). ICT has contributed to Malaysia's economy from 7.3% in 2019 to 10.4% in 2020 (RM320.0 billion); thus, it also contributed 22.6% to GDP, with 14.2% coming from the ICT industry and 8.4% from other industries' e-commerce. The government sector has developed websites such as the official website of the Agro-based Industry Malaysia, the Ministry of Agriculture and 13 other agricultural agencies such as the Department of Agriculture Malaysia, LPP, MPOB, RISDA and other departments. The used ICT applications were recognized in many agricultural sectors (Hassan et al., 2018). A website portal assists in disseminating and delivering information to customers and target groups. Web portal assists the public in accessing agricultural news, agricultural market information, agricultural technology, and information on rural life and culture by (Zhang et al., 2016). The findings reveal that 47.3% of respondents used ICT tools such as mobile phones to access agricultural information and resources. A rural community uses various ICT tools to obtain current agricultural information (Luqman et al., 2019).

In today's rapidly changing world, the use of ICT as a pillar of agricultural expansion has been acknowledged as the basis for supplying information and technologies as input for modern agriculture. According to the department of Sarawak agriculture (2020), Since agriculture may have a significant impact on the economy, the Ministry of Agriculture and Agro-Based Industry has been provided with a set of specific goals under the Ministerial Key Results Area (MKRA) initiative of the Government Transformation Programme (GTP). The primary goal was to change agriculture into agribusiness, moving toward a paradigm based on market-centricity and economies of scale rather than traditional farming methods. The government realized it needed to revitalize the industry to ensure its long-term viability. The Sarawak government recognizes the agricultural sector as the primary source of rural population income and is dedicated to supporting the agriculture sector on its digital infrastructure. This means a lot of advantages of the used ICT in market agriculture. Therefore, this study aims to know the factor influencing consumers adopting ICT in the agriculture market in Miri Sarawak.

Literature Review

i. Used of Information and Communication Technology (ICT)

The use of information and communication technology (ICT) has spread to the majority of economic sectors in developed nations. Mobile and the internet play a crucial role in the explosion of ICT (Alwahaishi & Snásel, 2013). Through ICT, the consumer will have a better knowledge of the relation between price and quality, and it will be easier for them to access the price information (Lindbeck & Wikstrom, 2000). Moreover, according to Safari et al. (2015), ICT is used to deliver agriculture information and market services. For example, most users prefer to use online banking services rather than debit and credit cards in making payments for online fresh agriculture purchases. The finding supported by Hananu et al. (2015) is that customers are satisfied with ICT's use in the service delivery by the banks. The most current ICT delivery methods used are online banking and internet banking. Therefore, ICT provides better market access and rural banking facilities.

ii. Perceived ease to use

The finding indicates that the strength of an individual's belief is in the fact that using ICT does not require a great deal of mental effort. The degree to which an individual believes using a particular ICT system is effortless by (Davis, 1989). Besides, the user generally utilizes technology to assist them in completing their task. According to (Ninsiima, 2015), The finding shows that 80 per cent of respondents are strongly agreed that systems used in ICT were easy to use if with own their languages. Farmers believe that using the apps is accessible, understandable, and flexible, and they will be more willing to use them. Furthermore, ICT as a technology can be helpful if used to improve its performance in market information. The study by Cho & Sagynov (2015) found that consumers were more likely to make an online purchase based on their perception of online store ease of use

iii. Perceived usefulness

Using ICT applications could result in access to the data information, leading to perceived usefulness. According to Gaol & Gustira (2020), applying ICTs in the agricultural sector can reduce risk in business in agriculture. The variety of data sources, decision support systems, and expert systems may assist farmers in decision-making. According to Ninsiima (2015), the findings show most farmers, which is 83 per cent answered the survey that they would continue to utilize the ICT system because it provided helpful information while remaining completely accessible. The researcher believed that ICT application in the agricultural sector allows for more accurate forecasting, decision support systems, and expert systems to assist farmers in decision-making. Besides that, farmers perceived helpful market information, especially daily updates on agricultural commodity prices in local marketplaces, as one of the essential ICT services (Lokeswari, 2016).

On the other hand, the most significant contributor to the building perceived usefulness is the overall usefulness of online transactions, whereas the least is its use in effort saving. Customers' perceptions of usefulness have a statistically significant influence on shopping online. The detailed product information available on the online platform significantly affects the perceived usefulness of ICT (Cho & Sagynov, 2015).

iv. Facilitating Condition

Tao Zhou (2011) defines facilitating conditions: "users have the resources and knowledge essential to use mobile Internet ". The users must pay for mobile internet usage, including communication and expensive services. Her finding states they need to be trained with the knowledge necessary to operate the mobile internet, representing ICT applications' use. Furthermore, the results of the findings (Luqman et al., 2019) state that 30% of respondents reported a low level of knowledge and skill in using ICTs to meet their information needs. This implies that respondents are not enjoying the full potential of ICTs as their knowledge and skill hinder the level of use. The farmers in the research area have medium-level expertise and abilities to utilize ICTs in agricultural practices. Besides, these resources' availability includes supporting infrastructures such as internet access, easy access to mobile devices, and file sizes that affect access speed (Ambarwati et al., 2020). They claim that the impact of facilitating conditions on infrastructure support must be strengthened and that infrastructure support is rendered meaningless in the absence of adequate support.

Methodology

The research focused on ICT consumers in Miri areas, and participants were chosen randomly from a pool of applicants. The participants will be selected randomly from those who use the information and communications technology in Miri districts. This research also includes the entire state of Sarawak, focusing on the Miri districts. The researcher carried out primary data to collect the data by adopting a web-based questionnaire approach. A pilot test study was conducted on 38 people in Miri, Sarawak. According to the results, the reliability with Cronbach's Alpha was 0.937, acceptable, and the questionnaire was accepted. After that, the researcher used descriptive analysis to show the demographic results and to know the types of ICT tools accessible to the consumer in Miri. Next, Pearson Correlation was used to identify the relationship between the use of information and communication technology and the factor of customers adopting the ICT. Finally, the researcher used multiple regression to determine factors influencing ICT adoption in this study.

Result and Discussion

Based on this research, there were 385 respondents; the results are shown in Table 4.1. The results show that most respondents are female (60.3%), and the remaining are male (39.7). Besides, for the majority of ages, respondents are between 26 to 34 years old (40.8%), followed by 18 - 25 years old (28.3%), 35 – 40 years old (22.3%) and lastly, more than 40 years old (8.6%). This shows that most respondents are adults. Furthermore, majority level of education respondent was secondary school (50.1 %), Primary school (4.7%), diploma (23.4%), degree (20.0%), Master (10.0%), certification only (0.5%) and lastly one only person PhD (1.0%). Therefore, these represent that most of the respondents have education and knowledge. Regarding the respondent frequency of usage internet per day, the majority has spent more than 4 hours (67.3), then (17,7%) spent 3 -4 hours per day, 2- 3 hours (7.5%), 1- 2 hours (2.3%) and only (2.3%) are spending less than 1 hour. This means most spend their time with information communication technology (ICT). In addition, most respondents with monthly incomes ranging from RM1,000 to RM3,000 (62.9%) it followed by income (13.8%) less than RM1000, student (11.9%), RM3,000 - RM 5,000 (8.3%) and more than RM 5000 (3.1%). Lastly, the research revealed that the majority of the respondent preferable a smartphone (88.8%), the second the computer (8.8%), followed by television (1.3%) and radio (1.0%)

Table 1
Demographic Profile

Profile	Per cent (%)	
Gender	Male	39.7
	Female	60.3
Age	18 - 25 years	28.3
	26 – 34 years	40.8
	35 - 40 years	22.3
	More than 40 years	8.6
Education level	Primary school	4.7
	Secondary school	50.1
	Diploma	23.4
	Degree	20.0
	Master	1.0
	Phd	0.3
	Sijil	0.5
Frequency of Internet usage per day	Less than 1 hour	2.3
	1-2 hours	5.2
	2-3 hours	7.5
	3-4 hours	17.7
	More than 4 Hours	67.3
Monthly income	Student	11.9
	Less than Rm1000	13.8
	RM1000-RM3000	62.9
	RM3000 -RM5000	8.3
	More than RM5000	3.1

N= 385

Sources: survey 2022

Table 2 shows that most respondents prefer smartphones (88.8%) used a smartphone to access the agriculture market and information. A study finding by Ganlari et al. (2016) revealed that (97%) of people use smartphones, and only (3%) do not use a smartphone. These finding supported that most consumers visit online purchasing and gain information via smartphone rather than the computer.

Table 2
ICT tools used by respondents

ICTs Device/ Tools	Percentage
Smartphone	88.80%
Computer	8.80%
Radio	1.00%
Television	1.30%

Based on table 3, the researcher found out that the average range of all result score means between 3.00 – 4.00. Based on the statement perceived ease to use, reveal the high score mean of 4.4649, standard deviation = .7667), meanwhile for the statement perceive usefulness also indicates the high mean score got the highest score with a value score (mean

= 4.4779, St. Deviation = .64964). Lastly, a statement under facilitating condition also reveals a high score with a value (mean = 4.3091, St. Deviation = .75038). Overall, it indicates that the statement under the perceived ease to use, perceived usefulness and facilitating condition contributes to the level of effectiveness of the system used by the respondent. This interpretation mean based on (Moidunny, 2009). The mean score interpretation is that the mean score value is 4.21-5.00 is a high level. This finding was supported by previous research indicating that the system gave valuable and free information (Ninsiima, 2015). The result found that Miri Sarawak had high levels of effective ICT systems. The respondent mostly agrees that the system's effectiveness enables them to get market information, price and efficiency in completing the purchased online task.

Table 3
Level of Effectiveness of the ICT

	Statement	Mean score	Standard deviation	Interpretation
Perceived ease to use	I prefer to use smartphones more and ease	4.4649	.76679	High
Perceived usefulness	Using ICT enables me to get new information about the agriculture market	4.4779	.64964	High
Facilitating Condition	My living environment supports me in using ICT	4.3091	.75038	High
Total		4.4173	.09392	High

Source: Survey 2022

Based on table 4, Pearson correlation analysis was used to assess the strength of the relationship between the factor influencing and the use of ICT in Miri, Sarawak. The results of the correlation between the factors that influence consumers and the use of ICT. The results revealed a significant positive correlation between independent variables (perceived ease of use, perceived usefulness, and facilitating conditions) and dependent variables (used of ICT) at a 0.01 level significant. The three of variables have strong correlation, perceive easy to use with correlation ($r = 0.496$, $p < 0.05$), perceived usefulness ($r = 0.470$, $p < 0.05$), and facilitating condition ($r = 0.404$, $p < 0.05$). Perceived ease to use and perceived usefulness present the strongest linear relationship with the dependent variable (Wong et al., 2021). These reveal that the relationship between two variables is generally considered strong when their R-value is between 0.40 to 0.69. The Political Science Department at Quinnipiac University provided a 'crude estimate' of the range of Pearson's Correlation coefficients, indicating that 0.40 to 0.69 are a strong relationship (Glen, 2022). Therefore, the results reveal a strong relationship between all the variables perceived ease to use, perceived usefulness and facilitating conditions with the use of ICT and reject the null Hypothesis. Wong et al (2021), supported these findings by stating that perceived ease to use and perceived usefulness presents the strongest linear relationship with the dependent variable.

Table 4

Correlation results

		Used of ICT	Perceived ease to use	Perceived usefulness	Facilitating Condition
Used of ICT	Pearson Correlation	1	.496**	.470**	.404**
	Sig. (2-tailed)		.000	.000	.000
	N	385	385	385	385
Perceived ease to use	Pearson Correlation	.496**	1	.847**	.725**
	Sig. (2-tailed)	.000		.000	.000
	N	385	385	385	385
Perceived usefulness	Pearson Correlation	.470**	.847**	1	.712**
	Sig. (2-tailed)	.000	.000		.000
	N	385	385	385	385
Facilitating Condition	Pearson Correlation	.404**	.725**	.712**	1
	Sig. (2-tailed)	.000	.000	.000	
	N	385	385	385	385

Next, the researcher used multiple regression analysis methods to identify the factors influencing Miri consumers to use ICT in agriculture. Table 5 above shows the results of the summary of regression that were measured by dependent and independent variables. The dependent variable that has been used for this research is the use of Information and Technology (ICT). The results show a multiple correlation coefficient, $R = 0.507$, and we can conclude that the prediction level is moderate. However, the R^2 coefficient is 0.257, indicating 25.7%; the independent variable may explain the dependent variable's (used of ICT) variability (perceived usefulness, perceived ease to use, and facilitation condition); another remaining can explain other factors variables. According to Ozili (2022), R^2 values between 0.10 and 0.05 are acceptable in research if some or most of the variable is statistically significant. The research results showed significant value among the variables, which means this research was acceptable. Cho and Sagynov (2015) also discovered that the value of R^2 was less than 0.5 for perceived usefulness ($R^2=.385$) and perceived ease of use ($R^2=.356$) on customers' behavioural intention to shop online.

Table 5

Regression Model

Model	R	R Square	Adjusted R Square	St. Error of The Estimate
1	.507 ^a	.257	.251	.455

a. Predictors: (Constant), Facilitation Condition, Perceived usefulness, Perceived ease to use

b. Dependent Variable: Used of ICT

From table 6, the finding shows that there is a positive relationship dependent variable (used of the ICT) and the independent variable, which is perceived ease to use, perceived usefulness

and facilitating condition. But based on the P-value results, only one independent (perceived ease to use) has a significant relationship ($.000 < 0.05$ with the use of ICT.

As a result of this study, the main factor influencing Miri's consumers towards ICT was perceived ease of use. The majority of consumers Miri perceived ICT is eased to use to them in term system ICT, access new information, application ICT makes ease for them to learn, clear and understandable. They found that using the ICT more quickly when using smartphones while accessing the internet. All these findings have proved that Cho & Sagynov (2015) 's results are consistent with this study's findings. The conclusion has found that people are more likely to use ICT based on their perceptions of ease of use in the market information, which help them to choose the price and get better information about the product. When users accept and adapt to technology, their perception of ICT use will be easy and frequently used.

Table 6

Multiple linear regression

Coefficient	B	St. Error	Beta	T-value	P-value
(Constant)	1.984	.197		10.058	.000
Perceived ease to use	.326	.089	.322	3.660	.000
Perceived usefulness	.157	.088	.155	1.794	.074
Facilitation Condition	.049	.054	.060	.901	.368

a. *Dependent Variable: Used of I*

Conclusion

This study focused on determining factors adopting information and communication technologies (ICT) from the consumer perspective. The results show that most respondents refer to the primary ICT tool as the smartphone. The respondent prefers a smartphone because it is quicker and more flexible than a computer. The finding found that all the variables (perceived ease to use, perceived usefulness and facilitation condition) have a positive relationship with the use of ICT. Perceive ease to use is the only factor influencing the adoption of ICT users. The study reveals that the usefulness of the ICT makes consumers easy to use the ICT system to access information, and the application of ICT makes it easy to learn, clear and understandable. These indicate that the ease of the ICT used makes it consumer easy to get information about the market price.

As for recommendations, future research should include the government's role in promoting the use of ICT as one of the factors to be researched. Improve the study predictability and better understand the obstacles to using ICT in Sarawak. As a recommendation, the rapid development of agricultural technology offers an advancement opportunity to increase economic benefits to consumers and sellers. Taking advantage of this opportunity requires effectively disseminating technology in the agricultural market. ICT can potentially deliver market information to many ICT consumers immediately. Connection services use these various modes of communication. The newly developed ICT on the internet includes websites and online communications, which play an essential role in the agriculture market. This will

make a significant contribution to Miri's agribusiness sector. In the nut of shell, to achieve the Sarawak digital economy strategy 2018-2022, to improve infrastructure, the government needs to emphasize and expand the use of ICT among agribusinesses. There is beneficial factor use of ICT can benefit the community and allow the rural entrepreneurs to reach new market growth opportunities.

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