

Farmers' attitude to the effectiveness of ICTs Use in their Farming, Nay Pyi Taw, Myanmar

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ABSTRACT

This study focused on farmers' attitudes to the effectiveness of ICTs in their farming and farmers' challenges in accessing it. Extension workers of the respective Townships identified the 144 sample farmers, and the data was collected through interviews using questionnaires during 2019. There were frequency means and a dichotomous scale used to analyze the ICT attitude pattern among farmers and a 5-point Likert scale with the options.

This study explored the personal factors of ICT accessed farmers who are significantly getting young and middle age, high school, and graduate-level education and a moderate working experience compared with ICTs non- access farmers. 110 out of 144 farmers frequently used and accessed ICTs such as Radio, FM radio, TV, Facebook, Phone, and Agricultural Journals to obtain the agricultural information, but 34 farmers could not access ICTs due to the high cost, other social factors, and low ICT exposure. Most of the farmers received agricultural information from related Departments and Organizations traditionally, such as training, meeting, demonstration, trials, and conferences. More than half of the farmers were positively consistent agricultural information with their needs, but the rest did not meet their needs. Most farmers believed highly positive to agricultural information. However, some farmers responded negatively to agricultural details because they seem commonly knowledgeable information. Farmers mentioned in this study that more than half of farmers positively showed that attitude on high true and true regarding agricultural information.

Moreover, farmers encountered insufficient electricity, challenging ICT exposure, low trust, and social problems. And also, farmers commonly faced challenges as high cost for ICT usage, high price for ICTs tools, and poor ICT service. Besides, farmers' other challenges were poor connectivity, inadequate support for the mother service provider, failure to attend the training, complexity to operate, and badly wanted news. Finally, this study recommended that farmers use effective utilization of ICTs in their farming in Nay Pyi Taw area that has the

potential to make the rural communities prosperous as it enables the dissemination of required information in user-friendly patterns, easy to access, cost-effective ways at the right time with relevant information and training to be a skill.

Keywords: Farmers, ICTs, Attitude and effectiveness, Nay Pyi Taw

INTRODUCTION

Myanmar is an agricultural country, and the agriculture sector is the backbone of its economy. The agriculture sector contributes to 37.8% of gross domestic product (GDP), accounts for 25% to 30% of total export earnings, and employs 70% of the labor force, DOP [1]. Then, Myanmar is a resource-rich country, endowed with natural resources like arable land, forestry, minerals (including gas and oil), freshwater, and marine resources. Eventually, agriculture is one of the most important sectors in Myanmar, which could be benefited tremendously with the application of ICTs. Ponniah et al. [2] and DOA rice Division, [3], addressed that in Myanmar, extension program included the most important agricultural extension methods such as field-trial, demonstration, training, workshop, field day, farmer-field-school, media, group discussion, integrated extension method, and other extension methods. Among those, farmers applied one or almost methods in each State and Region based on local farmers' preference.

Myint et al. [4] pointed out to ICT as the key trends reflect global socio-economic change and driven by key concepts such as participation, client orientation, decentralization as well as developments in modern information and communication technology. Next, FAO [5], in e-agricultural guide, addressed as specialized training programs based on farmers' needs and constraints, agro-ecological and socio-economic conditions, are virtually lacking in Myanmar. The lack of a sustainable extension support system encompassing farmers as technology transfer agents building on their established capacity and coordination mechanisms and strong linkages with other relevant agencies perceived as important contributing factors. Besides, Kim and Jemal [6], learned the Myanmar agricultural extension that training of in-service staff and farmers will have to be actively pursued through existing institutions and Agricultural Extension Stations revitalized. The extension service should modernize, and its sources diversified, to ensure the swift, effective communication of new ideas, techniques, and results to farmers.

White Paper, a New Vision for Myanmar's Agricultural Development from Rice Bowl to Food Basket [7] mentioned that the use of modern ICT tools at all levels of the agricultural and food sector, including the use of digital networks to collect, analyze, process, and publish agricultural sector statistics. Use cell phones and the Internet to access and distribute information on markets (prices, standards, and specifications), weather, and agriculture technology and knowledge. Therefore, in Myanmar, its initiatives to use digital technology to take advantage of knowledge transfer, capacity-building programs, and institutional links with agriculturally focused donor agencies, Universities, and Corporations. Such partnerships will also facilitate the opening of new markets and the diversification of produce and livestock.

Moreover, the World population is expected to surpass the 9 billion mark by 2050, and agricultural production will need to increase by 60% from its 2005/2007 levels to meet this additional food demand. ICT applications can make a significant contribution to meet this future global food needs,

FAO [8]. The farming community has had to deal with declining arable land area, prolific pests and diseases, as well as anomalous and sometimes drastic weather patterns induced by climate change; these issues are juxtaposed by agricultural industrialization, newer value chains and a lack of actionable information, which when bundled together make farming a highly challenging occupation as shown, FAO [9]. In addition, traditional extension services face several challenges in developing countries that limit their efficiency. Poor infrastructure makes it harder and more costly to visit remote areas. For this reason, often extension programs provide only one-time information to farmers, lessening their long-term impact. Traditional extension is plagued by principal-agent and institutional problems, including a lack of accountability, Nakasone, et al. [10]. Further, ICTs can increase small holder's access to timely extension information while addressing many of these challenges by reducing the cost of extension visits, enabling more frequent two-way communication between farmers and agents, and improving agents' accountability, Cole SA, Fernando AN [11].

The situation mentioned above points out that a sound and smart agricultural extension system must practice having concrete and complete agricultural development pathways. It is crucial to reform the existing extension service with appropriate extension approaches and professional skills in this context. In that regard, extensive use of modern information technologies must be promoted to the farm level to transfer technologies and information cost-effectively. At the root of Myanmar's agricultural challenges is a lack of sectoral oversight, a shortage of agricultural knowledge, and few means to disseminate, designed to distribute new knowledge techniques to farmers, are inadequately resourced, and lack access to digital networks. Online market intelligence is also virtually nonexistent in Myanmar. Therefore, there will be a need to study the attitude and level of farmers' knowledge towards Information and Communication Technology as a source of information used in extension service delivery and farmers' attitudes about ICT tools used for farm communication in Nay Pyi Taw area.

The objective of this study is farmers' attitudes to the effectiveness of ICTs usage in their farming and the farmers' challenges in accessing it.

LITERATURE REVIEW

In Myanmar, agriculture extension commenced with establishing the Department of Agriculture (DA) in 1906. These days, DA made demonstrations, distribution of pamphlets, and discussions to disseminate the improved technology. Moreover, the distribution of quality seeds, fertilizers, agrochemicals, and enhanced implements. Later, the Training and Visit (T&V) approach was introduced with the World Bank's aid and implemented as a pilot project in four townships of the Ayeyarwaddy Division and three townships of the Yangon Division in 1974, Hlaing and Maung [12]. The agricultural extension Division (AED) of the Department of Agriculture (DOA) mainly carried out its extension activities. AED has attempted more participatory extension approaches, based on the selection of pilot areas and farmers' groups, extension agents, and crop development plans based on perceived farmers' constraints.

Crop plans are packages of technologies demonstrated to farmers in study plots and conducted the meetings, training, and field days in the demonstration sites, FAO-ASR [13]. Participatory extension approaches are still being implemented in cooperation with JICA and ACIAR. The Farmer Field School is another recent participatory extension approach introduced by the Plant Protection Division. It is based on non-formal adult education methods that focus more on discussion and

experimentation rather than traditional training, FAO-ASR [13]. The Farmer Channel begins to transition in 2013 as a free-to-air channel. Production of agricultural related entertainment and education program aims to upgrade farmers' knowledge. Farmer Channel team has been producing six kinds of TV programs, such as interviews, documentary, short story, talk show, song, and news. Call Center under the Department of Agriculture (DOA) was opened in 2017 to provide agricultural information advice to farmers and people and facilitate the technical decision by addressing daily challenges and assisting agricultural technology and the agricultural value change. Call center responds to farmers' pest infestation and soil fertility problems by discussing related fields' agricultural expertise, DOP [14].

ICT includes devices, networks, mobiles, services, and applications; these range from innovative Internet-era technologies and sensors to other pre-existing aids such as fixed telephones, televisions, radios, and satellites. The Myanmar ICT sector began an overhaul in the early 2000s, through the enactment of the Computer Science Development Law (1996), and the following instatement of the Myanmar Computer Development Council, USAID [15]. Two international telecommunications operators are rolling out their mobile networks, signaling huge opportunities for the country's development as affordable communications become a reality for the first time. Although internet/mobile penetration among the population is still very low among users, there has been quick uptake of international web-based services such as Facebook, Viber, and Gmail, Lucy Purdon [16]. There are currently four ISPs operating in Myanmar MPT, Telenor, Ooredoo, and Mytel, sub-ISPs, such as Redlink, Digital, and Skynet, which help deliver internet services to private customers. The software market in Myanmar is still largely underdeveloped, with relatively few companies operating in this space.

Myanmar agriculture's least-expensive leapfrog opportunity is expanding rural broadband and improving digital data collection and management from the mobile phone. Internationally, mobile applications for development currently in use have been shown to improve market information access, leading to higher prices and demand for produce. Mobile agriculture apps have also been used to monitor climate shifts and disease outbreaks. Mobile phones can also improve extension services by disseminating agricultural knowledge and accurate assessments of pastures and crops, leading to higher yields, improved access to markets, and reduced exploitation by middlemen.

Rogers [17], innovativeness, or the timing of one's adoption decision is assumed to be determined by the subjective perception of a set of product features (relative advantage, complexity, compatibility, trialability, and observability). Another model is the technology acceptance model (TAM), an information systems theory that models how users come to accept and use technology. The actual system use is the end-point where we want everyone to do with technology, so we have to form Behavioral Intention, which is a factor that leads people to use the technology. The behavioral intention (BI) is influenced by attitude (A), which is the technology's general impression. The model suggests that when users presented with a new technology, several factors influence their decision about how and when they will use it, notably: Perceived usefulness (PU) – This was defined by Davis[18] stated as “the degree to which a person believes that using a particular system would enhance his or her job performance”. It means whether or not someone perceives that technology to be useful for what they want to do. Perceived ease-of-use (PEOU) Davis defined this as “the degree to which a person believes that using a particular system would be free from effort,” Davis, 1989. If the technology is easy to use, then the barriers conquered. If it's not easy to use and

the interface is complicated, no one has positive attitudes towards it. External variables such as social influence are an essential factor in determining the attitude. When these things (TAM) are in place, people will have the attitude and intention to use the technology. However, the perception may change depending on age and gender because everyone is different. Therefore according to the above models, the conceptualized model to be used in this study as follows;

Conceptual Frameworks

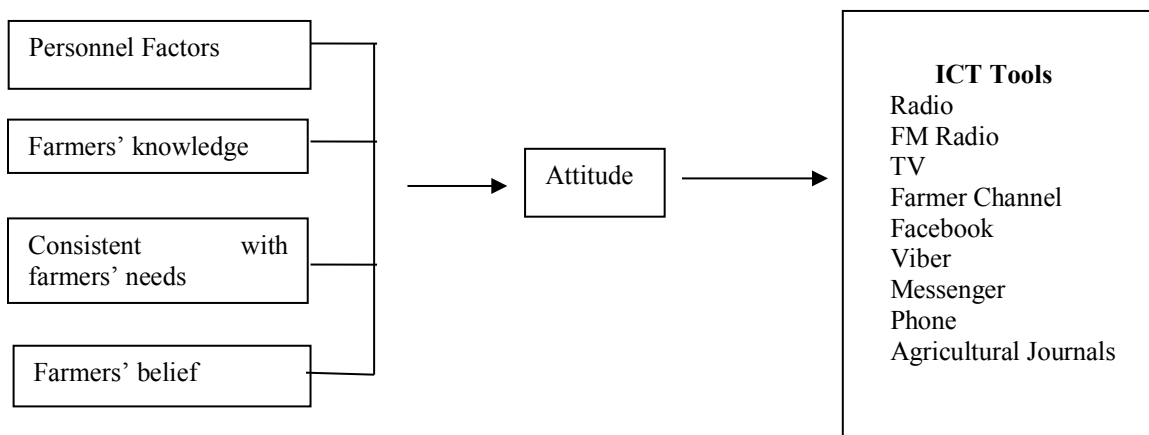


Figure (1) Author' improved

RESEARCH METHODS

The researcher conducted the study in Nay Pyi Taw area, including eight townships, namely Pyinmana, Tutkhone, Lewe, Zeyarthiri, Dikhinathiri, Ottarathiri, Pubathiri, Zabuthiri. In this area, 99,331 farm families participated in agriculture, and it has 249 extension workers, 18 frontier extension camps, and 40 agricultural knowledge centers of DOA, 2016-17 cropping year. Besides, a few extension agents worked in INGOs, NGOs, and the private sector and educating the farmers. The extension strategy implemented is the conventional extension, and a few of them used participatory extension approaches. The extension agent mostly disseminates the agricultural practices via contact farmers' who received agricultural information through group methods such as discussion meetings, ToT training, demonstration, field days, and printed media such as leaflets and pamphlets. A few knowledgeable farmers can access call centers, farmers' channel media, social media, and ICT tools to obtain agricultural information.

A well-structured questionnaire and validated interview schedule were used for data collection, a simple random sampling technique used to select 144 farmers as the study sample. The respondents identified through the extension workers of the respective Townships. Data collected through informal interviews and by administering a pre-tested structured interview schedule to the farmers during 2019. A dichotomous scale was used to study the ICT attitude pattern among farmers, and a 5-point Likert scale with the options. No agree (1); Less agree (2); Not response (3); agree (4); Very agree (5) was used to determine the factors impacting ICT use. The data collected were analyzed using descriptive statistics with the Statistical Package for the Social Sciences (SPSS).

RESULTS OF THE STUDY

The results or findings of the current study have presented with the help of the below mentioned-

Personal factors of farmers

The findings revealed the 110 out of 144 farmers were regarded as ICTs access farmers and 34 farmers were non-ICTs farmers. Among the ICTs access farmers, 85.5% and 14.5% of the respondents were male farmers and female farmers, respectively. Then, these farmers' average age was 48 years in the range of 69 and 25 years. The average farm size of the farm they possessed was 9 acres. The majority of the farmers (85.2%) have formal education, and 19.1% of them attained a Bachelor's Degree, and 8.2% of farmers achieved monastery education level.

The majority of farmers (78.2%) participated in credit organizations, social and religious organizations. More than half of respondents (54.5%) obtained the minimum farm income (100,000-2,000,000) kyats and 24.5% of farmers accepted the medium level income (2,000,001-4000000) kyat, while a few 4.5% of farmers obtained the high income (4,000,001-5,000,000) kyats and 14.5% of farmers received also high income above 5,000,000 Kyats. Besides, less than half, 45.5% of farmers did not earn the non-farm income, and 23.6% earned low-level (100,000-2,000,000) kyats. And then 22.4% of farmers received the middle class between (2000001-4000000) Kyats, and a few of them (7.3 %) earned above 5000000 kyats of income from diverse sources as buying and selling, livestock racing, plantation crops growing, and government staffs as shown in Table (1).

On the other hand, regarding ICTs non-access farmers, 82.4% and 17.6% of the non ICTs access farmers were male and female, respectively. Then, these farmers' average age was 52 years in the range of 80- 31 years. The average farm size of the non-ICTs farmers was 7 acres. The educational level of non ICT farmers was monastery education level (11.8%), formal academic level (85.2%), and graduate (2.9%). Twenty-seven out of 34farmers were membership in organizations such as credit organization, social and religious organizations.

Twenty-nine and 41.2% of respondents got the minimum farm income (100000-2000000) kyats and medium level income (2000001-4000000) kyats, respectively. A few (3 farmers) obtained high income above 5000000 kyats. Besides, 17 out of 34 farmers did not earn the none-farm income. Among them, 32.3 % and 17.6% of the non-ICTs farmers made low level (100000-2000000) kyats and middle class (2000001-4000000) kyats from non-farm sources. No one obtained a non-farm income of above 5000000 Kyats (Table 1).

Table.1 Personal factors of farmers

Personal factors of farmers	ICTs access farmers (n=110)		ICTs non-access farmers (n=34)	
	Frequency	Percent	Frequency	Percent
Age				
- 25-30	5	4.5	1	2.9
- 31-40	21	19.1	3	8.8
- 41-50	35	31.8	10	29.4
- 51-60	31	28.2	11	32.4
- Above 60	18	16.4	9	26.5
Gender				
- Male	94	85.5	28	82.4
- Female	16	14.5	6	17.6
Education				
- Monastery	9	8.2	4	11.8
- Primary school	14	12.7	8	23.5
- Middle school	44	40.0	18	52.9
- High school	22	20.0	3	8.8
- Bachelor	21	19.1	1	2.9
Membership in Organization				
- Yes	86	78.2	27	79.4
- No	24	21.8	7	20.6
Working experience (Year)				
- 1-10	22	20.0	3	8.8
- 11-20	36	32.7	5	14.7
- 21-30	24	21.8	13	38.2
- 31-40	20	18.2	8	23.5
- Above 40 years	8	9.0	5	14.7
Farm size				
- 1-5	56	50.9	18	52.9
- 6-10	33	30.0	8	23.5
- 11-15	7	6.4	5	14.7
- 16-20	6	5.5	1	2.9
- 21-25	3	2.7	2	5.9
- Above 25	5	4.5	-	-
Farm income (Kyat) (1400 Kyat = 1US\$)				
- 100000-1000000	44	40.0	8	2.5
- 1000001-2000000	16	14.5	9	26.5
- 2000001-3000000	16	14.5	7	20.6
- 3000001-4000000	11	10.0	7	20.6
- 4000001-5000000	5	4.5	-	-
- Above 5000000	18	14.6	3	8.8
Non-farm income (Kyat)				

- Non income	50	45.5	17	50.0
- 100000-1000000	14	12.7	8	23.5
- 1000001-2000000	12	10.9	3	8.8
- 2000001-30000000	20	18.2	3	8.8
- 3000001-4000000	6	4.2	3	8.8
- 4000001-5000000	-	-	-	-
- Above 50000000	8	7.3	-	-

Source: Field survey

Farmers received agricultural information from related Departments and Organizations

Table (2) presented that most farmers (79.2 %) contacted the organizations such as the Yezin Agricultural University, Department of Agriculture, and Department of Agricultural Research, INGOs, NGOs, other crop-related organizations. In comparison, a few farmers (20.8%) did not contact the Departments and Organizations. 70.1% of farmers received the information regarded as input news, and 29.9% did not receive input information. Regarding market information, 59.7% of farmers obtained, while 40.3 % of farmers did not access it. Next, 69.4% of farmers accepted the “agro-technology information”; on the other hand, 30.6 % of farmers did not accept them. Moreover, 59.7% of farmers got the “post-harvest information,” but 40.3% of farmers said they did not receive post-harvest information. Lastly, 52.8% of farmers called the chance to visit and acquire knowledge from the demonstrations and trials, while 47.2% of farmers did not get these chances.

Table.2 Farmers currently received agricultural information from related Departments and Organization

Agricultural Information	Respondent (n=144)			
	Received		Not received	
	N	%	N	%
Input news	101	70.1	43	29.9
Weather news	86	59.7	58	40.3
Market news	100	69.4	44	30.6
Agro-technology news	100	69.4	44	30.6
Post-harvest news	86	59.7	58	40.3
Demonstrations/Trials news	76	52.8	68	47.2

Source: Field survey

The farmers' knowledge of ICTs likely on social, broadcast, and printed media

Table (3) resulted the majority of farmers (91.7%) know the Information and Communication Technology (ICTs), and a few 8.3% of farmers did not have on it. Moreover, 79.2% of the farmers were aware of the media, but 20.8% did not know it. More than half of farmers (65.3%) see the print media, and 34.7% of farmers did not realize the printed media. The majority of farmers (82.6%) knew about the broadcast media, but a few farmers (17.4%) did not know it. Besides, more than half of farmers (56.9%) used social media, and 43.1% did not understand social media.

Table.3 Farmers' knowledge on ICTs likely on social, broadcast, and printed media (n=144)

Knowledge	Respondent (n=144)			
	Yes		No	
	N	%	N	%
Do you Know ICT	132	91.7	12	8.3
Do you Know the Media	114	79.2	30	20.8
- Print Media	94	65.3	50	34.7
- Broadcast Media	119	82.6	25	17.4
- Social Media	82	56.9	62	43.1

Source: Field survey

The farmers' agricultural information access

Table (4) expressed that two third of farmers (76.4%) accessed ICTs to get farm information, and 23.6% of farmers did not access it. Among the ICTs user farmers, more than half of farmers(67.4%) listen to the radio, but 32.6% of farmers did not hear the radio. Among them, less than half of farmers (49.3%) also listen to FM radio when working and in leisure time, but another (50.7%) did not have time to listen to the radio. Many farmers (6.25 %) watched Farmers' Channel programs of agriculture, but most farmers did not care (93.75%), and 37.5 %of farmers enjoy managing TV programs. However, 62.5% of the farmers did not enjoy watching TV to get agricultural information. More than half of farmers (56.9%) accessed the "agricultural information" through Facebook, while 43.1% did not access it.

The respondents show that the information through the ICT tools is a few 13.2% of farmers accessed from Viber, while most 86.8% of farmers could not access. A few farmers (11.1%) access the Messenger application's agricultural information, but most farmers (88.9%) could not access it. Besides, half of the farmers (50%) get agricultural news by phone. However, another half of farmers (50%) did not contact the transmission via telephone. Moreover, 52.8% of farmers read agricultural Journals to get the information, but 47.2% of farmers did not have a chance to learn from the Journals.

Table.4 Accessibility of ICTs tools to obtain Agricultural information by farmers (n=144)

ICTs tools	Respondent (n=144)			
	Yes		No	
	N	%	N	%
Agricultural information	110	76.4	34	23.6
- Radio	97	67.4	47	32.6
- FM Radio	71	49.3	73	50.7
- Farmer channel	9	6.25	135	93.75
- TV	54	37.5	90	62.5
- Facebook	82	56.9	62	43.1
- Viber	19	13.2	125	86.8
- Messenger	16	11.1	128	88.9
- Phone	72	50.0	72	50.0
- Agricultural Journals	76	52.8	68	47.2

Source: Field survey

The information received from ICT's tools consistent with farmers' need

Table (5) revealed that 10.9 % of farmers responded that "General agricultural news" is very consistent with the need of farmers, 75.5% of farmers replied that is consistent with their needs, while 4.5% of farmers answered that is not consistent with farmers need, 0.9% of farmers felt that is not very consistent, and 4.5% of farmers did not respond this question. Upon the "Weather news," 13.6% of farmers responded it was very consistent with need, 76.4% of farmers replied that it was consistent with their needs. In comparison, it was not very compatible with their needs, and 5.6% of farmers did not respond. For "Market price news," (9.1%) farmers replied that was very consistent, and (62.7%) farmers responded that was consistent, and 18.2% of farmers answered not uniform. Next, 0.9% of farmers felt that it was not very consistent, and 9.1% of farmers did not respond to the question.

For "Input price news," 9.1% of farmers replied that it was very consistent with needs, 59.1% of farmers responded that is consistent with their needs. In comparison, 12.7% of farmers' answer is not uniform, 19.1% of farmers did not respond. For "Agricultural technologies new," 9.1% of farmers' reply was very consistent with needs, 68.9% of farmers replied that is consistent with their needs. In comparison, 6.4% of farmers answer not compatible, and 0.9% of farmers felt like that is not very consistent, and 15.5% of farmers did not respond. For "Post-harvest technologies news", 10% of farmers' replied is very consistent with needs, 64.5% of farmers replied that is consistent with their needs, while 7.3% of farmers answered it is not uniform. None of farmers felt like that was not very consistent, and 18.2% of farmers do not respond. For "Demonstration/ Trials news," 7.3% of farmers' replies are "very consistent with needs," 63.6% of farmers' reaction is consistent with their needs, while 2.7% of farmers' answers are not consistent and 26.4% of farmers did not respond.

Regarding the "Interview of education news," 7.3% of farmers replied that it is very consistent with needs, and 52.7% of farmer reply is consistent with their needs. In comparison, 8.2% of farmers' answered that is not compatible, and none of the farmers felt like that is not very consistent, and 31.8% of farmers did not respond. For "Short story of education news," 7.3% of farmers replied that it is very consistent with needs, 54.5% of farmers replied that it is compatible with their needs. In comparison, 9.1% of farmers answered that it is not uniform, 29.1% of farmers did not respond. Performance of the "General agricultural program," 8.2% of farmers replied that is very consistent with need, 46.9% of farmers replied that is consistent with their needs. In comparison, 4.5% of farmers' answer is not compatible, 40.9% of farmers do not respond to it.

Table.5 Consistency of information received via ITCs tools and farmer's need (n=110)

Information	Respondent (n=110)									
	Very consistent		consistent		No response		Not consistent		Not very consistent	
	N	%	N	%	N	%	N	%	N	%
General agricultural news	12	10.9	83	75.5	5	4.5	9	8.2	1	0.9
Weather news	15	13.6	84	76.4	7	6.4	3	2.7	1	0.9
Market price news	10	9.1	69	62.7	10	9.1	20	18.2	1	0.9
Input price News	10	9.1	65	59.1	21	19.1	14	12.7	0	0
Agricultural technologies new	10	9.1	75	68.9	17	15.5	7	6.4	1	0.9
Post-harvest technologies news	11	10.0	71	64.5	20	18.2	8	7.3	0	0
Demonstration/Trials news	8	7.3	70	63.6	29	26.4	3	2.7	0	0
Interview of educational news	8	7.3	58	52.7	35	31.8	9	8.2	0	0
Short story of educational news	8	7.3	60	54.5	32	29.1	10	9.1	0	0
General agricultural programs	9	8.2	51	46.9	45	40.9	5	4.5	0	0

Source: Field survey

Farmers' believe in the information received from ICTs tools

Table (6) resulted that a very few farmers (5.5%) responded they are very believable in "General agricultural news," and the majority of farmers (84.5%) responded they believed, and 5.5% of farmers answered low believes, and 4.5% of farmers did feedback unknown, but none of farmers said, not judge. A few farmers (9.1%) responded as very believable in "Weather news," and 80.0% of farmers replied as Believe, while 5.5% of farmers said as unknown and 5.5% of farmers responded as low believe. There were no farmers who replied as not to believe. As a response to "market news," 4.5% of farmers responded as very believable, 58.2% of farmers answered as belief, but 8.2% of farmers acted as unknown. In contrast, 27.3% of farmers replied as low beliefs, and 1.8% of farmers felt not believe.

Besides, very few farmers (3.6%) had a positive attitude on "Input price new" as very believable, of farmers, responded as belief (67.3%), unknown (16.4 %). Still, low believes (10.0%), and 2.7% of farmers acted as not believe. Moreover, a few 3.6% of farmers replied as Very believe in "Agricultural technology news." In comparison, most 82.7% of farmers responded as belief, and 11.8% of farmers acted as unknown, but 1.8%, none of the farmers answered that they were low believed and did not believe it. Also, 4.5% of farmers expressed as very believe in "Post-harvest technology news." In comparison, the majority, 77.3% of farmers satisfy as belief, and 15.5% of farmers acted as unknown, but 2.7% and none of the farmers felt low belief and did not believe it. Additionally, 3.6% of farmers answered as very believe in "Demonstration/ Trials for education news." and more than half, 60.9% of farmers replied as belief.

In comparison, 32.8% of farmers acted as unknown, but 2.7% and none of the farmers felt as low belief and did not believe in it. A few 3.6% of farmers mentioned their attitude as very believe to

“Short story for education news,” while more than half 62.7% of farmers watch as believe and 31.8% of farmers act as unknown, but 1.8% and none of the farmers felt as low believe and not believe in it. Lastly, very few 2.7% of farmers showed their attitude to “General agricultural program news” as very believable, and more than half, 65.5% of farmers reply as belief. In comparison, 28.2% of farmers acted as unknown, but 3.6% and none of the farmers felt as low belief and did not believe in it.

Table.6 Farmers’ believes on in agricultural information through ICT’s tools (n=110)

Information	Respondent (n=110)									
	Very believe		Believe		Unknown		Low believe		Not believe	
	N	%	N	%	N	%	N	%	N	%
General agricultural news	6	5.5	93	84.5	5	4.5	6	5.5	0	0
Weather news	10	9.1	88	80.0	6	5.5	6	5.5	0	0
Market price news	5	4.5	64	58.2	9	8.2	30	27.3	2	1.8
Input price new	4	3.6	74	67.3	18	16.4	11	10.0	3	2.7
Agricultural technology news	4	3.6	91	82.7	13	11.8	2	1.8	0	0
Post-harvest technology news	5	4.5	85	77.3	17	15.5	3	2.7	0	0
Demonstration/ Trials of education news	4	3.6	67	60.9	37	32.8	3	2.7	0	0
Short story of educational news	4	3.6	69	62.7	35	31.8	2	1.8	0	0
General agricultural program news	3	2.7	72	65.5	31	28.2	4	3.6	0	0

Source: Field survey

The constraints encountered by the farmers to use the ICTs’ tools

Table (7) pointed out there were constraints in using ICTs for accessing agricultural information; high cost for ICT usage (65.3%), high price for using ICTs’ tools (54.9%), insufficient electricity (83.3%), inadequate ICT services (59.0%), poor connectivity (63.9%), inadequate support of mother service providers (67.4%), challenging to get ICT exposure (81.9%), failure to attend the training (59.0%), low trust (81.2%), complexity to operate (67.4%), insufficient needed news (67.4%), and social problems (78.5%).

Table.7 Constraints encountered by farmers to use for ICTs tools (n=144)

Constraints	Yes		No	
	N	%	N	%
High cost for ICT usage	94	65.3	50	34.7
High cost for using ICTs’ tools	79	54.9	65	45.1
Insufficient electricity	120	83.3	24	16.7
Inadequate ICT services	85	59.0	59	41.0
Poor connectivity	92	63.9	52	36.1
Inadequate support of mother service provider	97	67.4	47	32.6
Challenging to get ICT exposure	118	81.9	26	18.1
Failure to attend the training	85	59.0	59	41.0
Low trust	117	81.2	27	18.8
Complexity to operate	97	67.4	55	38.2
Insufficient needed news	97	67.4	47	32.6
Social problems	113	78.5	31	21.5

Source: Field survey

Farmers' attitude to ICT tools

Table (8) mentioned regarding the "skill needed for using ICTs," farmers' response that is very true (17.4%), and true (63.9%), not less true (2.1%), not true (4.2%) and no response (12.5%) of the farmers. Regarding the "Low connection linkage within all stakeholders," 4.9% and 32.6% of farmers replied as very true and true, 6.9% and 38.9% of farmers did against not less true" and not true, while 16.7% of farmers did not answer. For "Better than conventional communication," 17.4% and 48.6% of farmers replied as very true and true, 13.2% and 4.2% of farmers showed as not less true, and not true, but 16.7% of farmers did not answer. Farmers' attitude to "Time-saving", 16.7%, and 59.7% of farmers replied as very true and true, while 6.2% and 1.4% of farmers felt likely not less true and not true, but 16.0% of farmers do not answer. Concerning on "Effectiveness of ICT on the problem solving," 6.2% and 52.1% of farmers replied as very true and true. In comparison, 20.8% and 2.1% of farmers accept as not less true and not true, but 18.8% of farmers do not answer.

On the "Better learning environment by ICT", 10.4% and 54.2% of farmers replied very true and true, while 15.3% and 0.7% of farmers learned as less true and not true, but 19.4% of farmers do not answer. For "Creative and innovative media distribution for farmers", 4.9% and 63.9% of farmers replied as very true and true, while 10.4% and 1.4% of farmers considered as not less true and not true, but 19.4% of farmers did not answer. For "Performance of phone be a better device for extension education service," 17.4% and 60.4% of farmers seem as very true and true, while 4.2% and 1.4% of farmers replied as not less true and not true, but 16.7% of farmers did not answer. For "ICT is fast and efficient information distribution to farmers," 14.6% and 59.7% of farmers agree as very true and true, 6.9% and 1.4% of farmers did against as not less true and not true, but 17.4% of farmers did not answer.

Table.8 Farmers' attitude to the effectiveness of ICT use in their farming (n=144)

Farmers' attitude	Very True		True		Neutral		Not Less True		Not True	
	N	%	N	%	N	%	N	%	N	%
Skill Need for using ICTs	25	17.4	92	63.9	18	12.5	3	2.1	6	4.2
Low connection linkage within all stakeholders	7	4.9	47	32.6	24	16.7	10	6.9	56	38.9
Better than conventional communication	25	17.4	70	48.6	24	16.7	19	13.2	6	4.2
Time saving device	24	16.7	86	59.7	23	16.0	9	6.2	2	1.4
Effectiveness of ICT on problems solving	9	6.2	75	52.1	27	18.8	30	20.8	3	2.1
Better learning environment by using ICT	15	10.4	78	54.2	28	19.4	22	15.3	1	0.7
Creative and innovative media for farmers	7	4.9	92	63.9	28	19.4	15	10.4	2	1.4
Performance of phone be a better device for communication	25	17.4	87	60.4	24	16.7	6	4.2	2	1.4
ICT is fast and efficient information distribution to farmers	21	14.6	86	59.7	25	17.4	10	6.9	2	1.4

Source: Field survey

DISCUSSION AND RECOMMENDATION

This study was conducted in Nay Pyi Taw, Myanmar's capital, to analyze the farmers' attitude to the effectiveness of ICTs in their farming to access agricultural information.

This study found out that the personal factors of ICTs access farmers were that most farmers were getting young and middle-aged and more male farmers involved in agricultural information. Because they were functionally high school and graduate-level education and almost a few moderate farming experiences, they still obtain mostly low and medium farm income as additional. At the same time, most farmers have no non-farm incomes, which are getting diverse sources. Most farmers then possess small and medium farm sizes and have an advantage for membership in local organizations. On the other hand, farmers who did not access ICTs were older age farmers, low education levels and many farming experiences. Wole-Alo and Oluwagbem [19] concluded that sex, age, marital status, level of education, total farming experience, and membership of crop society of the respondents affect the adoption utilization of the market technology. Lokeswari [20] mentioned that using ICT services, indicating that all farmers, irrespective of their landholding size, were using them. It's mean that farmers' landholding size has no bearing on their frequency of use of ICT services, In his study, Kabir, K, H,[21], revealed that age, level of education, farming experience, farmers' perception of their information need, and their level of knowledge influence farmers' attitudes towards ICT-based farming systems.

This study revealed farmers' knowledge regarding ICTs; currently, most farmers received agricultural information from related Departments and Organizations traditionally such as training, meeting, demonstration, trials, and conferences. Additionally, 110 out of 144 farmers frequently used and access ICTs such as Radio, FM radio, TV, Facebook, Phone, and Agricultural Journals to obtain agricultural information. On the other hand, 34 farmers cannot access ICTs due to the high cost and other social factors and low ICT exposure.

The study also explored the agricultural information received by farmers from ICTs that more than half of farmers were consistent with their needs. These are general agricultural news, weather news, market price news, input price news, agricultural technologies new, post-harvest technologies news, demonstration/trial information, interview for education news, and a short story for education news. However, some farmers do not meet their needs because they mainly focus on current farming affairs.

This study revealed out that farmers who responded to "agricultural information" receiving from ICTs showed highly optimistic views such as general agricultural news, weather news, and agricultural technology news. Then, farmers accepted positively agreed to market price news, input price new, post-harvest technology news. Besides, farmers replied entirely agreed to demonstration/ trials for education news, a short story for education news, and general agricultural program news. However, some farmers responded that it is an opposing view because they seem more than common knowledge and not meet.

Further, this study revealed that more than half of farmers positively showed the high true and true attitudes to the needs of skill to use ICTs and low connection linkage within all stakeholders, better than conventional communication and time-saving device. Then, farmers responded that their attitude towards ICT's effectiveness on problem-solving and a better learning environment using ICT, creative and innovative media for farmers, and phones' performance as a better communication and ICT device is fast and efficient information distribution.

Farmers also addressed their perspective, which is entirely agreed high true and true to the skill to ICTs, low connection linkage within all stakeholders, and creative and innovative media distribution for farmers to be practical. In comparison, around 15-20 % of farmers responded as neutral and the rest of the farmers against as negatively not high true and not correct to all factors.

Farmers' challenges were insufficient electricity, challenging ICT exposure, low trust, and social problems. Then, farmers faced common challenges: high cost for ICT usage, high price for ICTs' tools, insufficient ICT service, and low connectivity. Next, there was also inadequate support for a mother service provider, failure to attend the training, complexity to operate, and inadequate wanted news. On the other hand, some farmers responded as easy to use ICTs, and they have no problem.

Similarly, Syiem and Saravanan [22] resulted that despite the evident benefits of ICT integration into traditional extension services, problems such as lack of awareness of the benefits of ICTs, lack of skill in handling ICTs, lack of training and practical exposure to ICTs, financial handicap, electric power supply, and poor network connectivity continue to handicap the agricultural growth in the region. The study by Kabir, K [21], analyzed that unavailability of electricity, lack of proper knowledge on ICTs, insufficient availability of ICT services to rural farmers, and lack of training on specific aspects are the significant challenges encountered in having access to different ICT services study areas. Lokeswari [20], showed that many of these farmers are not entirely utilizing ICT's full potential. Many factors hinder the utilization of the service, including the failures to visit farmers, lack of promotion of the service, and farmers' training. Language and traditional constraints to ensure adequate ICT infrastructure in the agricultural communities have impacted the effectiveness of ICT adoption by agribusiness.

Finally, this study recommends that farmers are ineffective utilization of ICTs in their farming in Nay Pyi Taw area and has potential to make the rural communities prosperous as it enables the dissemination of required information in a user-friendly form, easy to access, cost-effective ways at the right time with relevant information and training to be the skill.

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