
Social media adoption and use by public agricultural extension organizations in Thailand

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Abstract This research explored the adoption and use of social media, i.e., Facebook and YouTube, by district and provincial agricultural extension offices (AEO) under Thailand's Department of Agricultural Extension (DOAE). To this end, 882 district AEO's and 77 provincial AEO's websites, as well as Facebook's and YouTube's website, were searched. Contents posted and user interactions (i.e., 'Like,' 'Comment,' and 'Share') were collected and analyzed. It was found that 566 district AEO (64.17%) and 65 provincial AEO (84.42%) adopted Facebook. However, there were ten district AEO (1.13%) and nine provincial AEO (11.68%) with full adoption and active use of Facebook. For YouTube, only some district and provincial AEO started to use it, and none were active users. An analysis of the Facebook contents posted by the ten district and nine provincial AEO, who were active users, revealed that most information was theirs, and published mainly with texts and pictures. It was also found that the AEO primarily distributed information concerning the offices' activities. This type of information may be a reason for lack of user engagement in terms of 'Comment' and 'Share.' Thus, social media adoption and use by district and provincial AEO need to be improved. A policy or directive would be necessitated to encourage the AEO to adopt social media, especially YouTube. Extension officers' capacity building for effective social media use should be provided. Also required is a clear guideline outlining elements of social media use (for example, management of personnel or team involved, and a procedure for publishing information). It should specify a priority of data to be disseminated, which would also help the AEO to employ Facebook, YouTube, and other social media applications in ways more attractive and beneficial.

Keywords: Social media, Facebook, Agricultural extension, Thailand

Introduction

Social media such as Twitter, Facebook, and LINE have increasingly been embraced by various organizations worldwide. The areas, where these applications are being applied, include marketing, law enforcement, and crisis management, for example (e.g., Ayanso and Moyers, 2012; Ibrahim *et al.*, 2020; Stern, 2017; White, 2012). In the field of agricultural extension, social media have also gained interest from both researchers and practitioners (e.g., Andres and Woodward, 2013; Saravanan *et al.*, 2015).

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Applications such as Facebook, Twitter, YouTube, and Blog are indicated to have potentials for extension works (Kinsey, 2010; Parsons, 2015). Cornelisse *et al.* (2011) outlined several advantages these applications could bring to the field, including real-time interaction with target groups, availability of extension materials on mobile devices, and extension of outreach to new audiences. In a similar vein, Newbury *et al.* (2014) reported that social media was perceived, on the top, to provide 'speed of communication' and 'connectedness' with stakeholders, but also 'publicness' and functions as tools for public relations. Suchiradipta and Saravanan (2016) also found that Facebook was the most popular application preferred by those involved in agricultural extension and advisor services. Other social media applications identified by the authors included WhatsApp, Twitter, and Youtube, for instance.

Like other countries around the globe, Thailand has seen an increase in social media popularity. The number of social media users in the country was 32 million in early 2015, where the top three applications were Facebook, Google+, and Twitter, respectively, in the previous year (Kemp, 2015). This number rose to 52 million in early 2020, where Facebook remained the most popular application along with YouTube, followed by LINE as the top applications (Kemp, 2020). Accordingly, many organizations appeared to harness social media for their benefits, including airline, automobile, banking, and hospital, among others (see: <https://thailand.zocialawards.com/2019/>, for example).

Regarding agricultural extension, the use of social media was also encouraged. For example, the Department of Agricultural Extension (DOAE) devised an extension model called the 'MRCF' model in 2014, and DOAE's line agencies, i.e. district and provincial agricultural extension office (AEO) responsible for providing extension and advisory services at the local level, were assigned to put the model into practice. In this model, social media could play a role as communication tools between extension officers and farmers. Although the 'MRCF' model was replaced by the Training and Visit (T&V) extension model in 2017, social media like Facebook and LINE remain essential communication channels in Thailand's agricultural extension context. This can be seen, for instance, from various Facebook pages created by several agricultural extension offices across the country. However, there are virtually no studies to examine the adoption and use of social media by public agricultural extension organizations in Thailand.

The current study aimed to explore how district and provincial AEO under DOAE embraced and utilized Facebook and YouTube to bridge the gap mentioned. Facebook was selected for this research because of its popularity in the country, but also for its acceptance among agricultural extension

practitioners (Kemp, 2015, 2020; Suchiradipta and Saravanan, 2016). The survey also included YouTube because its potentials for agricultural extension activities, especially demonstrations, as relevant video clips can be uploaded on the application for interested farmers and the general public. The study's results would shed light on how district and provincial AEO adopt and use social media. Insights gained may also be used to improve the use of social media for agricultural extension to their full capacity. Ultimately, this research would contribute to a better understanding of social media use in Thailand's public sector in general.

Materials and methods

A survey was conducted to explore social media adoption and use by all 882 district AEO and 77 provincial AEO in Thailand. Specifically, the survey aimed to investigate whether these offices used Facebook and YouTube offices during the 2016 Fiscal Year (FY 2016) (October 2015–September, 2016). To this end, the district and provincial AEO's website, as well as Facebook's and YouTube's website, were searched. Following Gunawong (2015), only the district and provincial AEO with continuous use of the two social media were included for further study. That is, an office had to continuously post every month with at least 30 messages on average/month on its Facebook, or at least eight video clips on average/month on its YouTube during FY 2016. For the AEO that satisfied these criteria, contents provided via Facebook or YouTube and interactions (i.e., 'Likes,' 'Comments,' and 'Shares') were collected.

Based on the survey, it was found that the district and provincial AEO continuously used only Facebook, ten, and nine offices, respectively. Thus, only the messages and their interactions from these offices were collected and analyzed. In FY 2016, the ten district AEO posted 4,622 messages, while the nine provincial AEO disseminated 5,351 messages in total. Sampling was conducted to select these messages, where all messages posted in the fourth, eighth, and twelfth month of the FY were chosen. As a result, 1,273 messages and 1,407 messages and their interactions from the concerned district and provincial AEO, respectively, were included for an analysis using descriptive statistics (i.e., frequency distribution, percentage and mean) with Bonsón *et al.* (2015)'s framework as a guideline. Qualitative content analysis (Elo and Kyngäs, 2008) was also performed.

Results

Social media adoption by district and provincial AEO

This research examined social media use by public agricultural extension organizations in Thailand with a particular reference to district and provincial

AEO. To achieve this, however, it must be first established whether these offices adopted social media, i.e., Facebook and YouTube, in the first place.

Facebook adoption

Based on a survey (Table 1), it was found that several district AEO adopted Facebook as 566 offices (64.17%) had Facebook accounts. Most provincial AEO (65 offices or 84.42%) also embraced Facebook. However, when considering whether these offices continuously used Facebook as specified above, it was observed that only a few offices happened to post messages during FY 2016 regularly. As shown in Table 2, of 566 district AEO that adopted Facebook, only 55 offices (9.72%) uninterruptedly used their Facebook. A figure is relatively higher in the case of provincial AEO, where 18 offices (27.69%) were found to engage with Facebook (Table 2) incessantly. When taking into account the number of messages posted throughout FY 2016 year (at least 30 messages on average/month), the number of district and provincial AEO meeting this criterion was further reduced. There were only ten and nine district and provincial AEOs, respectively, in this regard. It accounts for 18.18% of those district AEO, and 50% in the case of provincial AEO with continuous Facebook use. Viewing from a broader perspective, the ten district AEO and nine provincial AEO with full adoption and use of Facebook merely represent 1.13% and 11.68% of all district and provincial AEO in the country, respectively.

Table 1. Facebook adoption by district and provincial AEO

Facebook adoption	Number of district AEO	Percentage	Number of provincial AEO	Percentage
-Adopted	566	64.17	65	84.42
-Did not adopt	316	35.83	12	12.58
Total	882	100.00	77	100.00

Note: As of January 2017

Table 2. Continuous use of Facebook by district and provincial AEO

Facebook use	Number of district AEO	Percentage	Number of provincial AEO	Percentage
-Continuous	55	9.72	18	27.69
-Discontinuous	508	89.75	46	70.77
- Others	3	0.53	1	1.54
Total	566	100	65	100.00

Note: As of January 2017

YouTube adoption

A survey revealed that only a few district and provincial AEO adopted YouTube. As of January 2017, there were merely 15 district AEO (1.70% of the total 882 offices) using YouTube. None of these offices continuously posted video clips every month with an average of at least 12 video clips/month. For example, a district AEO in Pichit Province posted just three video clips in FY 2016, while another district AEO in Surin Province disseminated none in this FY with its latest two video clips posted in 2011. For provincial AEO, a similar situation was observed. Of 77 provincial AEO, only 23 AEOs (29.87%) adopted YouTube by January 2017, and like district AEO, no provincial AEO published video clips continuously on this social media. For instance, at least three provincial AEO posted only two video clips in FY 2016.

Facebook use and their interactions

Facebook messages and their interactions: As reported in the previous sections, there were ten district AEO and nine provincial AEO regularly using Facebook with minimum required messages. Table 3 and Table 4 present the number of messages posted on these district and provincial AEO's Facebook and their interactions, respectively. It can be seen that the ten district AEO published 4,622 messages on their Facebook in FY 2016. They drew 85,307 'Likes', 1,762 'Comments', and 2,090 'shares' (Table 3). Khuan Kanun District AEO (Phatthalung Province) posted the most messages of 671 messages or approximately 56 messages on average/month. In contrast, Kathu District AEO (Phuket Province) disseminated the least messages (362 messages or about 30 messages on average/month). For Khuan Kanun District AEO, its messages also received 13,953 'Likes' and 1,271 'Shares', which were the most compared to other AEO. On the opposite, Kanchanadit District AEO (Surat Thani Province) drew the least 'Like' with only 318 'Likes,' and no 'Share,' although its number of messages posted was second on the table. Apart from Khuan Kanun District AEO, the messages from three other AEO also received a large number of 'Likes' including Bo Rai District AEO (Trat Province), Thap Khlo District AEO (Pichit Province), and Laem-ngop District AEO (Trat) with 13,436 'Likes,' 12,147 'Likes,' and 11,964 'Likes,' respectively.

Regarding 'Comments,' it was found that Hang Dong District AEO (Chiang Mai Province)'s messages obtained the most 'Comments,' followed by those of Khuan Kanun District AEO and Thap Khlo District AEO with 358, 345, and 294 'Comments', respectively. Kanchanadit District AEO, again, came last in this respect as its messages received just one 'Comment.' For 'Shares,' the messages posted by some district AEO were also further shared,

although the number was much lower than that of Khuan Kanun District AEO. For example, Bang Len District AEO (Nakhon Pathom Province)'s messages had 236 'Shares', second only to Khuan Kanun District AEO, even though it was ranked the fourth on the table in terms of the messages disseminated.

Table 3. Messages posted on district AEO's Facebook and their interactions in the FY 2016

No.	District AEO (Province)	Number of messages	Number of 'Likes'	Number of 'Comments'	Number of 'Shares'
1.	Khuan Khanun (Phatthalung)	671	13,953	345	1,271
2.	Kanchanadit (Surat Thani)	596	318	1	0
3.	Laem-gnop (Trat)	541	11,964	140	144
4.	Bang Len (Nakhon Pathom)	484	10,232	254	236
5.	Bo Rai (Trat)	403	13,436	173	155
6.	Hang Dong (Chiang Mai)	402	9,429	358	64
7.	Kra Buri (Ranong)	401	5,895	87	23
8.	Thap Khlo (Pichit)	390	12,147	294	80
9.	Kapoe (Ranong)	372	7,432	94	62
10.	Kathu (Phuket)	362	501	16	55
	Total	4,622	85,307	1,762	2,090

Note: As of January 2017

When considering the number of 'Likes'/message, 'Comments'/message, and 'Shares'/message, it was discovered that overall, the ten district AEO messages received approximately 18 'Likes' on average/message. Generally, most individual district AEO messages drew 20-33 'Likes'/message, which was above average, with Bo Rai District AEO came on the top having about 33 'Likes' on average/message. However, there were three district AEOs with the score below average. These included Kra Buri District AEO (Ranong Province), as well as Kathu and Kanchanadit District AEO with roughly 15 'Likes,' 1 'Like,' and 0.5 'Like'/message, respectively.

For 'Comments'/message, on the whole, the ten district AEO messages obtained less than one 'Comment' on average/message. Individually, no district AEO messages also achieved one 'Comment' on average/message. For instance, Hang Dong District AEO's messages ranked the top in terms of the number of 'Comments,' scored only 0.89 'Comments' on average/message. Similarly, the ten district AEO messages collectively drew less than one 'Share' on average/message. Moreover, there were only Khuan Kanun District AEO's messages that could attain more than one 'Share' on average/message, having around 2 'Shares'/message.

Table 4. Messages posted on provincial AEO's Facebook and their interactions in FY 2016

No.	Provincial AEOs	Number of messages	Number of 'Likes'	Number of 'Comments'	Number of 'Shares'
1.	Trang	1,203	18,346	150	247
2.	Lamphun	687	16,605	381	83
3.	Nakhonsi Thammarat	601	4,425	45	274
4.	Chumphon	553	1,072	21	59
5.	Loei	538	6,250	61	30
6.	Samut Songkhram	504	2,989	136	251
7.	Trat	426	12,225	99	75
8.	Phuket	423	15,305	247	88
9.	Kamphaeng Phet	416	21,762	434	200
	Total	5,351	98,979	1,574	1,307

Note: As of January 2017

During FY 2016, the nine provincial AEO disseminated 5,351 messages via their Facebook, which obtained 98,979 'Likes', 1,574 'Comments', and 1,307 'Shares'. Trang Provincial AEO published the most messages (1,203 messages or approximately 40 messages on average/month) as seen in Table 4. In comparison, Kamphaeng Phet Provincial AEO distributed the least, 416 messages throughout the FY (around 34 messages on average/month). However, Kamphaeng Phet Provincial AEO's messages turned out to received the top interactions in terms of 'Likes' (21,762 'Likes') and 'Comments' (434 'Comments'). Concerning 'Likes,' the messages posted by four other provincial AEO including Trang, Lamphun, Phuket, and Trat Provincial AEO, also drew a large number of 'Likes' with 18,346 'Likes,' 16,605 'Likes,' 15,305 'Likes,' and 12,225 'Likes,' respectively. Lamphun and Phuket Provincial AEOs' messages also gained a substantial number of 'Comments' compared to the rest (381 'Comments' and 247 'Comments', respectively).

The messages posted by Nakhonsi Thammarat Provincial AEO appeared to have been shared the most, having 274 'Shares.' Trang, Samut Songkhram, and Kamphaeng Phet Provincial AEO's messages also received a considerable number of 'Shares' compared with that achieved by the messages from other provincial AEO with 247 'Shares' and 200 'Shares', respectively. In contrast, the least 'Shares' was obtained by Loei Provincial AEO (30 'Shares').

For the number of 'Likes'/message, it was found that the nine provincial AEOs' messages attained approximately 18 'Likes' on average/message. Kamphaeng Phet Provincial AEO came first in this respect as its messages gained around 52 'Likes' on average/message. At the same time, Chumphon Provincial AEO obtained the least score with roughly 2 'Likes' on average/message. Indeed, the provincial AEO concerned could also be divided into two groups. The first group included Kamphaeng Phet, Phuket, Trat, and

Lamphun Provincial AEO, with their messages performed well above average ranging from approximately 24-52 ‘Likes’ on average/message. In contrast, messages posted by Trang, Leoi, Nakhonsi Thammarat, Samut Songkhram, and Chumporn Provincial AEO in the other group, merely achieved about 2-15 ‘Likes’ on average/message.

Like the overall messages posted by the district AEO concerned, the whole messages published by the nine provincial AEO also drew less than one ‘Comment’ on average/message and less than one ‘Share’ on average/message. Regarding ‘Comments’/message, there were only the messages disseminated by Kamphaeng Phet Provincial AEO that gained around one ‘Comment’ on average/message. For ‘Shares’/message, each provincial AEO’s messages also received less than one ‘Share’/message. Even those from Nakhonsi Thammarat with the highest number of ‘Shares’ could manage only 0.45 ‘Share’/message.

Information sources and media types posted on Facebook

Based on the samples of the total messages posted by the district and provincial AEO (1,273 and 1,407 messages, respectively), it was found that the AEO mostly provided their information (Table 5) on Facebook. For the district AEO, 1,125 messages (88.37%) were published using their information, while the rest (148 messages or 11.63%) contained information that was shared from other sources; for instance, information from other public agencies. Similarly, 1,191 messages (84.65%) from the provincial AEO also included their information with only a small number of messages (216 messages or 15.35%) having information from other sources; for example, video clips shared from YouTube, and news shared from a website.

Table 5. Sources of information posted on district and provincial AEO’s Facebook in FY 2016

Sources of information	Number of messages	Percentage
<i>District agricultural extension offices</i>		
- Own information	1,125	88.37
- Information from other sources	148	11.63
<i>Total</i>	<i>1,273</i>	<i>100.00</i>
<i>Provincial agricultural extension offices</i>		
- Own information	1,191	84.65
- Information from other sources	216	15.35
<i>Total</i>	<i>1,407</i>	<i>100.00</i>

For the messages containing the AEOs own information, 1,125 messages for the district AEO, and 1,191 messages for the provincial AEO, a further analysis was performed concerning media types. From Table 6, it can be seen

that both the district and provincial AEO mostly published their messages with texts and pictures. The district AEO posted 1,010 messages (89.78%) in this manner, while just 108 messages (9.60%) contained only pictures. The rest contained texts only, or video clips only, for example (7 messages or 0.62%). For the provincial AEO, a similar pattern was also observed. However, it can be noticed that the number of provincial AEOs' messages with only pictures (229 messages or 19.23%) was significantly higher compared to that of the district AEOs' messages.

Table 6. Types of media posted on district and provincial AEO's Facebook in FY 2016

Media	Number of messages	Percentage
<i>District agricultural extension offices</i>		
- Texts and pictures	1,010	89.78
- Pictures	108	9.60
- Others (e.g., texts only, and web links)	7	0.62
<i>Total</i>	<i>1,125</i>	<i>100.00</i>
<i>Provincial agricultural extension offices</i>		
- Texts and pictures	925	77.67
- Pictures	229	19.23
- Others (e.g., video clips only, and web links)	37	3.10
<i>Total</i>	<i>1,191</i>	<i>100.00</i>

Information published on Facebook

The sample messages published with the AEO own information were examined as to which kind of information was disseminated via the AEO's Facebook (Table 7). It was discovered that both district and provincial AEO overwhelmingly posted information on their activities. For the district AEO, this type of information accounted for almost all the information provided (1,061 messages or 94.31%). Information on the district AEO's activities included, for example, the AEO's meetings and field activities, and previous farmer training organized by the AEOs. The majority of information distributed by the provincial AEO also concerned their activities (996 messages or 83.63%) involving, for instance, the AEO meetings and recent officer training organized by the AEO.

Other types of information appeared to be marginally provided by both district and provincial AEO. For example, information or announcements concerning agriculture accounted for a mere fraction of 2.76% (31 messages) and 2.85% (34 messages) of the sample messages from the district and provincial AEO, respectively. A few messages gave information on agricultural fairs or agriculture product competition, 23 messages (2.04%) in the case of the district AEO, and 23 messages (1.93%) for the provincial AEO.

Interestingly, the provincial AEO also repeated the district AEO in reporting their activities (130 messages or 10.92%).

Table 7. Information published on district and provincial AEO’s Facebook in the FY 2016

Information	Number of messages	Percentage
<i>District agricultural extension offices</i>		
- District agricultural extension office’s activities	1,061	94.31
- Information or announcements related to agriculture	31	2.76
- General information or announcements	23	2.04
- Others (e.g., other public agencies' activities)	10	0.89
total	1,125	100.00
<i>Provincial agricultural extension offices</i>		
- Provincial agricultural extension office’s activities	996	83.63
- District agricultural extension office’s activities	130	10.92
- Information or announcements related to agriculture	34	2.85
- General information or announcements	23	1.93
- Others (e.g., other public agencies' activities)	8	0.67
Total	1,191	100.00

Discussion

Social media adoption by the district and provincial AEO

This study was set out to explore the adoption and use of social media, i.e., Facebook and YouTube, by district and provincial AEO in Thailand. Many district and provincial AEO started to adopt the two social media applications, particularly Facebook (Table 1). This adoption might be because Facebook is very famous in Thailand (Kemp, 2015, 2020). Thus, it is not difficult for officials concerned to start using Facebook for their offices. Although YouTube is indicated as one of the useful social media tools for extension (Kinsey, 2010), it is not attractive for both district and provincial AEO. This is apparent as only a few AEOs had tried out YouTube, 15 district AEO (1.70%), for instance. Publishing a video clip on YouTube requires some preparation and attention (Gunawong, 2015; Turner, 2015). As such, this might contribute to a decline of interest in using this application at this early stage of social media exploration and tryout.

The early stage of social media exploration and tryout is indeed indicated by the occasional use of both Facebook and Youtube by district and provincial AEO. As shown in Table 1, several district AEO started to use Facebook (556 offices or 64.17%), while most provincial AEO had Facebook accounts (65 offices or 84.42%). However, only a few AEO can be considered as ‘an active user’ (Gunawong, 2015) with continuous Facebook use, that is, 55 district AEO (9.72% of those with Facebook accounts), and 18 provincial AEO (27.69% of

those with Facebook accounts). When considering the number of Facebook messages posted (at least 30 messages on average/month), the number of active Facebook users were further reduced to ten district AEO and nine provincial AEO. The tryout is event evident in the case of YouTube, where only a few district AEO (15 of 882 offices or 1.70%) and some provincial AEO (23 of 77 offices or 29.87%) created the accounts and virtually left them unused. A similar pattern was reported by Gunawong (2015) who found that Thai public agencies (e.g., ministries and provincial offices) simply created social media accounts, but rarely used them. Thus, according to Rogers (2003), only a few district and provincial AEO reached an early period of 'the implementation stage' of social media. It would take some time for social media to be incorporated into daily operations and institutionalized; in other words, full adoption by both district and provincial AEO.

Social media use by the district and provincial AEO

Results from a survey indicated that some ten district AEO and nine provincial AEO actively used only Facebook. It is apparent that these Facebook users, though considered 'active,' did not extensively publish messages. Collectively, the district AEO concerned posted just about 462 messages on average in FY 2016, or 1.28 messages on average/day. Likewise, the nine provincial AEO posted approximately 594 messages on average in the same FY or 1.65 messages on average/day. The published Facebook messages from both district and provincial AEO also did not draw much engagement from the public users. Although methods suggested by Bonsón *et al.* (2015) were not dully applied in this study, the Facebook message interaction itself (Table 3 and 4) and a simple calculation, particularly in terms of 'Comments'/message and 'Shares'/message showed this lack of user engagement. Indeed, no district and provincial AEO had their Facebook messages receiving even one 'Comment' or 'Share' on average/message. A closer look at the contents of the messages disseminated helped shed light on this issue.

Both district and provincial AEO extensively posted messages containing information on their offices' activities (Table 7). These activities were already implemented, many of which were the offices' routine activities (e.g., monthly meetings). In contrast, there were only a few messages providing information that might be of interest to the public or farmers like information related to agriculture, upon which they may like to comment, or they may even want to share with others. This may explain a lack of user engagement, especially in terms of 'Comment' and 'Share.' Thakur and Chander (2018) reported a similar finding where public organizations in India using Facebook to provide information on their official activities rather than useful information for

farmers. A review by Bonsón *et al.* (2017) found that US municipalities mostly used social media in a one-way communication mode. However, social media like Facebook should not be employed only in this mode, especially with the focus on broadcasting the AEO's official activities (Thakur and Chander, 2018; see also Davis and Dishon, 2017).

According to Suchiradipta and Saravanan (2016, p.8), 'social media is all about user engagement, and as long as rural users are not engaged in conversation, it will not be of much help to anyone.' Thus, a two-way communication or interactive mode (Mergel, 2017) is also needed to utilize social media for agricultural extension fully. Indeed, interactivity with farmers is one of the benefits the AEO could gain from using social media (Newbury *et al.*, 2014; Suchiradipta and Saravanan, 2016).

Changes are, therefore, required to improve social media use, particularly Facebook and YouTube, by the district and provincial AEO. DEA should first devise policy or directive to encourage wider adoption of social media, especially YouTube. Having a YouTube channel may be prescribed as a performance indicator for the district and provincial AEO, for example. Besides, DEA should provide support in terms of capacity building for effective social media use for extension officers.

To have Facebook pages or YouTube channels is undoubtedly not adequate, as indicated by the evidence that many district and provincial AEO are non-active users. Thus, a clear guideline from the policy level is necessary to enable the AEO to fully adopt the concerned social media applications and become active users. This guideline should specify elements for social media use, such as management of personnel or team involved, a procedure for publishing information, types of media to be posted (cf. Table 6), and a benchmark in terms of posts or video clips published per day. Besides, the guideline should stipulate interaction modes in using social media. The district and provincial AEO are to practice an interactive two-way communication mode, along with a traditional one-way communication mode (see Mergel, 2017). As far as an agricultural extension is concerned, a one way-communication mode or 'one-directional push tactic' (Mergel, 2017) is still crucial. This is because the AEO, particularly the district AEO, need to provide information to farmers and the general public. At the same time, a more interactive mode is needed to engage with these prospective users; for example, to answer questions about the information disseminated.

Information distributed via Facebook by both district and provincial AEO predominantly covered the offices' activities (Table 7). Thus, this area needs to be improved to make Facebook more attractive and beneficial to farmers and the general public and to gain more user engagements. The guideline mentioned above should outline types of information the AEO will provide through their

Facebook pages, and for that matter, YouTube channels and other social media to be used in the future. A priority should be given to information about agricultural production, e.g., new technologies, markets, and financial services (Christoplos, 2010). Policies, directives, and announcements concerning farming and farmers in the respective districts or provinces should also be on a top priority. Information on the AEO's activities indeed can be provided weekly to keep the Facebook users updated on the offices' efforts in the past week or works to be implemented in the coming weeks.

Social media have become part of *modus operandi* in organizations worldwide. In the field of agricultural extension, social media have the potentials to help improve extension activities. Various actors concerned started to use social media in their extension and advisory services. In Thailand, where social media popularity has increasingly been on the rise, public agencies concerned with an agricultural extension like those district and provincial AEO under DOAE were encouraged to use social media. However, it is evident that these offices have not fully adopted social media, i.e., Facebook and YouTube, and utilize them in meaningful manners. In the case of Facebook, although many district and provincial AEO started to use it, only a few were active users. Similarly, some AEO adopted YouTube, but none were active users. For those AEO who were active Facebook users, their Facebook was mainly used to distribute information about the offices' activities, which may also result in limited user engagement. Thus, DOAE's policy or directive is needed to increase social media adoption, especially YouTube. Also, DOAE should build extension officers' capacity for effective social media use. A clear guideline on social media use is also required. It would enable both district and provincial AEO to utilize social media applications in ways that are more attractive and beneficial to farmers and the general public.

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