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The influence of WhatsApp on improvements for fish farmers: A lesson from Semarang City, Indonesia

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ABSTRACT: This study compares the use of WhatsApp by fish farmers, between users and non-users and the improvement of these fish farmers' financial conditions and aquaculture knowledge. Questionnaires were distributed to 60 fish farmers: 30 who already used WhatsApp and 30 who did not. Result shows that fish farmers who were WhatsApp users showed a higher score in both financial conditions and aquaculture knowledge than non-WhatsApp users. This indicates that fish farmers who use WhatsApp have higher knowledge and have better financial conditions than fish farmers who are not WhatsApp user.

1 INTRODUCTION

Mobile phones are no longer considered a luxury item. Many people across the world are using mobile phones, no matter their income, including small-scale fish farmers in cities and rural areas. As mobile phones can provide access to many software applications and social media, this makes them more attractive. WhatsApp is one of many popular social media applications currently offered on the market. Worldwide usage of WhatsApp was reported to have reached 1 billion users in 2016 (Kumar and Sharma, 2017). WhatsApp social media has made it easier for small-scale fish producers in Semarang City to interact with each other and find a quick solution to aquaculture problems. A small producer can also widen their business network and market using this application. WhatsApp users can download the application for free, and they can send message, pictures, photos, videos, audio messages and make video calls without charge if there is an internet connection. Furthermore, they can communicate with several people at once in a group chat (Rusni and Lubis, 2017).

1.1 *Fish farmers' aquaculture knowledge and financial conditions*

The two aspects explored in this research measured the aquaculture knowledge and financial conditions of fish farmers. The aquaculture knowledge aspect emphasizes their knowledge of aquaculture techniques, problem-solving abilities, and knowledge on how fish farmers become familiar with new information resources. The financial conditions aspect measured the prosperity of fish farmers, how they distribute a fish product or marketing system, and their social network.

1.2 *Fish farmers and WhatsApp*

Fish farmers using WhatsApp in Semarang in this study were 152 farmers distributed along 13 sub-districts, where there are only three extension services in each subdistrict (Semarang city Fisheries and Marine Office, press communication). The ratio of extension services to fish farmers is 4:1. However, each extension service is not only obliged to assist fish farmers, but are also required to support fishers and fish processors in the same sub-district. The limited

number of extension services has made it difficult for the extension services to effectively help and reach each fish farmers location personally. This is one of the reasons that extensions services in Semarang city decided to create a WhatsApp group to make the communication with the fish farmers easier and faster. Intensive support by the extension services is needed in order to facilitate behavioral changes in the person that requires assistance (Safrida, Makmur and Fachri, 2015). This way, the function of an extension service is not only limited to transferring knowledge and information, as it can continuously develop good relationships and eventually create changes in other people.

Fish farmers that belong to the WhatsApp group will get information much faster, easier, and unlimited by time or distance. WhatsApp groups have been used by extension services in rural areas as media to share information, problems, and finding solution through discussions (Thakur, Chander and S. K. Sinha, 2017; Thakur, Chander and S. Sinha, 2017; Thakur, Chander and Katoch, 2018; Thakur and Chander, 2018).

2 METHODOLOGY

This research employed a quantitative method through questionnaire distribution to two groups of fish farmers: (1) fish farmers that use WhatsApp and (2) fish farmers that do not use WhatsApp. Variables used in this research were:

a. Independent variable (X1) fish farmers that use WhatsApp.
b. Independent variable (X2) fish farmers that do not use WhatsApp.
c. Dependent variable (A) knowledge enhancement of fish farmers
d. Dependent variable (B) financial conditions of fish farmers

Respondents were chosen using a purposive random sampling method to ensure a balance between the number of WhatsApp users and non-users. The population was also limited to fish farmers of freshwater, brackish water, and ornamental fish. However, age and education background were not limited. The data collected were then analyzed using SPSS software.

2.1 *Demographical condition of respondents – Age*

The ages of respondents are divided into five groups, as shown in Table 1

Table 1 shows that non-users of WhatsApp are dominated by one age group (41–50), whereas users of WhatsApp are more evenly distributed between age groups.

2.2 *Demographical condition of respondents – educational background*

The educational background of the respondents is shown in Table 2.

Table 2 shows that non-users of WhatsApp have a lower educational background than WhatsApp users. This indicates that lower-educated farmers use technology less often than farmers with higher levels of education.

Table 1. Respondents' age.

Age group	Non-users of WhatsApp	Users of WhatsApp
21 – 30	0 %	20 %
31 – 40	24 %	17 %
41 – 50	50 %	27 %
51 – 60	16 %	36 %
> 60	10 %	0 %
TOTAL	100%	100%

Table 2. Educational background of respondents.

Education	Non-users of WhatsApp	Users of WhatsApp
Primary	23.3 %	3 %
Junior High	33.3 %	7 %
Senior High	40 %	50 %
Higher Edu	3.3 %	40 %
TOTAL	100%	100%

Table 3. Respondents' aquaculture commodity.

Commodity	Non-users of WhatsApp	Users of WhatsApp
Freshwater	67 %	47 %
Ornamental	0 %	33 %
Brackish	33 %	20 %
TOTAL	100%	100%

2.3 *Demographical condition of respondents – commodity*

The aquaculture commodity of respondents was limited to freshwater, brackish water, and ornamental fish, as shown in Table 3.

Table 3 shows that WhatsApp users come from all three commodities (freshwater, brackish water, and ornamental). Interestingly, no non-users were farmers of ornamental fish. All farmers of ornamental fish are more advanced and have utilized WhatsApp for their business.

3 RESULTS AND DISCUSSION

3.1 *Aquaculture knowledge*

Aquaculture knowledge consists of three aspects: knowledge of aquaculture techniques, problem-solving abilities, and knowledge on how fish farmers become familiar with new information resources. The result of the data collection is provided in Table 4.

Table 4 shows that fish farmers who use WhatsApp have a higher overall score (30.8) in aquaculture knowledge compared to non-users (29.8). This indicates that fish farmers who are WhatsApp users have higher aquaculture knowledge compared to non-users. This result was as expected, as WhatsApp users can gain new information easier and faster. Even in an individual score of aquaculture techniques, problem-solving and new information, the score for WhatsApp users is consistently higher than non-users.

Table 4. Mean score of aquaculture knowledge of respondents.

	Mean score			
	A1 Aquaculture Technique	A2 Problem-solving	A3 New information	Total
Non-users of WhatsApp	18.4	5.5	5.3	29.2
Users of WhatsApp	19.3	5.8	5.7	30.8

Note: Total maximum score is 40 (A1: 24; A2: 8; A3: 8)

Table 5. Mean score of the financial condition of respondents.

	Mean score			
	B1 Prosperity	B2 Marketing	B3 Social network	Total
Non-users of WhatsApp	10.5	8.4	7.5	26.4
Users of WhatsApp	10.7	8.6	8.5	27.8

Note: Maximum score is 40 (B1: 16; B2: 12; B3: 12)

3.2 *Financial conditions*

The financial condition of fish farmers is based on three aspects: the prosperity of fish farmers, how they distribute a fish product or marketing system, and their social networks. The data collection result is shown in Table 5.

Similarly to the indicator of knowledge, the financial condition score of fish farmers that are WhatsApp users is higher (27.8) compared to non-users of WhatsApp (26.4). The higher score is also consistently found in all aspects of financial conditions: prosperity, marketing, and social networks. This result indicates that WhatsApp has a positive impact for fish farmers in improving their financial condition, including their welfare, access to a broader market, and social networking.

4 CONCLUSION

This research has confirmed that WhatsApp shows a positive impact on fish farmers, regarding their aquaculture knowledge and financial conditions. Both indicators show that the scores for fish farmers who are WhatsApp users are consistently higher than their non-user counterparts. The result of this research indicate that fish farmers who use WhatsApp retain higher levels of aquaculture knowledge and experience better financial condition than fish farmers who do not use WhatsApp. Therefore, it is advisable to extend the service to broadly utilize social media such as WhatsApp to assist fish farmers more effectively through the creation of WhatsApp groups.

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