A Scale to Measure Attitude of Farmers towards Social Media Use in Agricultural Extension

Devesh Thakur[1], Mahesh Chander[2] and Sushil Kumar Sinha[3]

1 & 3 Ph. D Scholars, 2. Principal Scientist and Head, Division of Extension Education, Indian Veterinary Research Institute, Izatnagar, Bareilly (UP);

Corresponding author e-mail: drdth4@gmail.com

Paper Received on April 20, 2017, Accepted on June12, 2017 and Published Online on July 01, 2017

ABSTRACT

A scale was developed to measure the attitude of social media using farmers towards use of social media in sharing of agricultural information. Likert's summated rating scale technique was followed for the construction of attitude scale. A total of 41 statements were selected after obtaining relevance scores and given to 30 social media using farmers from non sampled areas in Himachal Pradesh, India. The scale developed finally consisted of 16 statements including 8 positive and 8 negative statements .The reliability and validity of the scale indicates its precision and consistency of the results.

***Key words**: Attitude; Farmers; Social media; Scale;*

Social media are potential low cost tools that have the ability to increase the scope and coverage of agricultural extension. Social media tools can be regarded as social communication technologies in which opportunities of farmers' feedback, interaction, and networking are much higher than other forms of extension information delivery. The number of social media (Facebook and WhatsApp) using farmer clientele is likely to increase substantially in near future. In order to utilise this tool for the benefit of farmers, it is necessary to know the attitude of the social media using farmers towards sharing of agricultural extension information through this tool. Attitude has been defined as the degree of positive or negative affects associated with the some psychological object (*Edwards, 1957*). In this study; it referred to the degree of positive or negative attitude of the respondents towards use of social media tools such as WhatsApp and Facebook in agriculture. For this purpose, the study was designed with the objective of developing a scale to measure attitude towards use of social media tools in agricultural extension.

METHODOLOGY

In the present study, Likert method of summated rating (*Likert's Technique, 1932*) was followed to develop desired scale. A summated rating scale is a set of attitude statements, all of which are considered of approximately equal attitude value and to each of which subjects respond with degrees of agreement or disagreement carrying different scores. This method was adopted for the present study, because the use of single statement to represent a concept is avoided and instead several statements as indicators, all representing different facets of the concept to obtain a more well-rounded perspective can be used.

Item collection : A set of items and statements which elicits the attitude towards social media in agriculture was collected in consultation with the experts in the discipline of Extension Education. A tentative list of 78 statements, consisting of 40 positive and 38 negative statements was drafted keeping in view of the applicability of statements suited to the area of study.

Editing the items : These items and statements were carefully edited on the basis of criteria suggested by Thurstone, Likert and Edward (*Edward, 1957*). Therefore, 9 statements were eliminated. The remaining 69 statements were included in the performa.

Relevancy test: All the statements collected may not be equally relevant in measuring the attitude of farmers towards use of social media tools (Facebook and whatsapp) in agricultural extension. Hence, these statements were subjected to scrutiny by an expert panel to determine the relevancy and screening for final inclusion in the scale. The panel comprised from experts of the concerned subject of the universities, research and extension institutes. The statements were sent to 142 experts . Out of 142 experts only 44 responded in a time span of 45 days. The judges were requested to examine each statement and to determine their relevancy on a 3 point continuum *viz.*, most relevant, relevant and not relevant with the score of 3, 2 and 1, respectively and reverse for the negative statements. After duly recording their judgments, the statements were considered for the analysis. Mean Relevancy Percentage, Mean Relevancy Weightage and Mean relevancy Score were calculated in following manner:

Relevancy percentage (RP): It is the number of respondents who rated the statements as "most relevant" and "relevant", which is converted into percentage.

$$RP = \frac{FS}{\text{No. of respondents}} \times 100$$

FS= Frequency score of most relevant and relevant

Relevancy Weightage (RW): It is the ratio of actual score obtained to the maximum possible scores obtainable for each statement.

$$RW = \frac{AS}{MPS}$$

AS=Actual scores obtained for the statement

MPS=Maxi possible scores obtainable for the statement

Mean Relevance Score: It is the ratio of actual score obtained by each respondent to the number of judges responded for the variable.

$$MRS = \frac{\text{Actual Score obtained for item}}{\text{No. of judges responded}}$$

Using these three criteria the statements were screened for their relevancy. Accordingly, statements having relevancy percentage >70, relevancy weightage >0.70 and mean relevancy score >2 were considered for final selection of statements. Accordingly 39 Statements were selected and suitably modified and rewritten as per comments of the experts.

Table 1. Selection of statements based on judges: Relevancy Percentage (RP), Most Relevancy Score (MRS) and Relevancy Weightage (RW) score.

Statements	RP	RW	MRS
I am comfortable in using Whatsapp	70.49	0.62	2.15
I use Whatsapp regularly	62.68	0.67	2.32
Whatsapp lets me communicate quickly	65.12	0.65	2.54
Whatsapp has become important part of my life	48.78	0.54	1.63
WhatsApp is a good use of my free time.	70.73	0.57	1.71
Information through WhatsApp makes me feel worried sometimes*	39.02	0.52	1.56
Sometimes I feel quitting WhatsApp*	58.54	0.58	1.73
Using WhatsApp is costly affair for me*	63.41	0.65	1.95
Sometimes WhatsApp use leads to substantial wastage of time for me*	75.61	0.68	2.05
I am comfortable in using Facebook	80.49	0.68	2.05
I use Facebook regularly	85.37	0.65	2.24
Facebook lets me communicate quickly	65.37	0.76	2.27
Facebook has become important part of my life	63.41	0.64	1.93
Facebook is a good use of my free time	60.73	0.62	1.85
Information through Facebook makes me feel worried sometimes*	43.90	0.54	1.61
Sometimes I feel quitting Facebook*	56.10	0.59	1.76
Using Facebook is costly affair for me*	65.85	0.64	1.93
Sometimes Facebook use leads to substantial wastage of time for me*	67.80	0.74	2.22
I feel that agriculture based information cannot be provided through WhatsApp/Facebook*	53.66	0.59	1.78
I have used WhatsApp/Facebook for seeking farm based information*	68.05	0.69	2.07
It may be difficult for average person using Facebook/WhatsApp to understand farm based information*	60.98	0.62	1.85

There will be more problems and dangers than benefits in using WhatsApp/Facebook for agricultural based information*	73.17	0.67	2.00
Facebook/WhatsApp tools can lead to spread of incorrect farm based information	78.05	0.71	2.12
I feel it would be difficult for me to share farm based information through WhatsApp/Facebook with others*	68.29	0.60	1.80
I share pictures of my agricultural products in the social media	53.66	0.58	1.73
It is difficult for government departments to provide farm based information through WhatsApp/Facebook*	65.85	0.63	1.88
WhatsApp/Facebook can be a very valuable tool to receive farm based information	80.49	0.79	2.37
Information provided through WhatsApp/Facebook can be interesting	82.93	0.71	2.00
Through WhatsApp/Facebook it is easy to generate peer to peer discussion about farming practices	95.12	0.79	2.37
Delivering farm based information through WhatsApp/Facebook can be very difficult tasks*	51.22	0.59	1.76
I have not given much thought on use of WhatsApp/Facebook in agriculture*	85.37	0.72	2.15
WhatsApp/Facebook helps me to discuss farm based information with others*	58.54	0.59	1.78
I feel WhatsApp/Facebook has limited role in provision of farm based information to farmers*	73.17	0.75	2.11
In future also, I see limited role of WhatsApp/Facebook for delivering agriculture based information*	51.22	0.56	1.68
Clarifying farm related doubts / queries through WhatsApp/Facebook are difficult.*	56.10	0.60	1.80
Through WhatsApp/Facebook, non social media using farmers cannot solve their farm related queries solved*	56.10	0.56	1.68
I get to know more about agriculture through facebook/Whatsapp	58.54	0.63	1.90
I regularly follow farm based advice through facebook	75.61	0.72	2.15
WhatsApp/Facebook gives me the feeling that it is easy to gather agriculture based information	80.49	0.76	2.27
WhatsApp/Facebook gives me the feeling that most of my agriculture based problems can be solved	80.49	0.74	2.22
Even after research work is over, I would prefer to use facebook and WhatsApp for seeking agriculture based information	70.73	0.62	1.85
I would prefer Facebook/WhatsApp over telephone calls for seeking farm based information	92.68	0.78	2.34
I would use newspapers than facebook and WhatsApp for seeking farm based information	65.85	0.63	1.90
Radio and Television are always better option than social media for receiving agriculture related information	78.05	0.71	2.12
Farm based Information received through facebook and WhatsApp is of not much use for me*	78.05	0.68	2.05
I would not use Facebook and WhatsApp for seeking farm based information in near future*	58.54	0.59	1.78
Absence of Face to Face contact, makes use of WhatsApp/Facebook for farm extension activities a difficult tool to use*	76.10	0.77	2.11
For me Kisan Gosthi and Kisan Melas offer better opportunities to learn about agriculture than social media*	82.93	0.71	2.12
Neighbours and relatives better sources than WhatsApp/Facebook for agriculture based information*	80.49	0.72	2.17
Appropriate time has not arrived yet to provide information in agriculture through facebook or WhatsApp*	70.73	0.71	2.01
Information through social media creates more confusion in minds*	71.29	0.72	2.01
Overall I feel dissatisfied about using WhatsApp /facebook for farming based information*	72.29	0.71	2.12
Information through social media is as effective as face to face extension	78.05	0.72	2.17
Social Media is a good tool to share agriculture based information with other persons	73.17	0.71	2.12
By receiving farm based information through WhatsApp/Social Media,I am able to save my time	85.37	0.78	2.34
WhatsApp helps me to discuss farm based information with others	70.73	0.71	2.07
Agriculture based information received through social media can help me to reduce my farm losses	85.37	0.73	2.20
Farm based information through social media can help to increase my farm income	92.68	0.81	2.44
Information received through facebook/WhatsApp is better than Kisan Call centre	71.85	0.74	2.01
I will prefer going to agricultural extension officer than seeking help of facebook/WhatsApp for agricultural problems*	73.66	0.71	2.01
Social media interactions are more productive than direct face to face communication due to absence of inhibition	71.22	0.71	2.71
Social Media helps to create specific interest groups in agriculture	97.56	0.81	2.44
It is possible to discuss in detail on farm related topics through social media	73.41	0.89	2.78
Discussions in social media can easily lose its focus and divert from main topic under discussion*	73.66	0.75	2.66
I can travel a reasonable distance (1-2 kms) to a cyber café/common service centre/panchayat office to seek farm based information on social media	90.24	0.82	2.46
Social media can help to receive information from other farmers in a rapid manner	80.49	0.73	2.20

Agricultural Information through social media is good for awareness but applying it is difficult*	73.41	0.73	2.90
Information received through social media helps to make farming practices more scientific	78.29	0.76	1.58
Among internet based sources, social media remains one of the best tools to receive information	82.93	0.78	2.34

*Negative Statements

Item analysis : Item analysis is an important step as per the Likert's technique of attitude measurement in the construction of valid and reliable scale. The purpose of item analysis is to select such items which can very well discriminate between two criterions. The 39 items selected through judges opinion were administered to a random sample of 30 social media using farmers to respond on a five point continuum in a non-sample area. Scores assigned for the positive statements were, 5, 4, 3, 2, 1 for strongly agree, agree, undecided, disagree and strongly disagree respectively. For negative statements the scoring pattern was reversed. The total score of a respondent was computed by summating his scores for all the individual items. Based upon the total scores, the respondents were arranged in descending order. The top 25 per cent of the respondents with their total scores were considered as the high group and the bottom 25 per cent as the low group, so as these two groups provide criterion groups in terms of evaluating the individual statements as suggested by *Edwards (1957)*. Thus out of 30 farmers to whom the items were administered for the item analysis, 8 farmers with lowest and 8 with highest scores were used as criterion groups to evaluate individual items. The critical ratio, that is the 't' value which is a measure of the extent to which a given statement differentiates between the high and low groups of the respondents for each statements was calculated by using the formula suggested by *Edward (1957)*.

$$t = \frac{X_H - X_L}{\sqrt{\frac{S_H^2}{n_H} + \frac{S_L^2}{n_L}}}$$

Where,

X_H = the mean score on a given statement for the high group

X_L = the mean score on the same statement for the low group

S^2_H = the variance of the distribution of responses of high group to the statement

S^2_L = the variance of the distribution of responses of low group to the statement

n_H = number of subjects in the high group

n_L = number of subjects in the low group

Selection of attitude Statements for final scale: After computing "t" value for all the items, 16 statements with highest "t" value equal to or greater than 1.75 were selected. The thumb rule of rejecting items with't' value less than 1.75 was followed (*Edwards, 1957*). As per the thumb rule selection of items to be retained in the scale, apart from eliminating those with poor discriminating ability and questionable validity, was a matter of including those with highest discriminating values. Thus, 29 statements were retained in the final scale based on the following criteria:

i. The't' value should be more than 1.75
ii. The statement should present a new idea *i.e.*, the idea not overlapping with that expressed other
iii. The statement should be simply worded and brief.

Standardization of the scale : The scale developed was further standardized by establishing its reliability and validity.

Reliability: Reliability is the ability of a test instrument to yield consistent results from one set of measures to another. According to *Kerlinger (1964)* reliability is the accuracy or precision of a measuring instrument.

Split half method: In the present study, split-half method was used for testing reliability. The scale was split into two halves on the basis of odd and even number of statements and administered to 30 respondents. Thus, the two sets of scores were obtained. Karl Pearson product moment correlation coefficient was calculated between the two sets of scores obtained. The reliability of the test was 0.76. The 'r' value was significant at one per cent level of significance, indicating the high reliability of the instrument. It may be said that, the test is reliable to measure the attitude of farmers towards social media use in agriculture.

Validity: The content validity of the scale was tested. The content validity is the representative or sampling adequacy of the content, the substance, the matter and the topics of a measuring instrument. As the content of the scale thoroughly covered the entire cosmos of social

Table 2. Statements of item analysis by farmers of non-sample area

Statements	't' value
Facebook/WhatsApp tools can lead to spread of incorrect farm based information	1.78
WhatsApp/Facebook can be a very valuable tool to receive farm based information	1.67
Information provided through WhatsApp/Facebook can be interesting	1.89
Through WhatsApp/Facebook it is easy to generate peer to peer discussion about farming practices	2.01
I have not given much thought on use of WhatsApp/Facebook in agriculture	2.12
I feel WhatsApp/Facebook has limited role in provision of farm based information to farmers	3.76
I regularly follow farm based advice through Facebook/WhatsApp	3.89
WhatsApp/Facebook gives me the feeling that it is easy to gather agriculture based information	1.67
WhatsApp/Facebook gives me the feeling that most of my agriculture based problems can be solved	1.77
I would prefer Facebook/WhatsApp over telephone calls for seeking farm based information	1.87
Radio and Television are always better option than social media for receiving agriculture related information	1.56
For me Kisan Gosthi and Kisan Melas offer better opportunities to learn about agriculture than social media	1.66
Neighbours and relatives are better sources than WhatsApp/Facebook for agriculture based information	3.65
Appropriate time has not arrived yet to provide information in agriculture through facebook or WhatsApp	1.89
Overall I feel dissatisfied about using WhatsApp /facebook for farming based information	2.12
Information through social media is as effective as face to face extension	1.45
Social Media is a good tool to share agriculture based information with other persons	2.23
By receiving farm based information through WhatsApp/Social Media, I am able to save my time	2.67
WhatsApp helps me to discuss farm based information with others	3.78
Agriculture based information received through social media can help me to reduce my farm losses	3.97
Farm based information through social media can help to increase my farm income	2.89
Information received through Facebook/WhatsApp is better than Kisan Call centre	3.67
Social Media helps to create specific interest groups in agriculture	4.15
It is possible to discuss in detail on farm related topics through social media	1.56
I can travel a reasonable distance (1-2 kms) to a cyber café/common service centre/panchayat office to seek farm based information on social media	1.78
Social media can help to receive information from other farmers in a rapid manner	1.89
Information received through social media helps to make farming practices more scientific	1.93
Among internet based sources, social media remains one of the best tools to receive information	4.32
Absence of Face to Face contact, makes use of WhatsApp/Facebook for farm extension activities a difficult tool to use	3.89
Information through social media creates more confusion in minds	2.98
By receiving farm based information through WhatsApp/Social Media,I am able to save my time	3.65
Information received through facebook/WhatsApp is better than Kisan Call centre	1.76
I will prefer going to agricultural extension officer than seeking help of facebook/WhatsApp for agricultural problems	3.56
I feel WhatsApp/Facebook has limited role in provision of farm based information to farmers	1.56
It is possible to discuss in detail on farm related topics through social media	1.55
Neighbours and relatives are better sources than WhatsApp/Facebook for agriculture based information	3.68
Social media interactions are more productive than direct face to face communication due to absence of inhibition	3.65
Discussions in social media can easily lose its focus and divert from main topic under discussion	3.78
Agricultural information through social media is good for awareness but applying it is difficult	3.57

Table 3. Statements selected for inclusion in the final scale

Statement	SA	A	UD	DA	SDA
I feel WhatsApp/Facebook has limited role in provision of farm based information to farmers*					
I regularly follow farm based advice through Facebook/WhatsApp					
Absence of Face to Face contact, makes use of WhatsApp/Facebook for farm extension activities a difficult tool to use*					
Neighbours and relatives are better sources than WhatsApp/Facebook for agriculture based information					
Information through social media creates more confusion in minds*					
By receiving farm based information through WhatsApp/Social Media,I am able to save my time					
WhatsApp helps me to discuss farm based information with others					
Agriculture based information received through social media can help me to reduce my farm losses.					
Information received through Facebook/WhatsApp is better than Kisan Call centre					
I will prefer going to agricultural extension officer than seeking help of Facebook/WhatsApp for agricultural problems					
Social media interactions are more productive than direct face to face communication due to absence of inhibition*					
Social Media helps to create specific interest groups in agriculture*					
It is possible to discuss in detail on farm related topics through social media*					
Discussions in social media can easily lose its focus and divert from main topic under discussion*					
Agricultural Information through social media is good for awareness but applying it is difficult*					
Among internet based sources, social media remains one of the best tools to receive information					

* Negative statements.

SA: Strongly agree A: Agree UD: Undecided DA: Disagree SDA: strongly disagree

media use in agriculture through literature and expert opinion, it was assumed that present scale satisfies the content validity. Thus, scale value difference for all the statements has a high discriminating value and it seems reasonable to accept the scale as a valid measurement.

The statements with 't' values of 2.75 and above (Table 2) were considered for final inclusion. Thus, 8 positive and 8 negative statements with highest' values were selected for the final scale (Table 3) as they differentiate between highest and lowest groups.

CONCLUSION

Use of social media by the farmers is on the rise. The preference of farmers in social media usage specifically for sharing agricultural information needs to be ascertained. This scale has been devised to meet these requirements as well as to assess the satisfaction level towards sharing of agricultural information through social media. Further, the scale can be used to measure farmer's attitude beyond the study area with suitable modifications.

REFERENCES

Kumar, P. G. and Ratnakar, R. (2016). A scale to measure Farmers' Attitude towards ICT-based Extension Services. *Indian Res.J.Ext. Edu.,* **11** (21), 109-112.

Kerlinger, F. N., 1964, *Foundations of Behavioural Research,* Holt Rinehart and Winston Inc., New York, p. 379.

Edwards, A.L. (1957). Techniques of attitude scale construction. Vakils, Feffer and Simons Private Ltd. 9 Sport Road, Ballard Estate, Bombay (Mumbai).

• • • • •