

Stakeholders' Perception about Rice Knowledge Management Portal's information

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ABSTRACT

In agriculture various forces are working to change the agricultural extension from a process of technology transfer to a process of facilitating wide range of communication, information and advocacy services. The amidst of these change farmers are grappling with the question of how best to harness ICTs to benefit the farming. There was no scale available to measure farmers' perception towards knowledge portal. A scale was constructed to measure the perception of the farmers towards Rice Knowledge Management Portal (RKMP). Likert's summated rating scale technique was followed for construction of perception scale. Out of 41 statements, 16 statements were retained on the final scale. The validity of the scale was examined with the help of content validity. Split half method was followed for testing reliability of the scale and reliability co-efficient of the scale was 0.76 hence, the scale is reliable and can produce consistent results. This scale can be used to measure farmers' perception beyond the study area with suitable modifications.

Keywords: Item analysis, likert's summated rating, perception scale, reliability; RKMP, rice farmers, validity,

INTRODUCTION

Today, agriculture is not only a medium of earning for farmer for sustaining livelihood but also a fast growing area for entrepreneurial activities. More complex technologies are proving lesser implementation by technically weak farmers. In order to avoid this type of problem, farmers should be in lined with growing technologies to compete and fulfil the information need for various farming activities. ICTs are major and vital part of the knowledge economy and information revolution. Major part is handled by mobile phone and computer technologies. In agriculture, several attempts has made regarding the availability of right information to the users at right time in shortest possible time. The report of the 'Task Force on India as Knowledge super power' (GoI, 2001) emphasized that when ICT is used as a broad tool for providing local farming communities with scientific knowledge, ICT heralds the formation of knowledge societies in the rural areas of the developing world. Any knowledge-centric ICT platform does is essentially handle and present data and information. Any relevant agricultural information, which is either enabled or driven by ICTs and which farmers can apply to their farms or which can help farmers make informed decisions

about their farming enterprise, could potentially increase agricultural productivity and income (Chapman and Slaymaker, 2002). ICT has is an emerging tool for achieving meaningful societal transformation (Meera *et al.*, 2004). Rice is a staple crop of India which is contributing more to the agricultural production. Today information are the important element of farming , every information is needed by farmers to keep themselves continuously updated towards farming activities taking place in present condition of farming. Information like Disease management, water management, plant protection chemicals, market information *etc.* are considered as key inputs for sustainable agriculture and intensive farming. For qualitative improvements in farming including improved crop production technology effective & efficient research and developmental programme is the need of the hour. Agricultural portal share specially designed single access points to information collected from diverse sources related to crops and its entities. An effort has made by Indian Institute of Rice Research along with consortium partners to cater the information need of the major stakeholders of agriculture to get all related information regarding rice. For this they built Rice knowledge management portal (RKMP). Under this portal for different stakeholders

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separate domain has made. So by using portal different stakeholders can search information regarding their needs. It acts as a gateway to information and an aggregator of knowledge gathered from various sources for various stakeholders such as farmers, extensionists and scientists. There was no scale available to measure farmers' perception towards rice knowledge management portal's information. Hence, the present study was contemplated to develop and standardize a scale for measuring farmers' perception towards rice knowledge management portal's information.

METHODOLOGY

Perception can be defined as the active process of selecting, organizing, and interpreting the information brought to the brain by the senses. Perception has operationally defined as the way that people notice or understand something about RKMP information using their senses. Summated rating method suggested by Likert (1932) was followed in the development of scale and it provide unique opportunities of item analysis and selecting items based upon their discriminating power as well as being appropriate. The following points were considered for measuring the perception of farmers towards RKMP information.

Construction of perception scale

Collection of Items:

A boundary of universe about the positive and negative perception of the farmers towards RKMP was outlined through available relevant literature also by having discussion with experts at various institutes and universities. A tentative list of 52 statements consisting 34 positive and 18 negative statements were drafted keeping in view of the applicability of statements suited to the area of study.

Editing of items: According to 14 informal criteria suggested by Edwards (1969), the statements were carefully edited. Utmost care was taken so that the statements could measure for what it is intended. After rigorous culling, a total of 45 statements were retained out of 52 statements. Each statement comprised minimum possible words and these were checked for their easy comprehension. These statements satisfied the criteria were provided to the judges to examine the relevancy of each statement for inclusion in final scale. thus, after scrutiny of judges, a total of 45 statements were retained for further analysis with arrangement on a five point continuum.

Relevancy test: There was possible all the statements collected may not be relevant equally in measuring the

perception of farmers towards information provided by Rice knowledge management portal. Hence these statements were subjected to scrutiny by an expert panel of judges to determine the relevancy and screening for inclusion in the final scale. For this all the forty five statements list was then send to panel of judges. Judges comprised experts in the field of extension education of Indian agricultural research institute, New Delhi and different KVKs and state agricultural universities. The statements were sent to 40 Judges with request to critically evaluate each statement for its relevancy to measure the perception of farmers towards information provided by Rice knowledge management portal. The judges were requested to give their response on a five point continuum *viz*, most relevant, relevant, somewhat relevant, undecided and irrelevant with scores 5,4,3,2 and 1 respectively. Out of 50 judges only 40 responded in a time span of one month. The relevancy score of each item was ascertained by adding the sores on rating scale for all the 40 judges' responses. From this data relevancy percentage, relevancy weightage and mean relevancy scores were worked out for all the statements by using the following formulae.

Relevancy percentage: Relevancy percentage was worked out by summing up the scores of highly relevant, relevant and neutral categories, which were converted into percentage.

Relevancy weightage (R.W.): Relevancy weightage was obtained by the formula.

$$RW = \frac{MR + R + SR + U + IR}{MRS}$$

Mean relevancy score (M.R.S.): M.R.S. was obtained by the following formula.

$$MRS = \frac{MR + R + SR + U + IR}{N}$$

MR=Most relevant, R=Relevant, SR=somewhat relevant, U=undecided, IR=irrelevant

MPS = Maximum possible score, N = Number of judges
Using these three criteria the statements were screened for their relevancy. Accordingly, statements having relevancy per cent >75, relevancy weight age >0.75 and mean relevancy score > 3.5 were considered for final selection of statements. By this process, 41 statements were isolated in the first stage, which were suitably modified and rewritten as per the comments of judges.

Item analysis (calculation of t-value)

The final 41 statements were subjected to item

analysis to delineate the items based on the extent to which they can differentiate the respondents with very relevant to the respondent with irrelevant towards RKMP. For this 40 respondents were selected initially. The respondents were asked to indicate their degree of agreement or disagreement with each statement on the five-point continuum ranging from “strongly agree” to “strongly disagree”. The scoring pattern adopted was 5 to 1, in which, 5 weighs to strongly agree, 4 to agree, 3 to undecided, 2 to disagree and 1 to strongly disagree for positive statement and for negative statement, the scoring pattern was reversed. Based upon the total score, the respondents are organized in the descending order. The top 25 percent of the respondents with their total scores were considered as the high group and the bottom 25 percent as the low group, as these two groups provide criterion groups in terms of evaluating the individual statements as suggested by Edwards (1957). Thus out of 40 respondents, from whom the statements were received over a period of 45 days, 10 respondents with lower most and 10 respondents with uppermost scores were used as criterion groups to evaluate individual items.

Final selection of items: The critical ratio, that is the t value, which is a measure of how significantly a given statement could differentiate between the high and low groups of the respondents for each statements, was calculated by using the formula suggested by Edwards (1957).

$$t' = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{(X_H - \bar{X}_H)^2 + (X_L - \bar{X}_L)^2}{n(n-1)}}$$

Where,

\bar{X}_H = The mean score on a given statement for the high group

\bar{X}_L = The mean score on a given statement for the low group

$\sum_{2H} X^2$ = Sum of squares of the individual score on a given statement for high group

$\sum_{2L} X^2$ = Sum of squares of the individual score on a given statement for low group

\sum_{HX} = Summation of scores on a given statement for high group

\sum_{LX} = Summation of scores on a given statement for low group

n = Number of respondents for in each group

∑ = Summation

After calculating the t value for all items, the statements with t value equal to or less than 1.75 were followed for rejecting the statements (Edwards, 1957). Thus, 16 statements were found to be having the t values more than 1.75 (Table.1). Therefore, the perception scale consisted of 16 items (13 positive and 3 negative statements) which were finally included for the scale based on following criteria:

- I. The t value more than 1.75 selected
- II. The overlapping of ideas should be avoided
- III. Statements should be comprehensive and simple

Table 1: Scale developed to measure the perception towards Rice Knowledge Management Portals' information

Perception statement	t-value
RKMP gives information about new rice varieties	4.29**
RKMP provides comprehensive information about rice cultivation	3.40**
RKMP usage is limited by computer illiteracy*	3.70**
RKMP Information is not relevant to my location*	3.09**
RKMP Provides information about Government schemes	1.79**
RKMP fulfils various information need	2.75**
RKMP content is up to date	2.69**
RKMP is user-friendly	1.96**
RKMP content is adequate	4.11**
RKMP videos are relevant	2.71**
RKMP information is easy to understand	2.40**
RKMP provides relevant cultivation package of practices	1.91**
RKMP provides reliable and timely information	2.20**
RKMP provides information at door step at one click	2.22**
RKMP increases the farming benefits	2.56**
RKMP minimizes time in getting information*	4.30**

** Significant at 1 per cent level of probability;

Note: Correlation is 0.76 ** Significant

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

Reliability of the scale: Reliability is the ability of a test instrument to yield consistent results from one set of measures to another. A good instrument should evoke responses that are valid and yield nearly same results if administered twice to the same respondents (Goode and Hatt, 1952). According to Kerlinger (1964), reliability is the accuracy or precision of a measuring instrument. A scale is said to be reliable when it consistently produces the same or similar results when applied to the same sample at different time. Reliability is defined through error, “Reliability is the proportion of true variance to the total obtained variance of the data yielded by a measuring instrument”.

Split half method: in the present study reliability was tested by means of split-half method. The scale was administered to 40 non- sample respondents (other than the study area) and was divided into two halves based on odd and even number of statements. The total scores obtained for odd and even numbered items were subjected to correlation analysis. Pearson product moment correlation coefficient was obtained on the scores of even numbered items and the scores of odd numbered items. The resulting coefficient is the split half reliability. Based on the analysis, it was found that the split half reliability was 0.76 to adjust the split half reliability in to full test reliability, Spearman Browns prophecy formula was used which as follows,

$$\text{Reliability} = \frac{2Xr \text{ half test}}{1 + r \text{ half test}}$$

The full test (16 items) reliability was found to be 0.76 and found to be significant at one percent level of significance ($p < 0.01$). Since the reliability value was more than 0.7, the scale was considered to be highly reliable. So it may said that, the test is reliable to measure the perception of the farmers towards Rice Knowledge Management Portal (RKMP).

Validity of the scale

According to Lindquist (1951), the validity of a test as the accuracy with which it measures that which is intended to measures. A test is valid only, for a particular purpose. The content validity indicates how adequate is the content of the scale, sampling the domain of which inferences are to be made. To restore such validity to the scale, an attempt was made to see that all the components of attributes of technology were embraced by it. Firstly the content validity was determined through a group of experts. Since the items selected were from the universe of content, it was ensured that the items covered the various aspects of perception of the farmers towards RKMP. The instrument was subjected to the scrutiny, criticism and comment of the experts in Agricultural Extension. The scale was modified in the light of their comments and criticism. Thus, it may be said that the scale possessed content validity. Known Group Method was used to test the construct validity of the instrument.

Administration of the scale

The final scale which would measure the perception of farmers towards RKMP consisted of 16 statements. Each statement was noted on a five-point continuum as Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree with scores of 5, 4, 3, 2, and 1, respectively for positive statements. Reversed scoring was used in the case of negative statements. The final perception scale was administered to the RKMP users after thoroughly

mixing the statements. The score obtained for each item was summed up to get the perception scores of farmers towards RKMP.

Category	Score
Strongly Disagree	1
Disagree	2
Neutral	3
Agree	4
Strongly Agree	5

RESULTS AND DISCUSSION

Table 2 describes how the farmers perceive about RKMP. It reveals that 80 per cent strongly agreed that 'RKMP gives comprehensive information about rice cultivation' followed by 'its usage is limited by computer illiteracy' (73.8 %), and it has relevant videos (27.5 %). About 87.5 per cent farmers agreed that 'RKMP minimizes time barrier' followed by 'it fulfils various information' and it 'provides relevant package of practices' (33.3 %) and reliable and timely information. Whereas 60.7 per cent farmers strongly disagreed that RKMP provides reliable and timely information and its content is up to date (35 %).

On the basis of perception score it was arranged and found as stated above. The ranking of statements was done based on perception score of each statement. Similar result was supported by Yadav K. (2011) and Bhimappa *et al.* (2006).

Table 2: Farmers' perception about RKMPs' information n=80

STATEMENTS	SA	A	N	DA	SDA	PS	RANK
RKMP provided comprehensive information about rice cultivation	64	7	1	1	7	360	1
RKMP usage is limited by computer illiteracy	59	6	11	3	1	359	2
RKMP provided relevant cultivation package of practices	3	72	3	2	0	316	3
RKMP is user-friendly	6	63	5	3	3	306	4
RKMP minimized time in getting information	3	70	1	2	4	306	5
RKMP Fulfilled various information need	3	63	8	2	4	299	6
RKMP gives information about new rice varieties	4	60	7	8	1	298	7
RKMP is easy to understand	29	18	13	12	8	288	8
RKMP provided reliable and timely information	8	55	0	3	14	280	9
RKMP Videos are relevant	22	16	20	18	4	274	10
RKMP provided information about Government scheme	12	31	15	10	12	261	11
RKMP content is adequate	20	16	10	15	19	243	12
RKMP Increased the farming benefits	10	23	17	20	10	243	13
RKMP provided Information is not relevant to my location	10	14	20	19	17	221	14
RKMP provided information at door step at one click	13	18	9	17	23	221	15
RKMP content is up to date	8	12	16	16	28	196	16

SA=Strongly Agree, A=Agree, N=Neutral, DA=Disagree, SDA=Strongly Disagree, PS=Perception score

Table 3. Distribution of farmers according to their extent of perception
n=80

Categories	Respondents		Mean	SD
	Number	Percent		
Low (16-37.33)	6	7.5	47.70	06.30
Medium (37.34-58.66)	65	81.25		
High (58.67-80)	9	11.25		

Further it was observed that 81 per cent of respondents have a good perception towards RKMP as a source of information, where as 11 per cent in high level of perception category and 7 per cent in low level category (Table 3). Similar results were also found by Ganesh (2008) and Kaini (2003).

Table 4 describes how RKMP is perceived by scientists. It reveals that 90 per cent scientists strongly agreed that 'RKMP provided relevant package of practices' followed by 'it fulfils various information need' (73.3 %) and provides reliable and timely information. At the same time it also reveals that about 26.7 per cent scientists disagreed that 'information provided by RKMP is relevant to their location' and 40 per cent scientists strongly disagreed that 'RKMP provides information at one click' followed by 'its content is adequate' (36.7 %). Similarly it has been shown on the basis of rank value that signifies its perceived usefulness and appropriateness.

Table 4: Scientists' perception about RKMPs' information
n=30

STATEMENTS	SA	A	N	DA	SDA	PS	RANK
RKMP provided relevant cultivation package of practices	5	22	3	0	0	122	1
RKMP fulfilled various information need	8	17	0	3	2	116	2
RKMP provided reliable and timely information	5	17	4	3	1	112	3
RKMP gives information about new rice varieties	3	19	4	2	2	109	4
RKMP provided information at door step at one click	12	4	7	3	4	107	5
RKMP provided comprehensive information about rice cultivation	2	19	4	3	2	106	6
RKMP information is easy to understand	0	19	6	3	2	102	7
RKMP videos are relevant	9	6	5	7	3	101	8
RKMP content is adequate	5	11	7	3	4	100	9
RKMP usage is limited by computer illiteracy	9	5	6	3	7	96	10
RKMP minimized time in getting information	8	10	0	4	8	96	11
RKMP is user-friendly	1	17	3	3	6	94	12
RKMP content is up to date	7	4	9	5	5	93	13
RKMP increased the farming benefits	7	6	5	6	6	92	14
RKMP provided information about Government schemes	5	8	6	5	6	91	15
RKMP Information is not relevant to my location	5	3	7	8	7	81	16

SA=Strongly Agree, A=Agree, N=Neutral, DA=Disagree, SDA=Strongly Disagree, PS=Perception score

Table 5: Distribution of scientists according to their extent of perception
n=30

Categories	Respondents		Mean	SD
	Number	Percent		
Low (16-37.33)	4	13.33	45.67	08.41
Medium (37.34-58.66)	19	63.33		
High (58.67-80)	7	23.33		

Further it was observed that 63 per cent of respondents have a good perception towards RKMP as a source of information, where as 23 per cent in high level of perception category and 13 per cent in low level category (Table 5).

Table 6 describes how RKMP is perceived by extension personnel. It reveals that 16.7 per cent extension personnel strongly agreed that RKMP usage is limited by computer literacy but it is user friendly, provides reliable and timely information and increases the farming benefits. Around 63 per cent extension personnel strongly agreed that RKMP provides comprehensive information about rice cultivation followed by it fulfils various information need (56.7%), easy to understand (56.7%) and provides relevant package of practices 56.7 per cent. Around 37 per cent extension personnel disagreed that information provided by RKMP is not relevant to their location followed by its usage is limited by computer illiteracy 23.3per cent, provides reliable and timely information 20 per cent and videos are relevant 20 per cent. When coming to strongly disagreed, around 40 per cent extension personnel strongly disagreed that its content is up to date and videos are relevant 36.7 per cent followed by it minimizes time barrier 33.3 per cent and not relevant to their location 33.3 per cent. The above result was also shown by using perception score and rank value of the statements.

Table 6: Extension personnels' perception about RKMPs' information
n=30

STATEMENTS	SA	A	N	DA	SDA	PS	RANK
RKMP information is easy to understand	4	17	6	3	0	112	1
RKMP fulfilled various information need	4	17	4	2	3	107	2
RKMP is user-friendly	5	16	2	3	4	105	3
RKMP provided reliable and timely information	5	15	2	6	2	105	4
RKMP provided comprehensive information about rice cultivation	1	19	5	2	3	103	5
RKMP gives information about new rice varieties	2	16	5	4	3	100	6
RKMP increased the farming benefits	5	10	5	5	5	95	7
RKMP provided relevant cultivation package of practices	1	17	3	3	6	94	8
RKMP videos are relevant	6	8	3	9	4	92	9
RKMP usage is limited by computer illiteracy	5	7	7	7	4	90	10
RKMP content is adequate	4	11	4	3	8	86	11
RKMP content is up to date	2	7	12	5	4	82	12

RKMP provided information about Government schemes	2	9	8	5	6	79	13
RKMP provided information at door step at one click	4	6	7	4	9	72	14
RKMP Information is not relevant to my location	3	8	2	11	6	69	15
RKMP minimizes time in getting information	4	3	11	2	10	66	16

SA=Strongly Agree, A=Agree, N=Neutral, DA=Dis Agree, SDA=Strongly Dis Agree, PS=Perception score

Table 7: Distribution of Extension personals' according to their extent of perception

Categories	Respondents		Mean	SD
	Number	Percent		
Low (16-37.33)	5	16.67	47.10	10.10
Medium (37.34-58.66)	17	56.67		
High (58.67-80)	8	26.67		

Further it was observed that 57 per cent of respondents have a good perception towards RKMP as a source of information, where as 27 per cent in high level of perception category and 16 per cent in low level category. (Table 7).

CONCLUSION

Technologies becoming dynamic day by day. Tomorrow's society will be more virtual than physical. Hence, the emerging social media tools need to be integrated well in knowledge management models. So to measure the perception of respondents scale should be readily available. The validity and reliability of scale indicated the precision and consistency of the results. This scale can be used to measure the farmers' perceptions beyond the study area and to other crops with little modification.

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