

## DEVELOPMENT OF KNOWLEDGE TEST TO MEASURE THE LEVEL OF KNOWLEDGE OF MEMBER FARMERS OF GRAM PANCHAYAT ABOUT PRADHAN MANTRI FASAL BIMA YOJANA

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### ABSTRACT

*Knowledge is awareness, familiarity or understanding of someone or something such as facts, information, descriptions or skills which were acquired through experience or education by perceiving, discovering or learning. Knowledge is one of the key components of behaviour and as such holds an important role in the covert and overt behaviour of an individual. Gram Panchayats acts as a single window for implementation of all developmental schemes. PRI is the main planning and executive agency for all kinds of development projects at the Gram Panchayat level. It is very essential for the member of gram panchayat to have knowledge and awareness about the various government schemes implementing at panchayat level. as the panchayat members will act as point of contact for many farmers in the village. hence the present study was carried out in Anand Agricultural university in the year 2019-20 to study the knowledge level of member farmer of gram panchayat about PMFBY. to measure the knowledge level standardisation of knowledge test was done. In developing knowledge test, the scientific procedure was adopted with due care i.e., collection of items, jury opinion and the collected items were analysed through item difficulty index, discrimination index (E1/3), biserial correlations (rbis). Finally, the reliability and validity of the test were also measured which contained 28 items related to Pradhan Mantri Fasal Bima Yojana.*

**Keywords:** *pradhan mantri fasal bima yojana, knowledge test, gram panchayat, member farmers*

### INTRODUCTION

Agriculture is the back bone of the Indian economy. The crop depends on the natural rainfall and other atmospheric factors. Food is the crowning need for way too much attention on the commercialization of agricultural production for any human being. Therefore, adequate production and even distribution of food has become a high priority of our country and to the world. In this changing agricultural scenario and global competition, there is a need of exploiting the limited available resources at maximum level with a smoothly, at minimal cost and adequate flow of finance or credit is primary factor for sustainable agriculture development. Hence Government agencies are promoting diversification in production, research, and farm extension. Due to the unpredictable climatic change, farmer's credit earning capacity suffers a lot. Crop insurance is an emerging concept in our country. The agricultural sector privilege crop insurance schemes - Scheme based on Individual approach, 1972- 1978, Pilot Crop Insurance Scheme (PCIS), 1979-1984, Comprehensive Crop Insurance Scheme (CCIS), 1985-1999, Experimental Crop Insurance Scheme, (ECIS), 1997-

98, National Agricultural Insurance Scheme (NAIS), 1999 in India has been accorded top priority since independence. A cursory look at the growth of agriculture in the past five decades indicates that agricultural production has reached comfortable heights especially after the Green Revolution. Pradhan Mantri Fasal Bima Yojana was announced by the Government of India on 13<sup>th</sup> January 2016. It envisages a uniform premium of only 2.00 per cent to be paid by farmers for *Kharif* crops and 1.50 per cent for Rabi crops. The premium for annual commercial and horticultural crops is 5.00 per cent. This scheme allowed the farmers to pay a very low premium to insure their crops. The difference between the premium paid by the farmers and the premium fixed by the insurance companies is subsidized and there is no cap on the maximum subsidy to be paid by the Government. The developed knowledge test was administered to the selected 200 respondent's selected for the study. With the using of this test, it was found that majority of the member farmers of gram panchayat had a medium level of knowledge (72.33%) followed by high (15.00%) and low knowledge (12.67%) about improved dairy husbandry practices.

**OBJECTIVE**

To develop knowledge test to measure the level of knowledge of member farmers of gram panchayat about pradhan mantri fasal bima yojana

**METHODOLOGY**

The present study was carried out in Middle Gujarat region covering ine districts viz. Ahmedabad, Anand, Chhotaudepur, Dahod, Kheda, Mahisagar, Panchmahals, Vadodara and Botad. Among these Anand, Vadodara and Kheda were selected purposively for the study. The list of village panchayats has been obtained from district panchayat office. Every taluka from each district have enough number of village panchayat for the study. For the further selection process four talukas were selected randomly from each district. Thus, the total numbers of selected talukas were twelve. Afterward, random sampling technique was followed for selection of four villages from each selected talukas. Thus, the total 48 villages were selected for this study. Five member farmers of gram panchayat were selected randomly from each village panchayat. Thus, by multi stage sampling technique, a random sample of 240 farmers was selected for the study.

**RESULTS AND DISCUSSION**

Development of a standardize knowledge test to measure the level of knowledge of member farmers of gram panchayat about Pradhan Mantri Fasal Bima Yojana

**Item Collection**

The content of a knowledge test is composed of questions called items. Items for the test were compiled from different sources such as literature, field extension personnel, relevant specialists (Policy Makers, Extension Educationists, and Economists *etc.*) and the researcher’s own experience. The items were collected concerning major fields. Proper care was taken to make sure that no crucial aspect should be left out. The collected items were negotiated with research scientists of the concerned fields for relevance of the statements and for addition and alteration of the items. Keeping the following three criteria in view, the items were initially selected for developing knowledge test:

- (a) The item should provide thinking rather than simply rote memorization.
- (b) The item should differentiate between well informed and poorly informed farmers and should have certain difficulty value.

- (c) The items included should cover all the areas of knowledge about concerned field.

**Item Analysis**

The item analysis used by Jha and Singh (1970) was carried out so as to yield three kinds of information, viz., Index of item difficulty, Index of item discrimination and Index of item validity. Index of item difficulty refers to the extent to which an item was difficult, while the index of item discrimination was computed to find out whether an item discriminates a well-informed person from a poorly informed one. The index of item validity indicates how well an item measures or discriminates in agreement with the rest of the test.

The items were checked and modified on the basis of pretesting and administered to 42 respondents for item analysis. The respondents for administering the items were randomly selected and were not included in the sample for the final study. This was mainly done to avoid testing effect. Each one of the 42 respondents, to whom the test was administered, was given a score 1 or 0 for each item, according to whether the answer was right or wrong and responses were also collected under multiple choice question system in which those respondents who gave correct answer was given score 1 and 0 for those who gave wrong answer. The total number of correct answers given by the respondent out of collected items was the knowledge score of the individual. After calculating the score obtained by 42 respondents, the scores were arranged from highest to lowest in order of magnitude. These 42 respondents were divided into six equal groups, each groups having “7” respondents and were arranged in descending order of total scores secured by them. These groups were given names as G1, G2, G3, G4, G5 and G6, respectively. For item analysis, the middle two groups, i.e. G3 and G4 were removed. Only following four extreme groups with high and low scores were taken into account for the calculation of item difficulty and item discrimination indices:

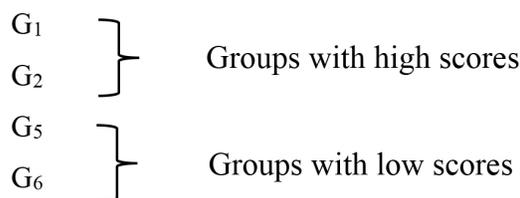


Table 1 : Arrangement of the scores obtained by respondents from highest to lowest in order of magnitude

Sr. no.	Form no.	Scores	Sr. no.	Form no.	Scores
1.	21	36	22.	32	26
2.	33	35	23.	27	25
3.	42	34	24.	36	25
4.	12	33	25.	40	24
5.	28	33	26.	14	23
6.	30	33	27.	41	23
7.	37	33	28.	23	23
8.	13	32	29.	26	22
9.	22	32	30.	35	22
10.	3	31	31.	25	21
11.	4	30	32.	15	19
12.	29	30	33.	19	18
13.	1	29	34.	24	18
14.	5	29	35.	9	16
15.	34	28	36.	17	15
16.	39	28	37.	16	14
17.	6	28	38.	38	14
18.	2	27	39.	8	14
19.	10	27	40.	20	12
20.	7	26	41.	18	11
21.	31	26	42.	11	4

Table 2: Formation of six different groups of respondents by arranging them in descending order based on scores obtained by them

Group	Serial no. of the respondents in descending order	No. of respondents
G1	1 to 7	7
G2	8 to 14	7
G3	15 to 21	7
G4	22 to 28	7
G5	29 to 35	7
G6	36 to 42	7

Table 3: Final four groups after elimination of middle two groups

Group	Serial no. of the respondents in descending order	No. of respondents
G1	1 to 7	7
G2	8 to 14	7
G5	29 to 35	7
G6	36 to 42	7

Calculation of Difficulty Index (P<sub>i</sub>)

The difficulty index of an item is defined as the proportion of respondents giving correct answer to that particular item. This was calculated by the following formula:

$$P_i = \frac{n_i}{N_i} \times 100$$

Where,

P<sub>i</sub> = Difficulty index in percentage of the i<sup>th</sup> item

n<sub>i</sub> = Number of respondents giving correct answer to i<sup>th</sup> item

N<sub>i</sub> = Total number of respondents

An example of calculation of Difficulty Index (P<sub>i</sub>) of item no. 4 is presented below:

$$P_i = \frac{n_i}{N_i} \times 100$$

$$P_4 = \frac{19}{28} \times 100$$

$$P_4 = 67.86 \%$$

Note: 1) Range of P values for final selection of the item was 20 to 80 per cent.

**Calculation of Discrimination Index ()**

The discrimination index can be obtained by computing the phi-coefficient as formulated by Perry and Michael (1951). Although, Mehta (1958) in using  $E^{1/3}$  method to find out item discrimination emphasized that this method was analogous to, and hence, a convenient substitute for the phi-coefficient. The ( $E^{1/3}$ ) was used in the research study.

$$E^{1/3} = \frac{(S_1 + S_2) - (S_5 + S_6)}{N/3}$$

Where,

$S_1, S_2, S_5,$  and  $S_6$  = The frequencies of correct answers in groups  $G_1, G_2, G_5$  and  $G_6$  respectively.

$N$  = Total number of respondents in the sample of item analysis.

**An example of calculation of Discrimination Index () of item no. 4 is presented below:**

$$E^{1/3} = \frac{(S_1 + S_2) - (S_5 + S_6)}{N/3}$$

$$E^{1/3} = \frac{(6 + 6) - (5 + 2)}{28/3}$$

$$E^{1/3} = 0.54$$

**Note:** 1) Range of  $E^{1/3}$  values for final selection of the item were above 0.20.

**Calculation of Biserial Correlation ( $r_{bis}$ )**

It was used for the test item validation, when the criteria of validity are regarded as internal consistency that is, the relationship of total score to a dichotomized response to any given item. Keeping this in view, with the help of following formula proposed by Guilford (1965), the Biserial correlation for each of the item was computed. The significance of the Biserial correlation coefficient was tested by using the formula given by Guilford (1965). The items which are found to be significant at 0.5 per cent level of significance was included in the final format of the knowledge test battery.

$$r_{bis} = \frac{M_p - M_q}{\sigma_t} \times \frac{pq}{y}$$

Where,

$M_p$  = Mean of X values for higher group (Giving correct answer of particular item) in dichotomized variable

$M_q$  = Mean of X values for lower group (Giving wrong answer of particular item) in dichotomized variable

$p$  = Proportion of cases in higher group (Giving correct answer of particular item)

$q$  = Proportion of cases in lower group (Giving wrong answer of particular item)

$y$  = Ordinance of the unit normal distribution curve with surface equal to 1.0 at the point of division between segments containing  $p$  and  $q$  proportion of the cases.

= Standard deviation

**An example of calculation of Biserial Correlation ( $r_{bis}$ ) of item no. 4 is presented below.**

$$r_{bis} = \frac{M_p - M_q}{\sigma_t} \times \frac{pq}{y}$$

Where,

$P$  = [Summation of the scores obtained by 19 respondents passing the item (giving correct answer of item no. 4)]

$$M_p = \frac{519}{19} = 27.32 \text{ (Mean score)}$$

$$\text{Proportion} = \frac{19}{28} = 0.68$$

$q$  = 151 [Summation of the scores obtained by 9 respondents not passing the item (giving wrong answer of item no. 4) = (670-519)]

$$M_q = \frac{151}{9} = 16.78$$

$$\text{Proportion} = \frac{9}{28} = 0.32$$

Hence,

$$\frac{pq}{y} = 0.6085 \text{ [table value from Guilford (1965)]}$$

The proportion passing and failing are 0.68 and 0.32, respectively. The 'y' ordinate from table is 0.3576 [value of 0.68 in table value from Guilford (1965)].

Hence,

$$\frac{0.68 \times 0.32}{0.3576} = 0.6085$$

$\sigma_t$  (Standard deviation of the total items scores) = 7.81

$$r_{bis} = \frac{27.32 - 16.78}{7.81} \times 0.6085$$

$$r_{bis} = 0.8210$$

$$r^2_{bis} = 0.6741$$

$$t = \frac{r_{bis}}{\frac{\sqrt{pq}}{y} - r_{2bis}} \sqrt{N}$$

$$t = \frac{0.8210}{\frac{1.304 - 0.6741}{5.3}}$$

$$t = 6.8955$$

**Test of significance of  $r_{bis}$**

The coefficient of Biserial Correlation was tested for their significance by using the following formula as given by Guilford (1965).

Significant at 0.5 level of probability

**Table 4: Difficulty index (Pi), Discrimination index (E1/3) and Biserial correlation coefficient (r bis) of the knowledge items**

Item No.	Frequency of correct answer given by group $G_1, G_2, G_3, G_4$				Total frequencies of correct answers $S_1+S_2+S_3+S_4+S_5+S_6$	$P_i$	$E^{1/3}$	r bis	Remark
	S1	S2	S3	S4					
1	6	7	6	4	23	82.14	0.32	0.508	Rejected
2	7	3	3	0	13	46.43	0.75	0.933	Selected
3	6	5	5	5	21	75.00	0.11	0.006	Rejected
4	6	6	5	2	19	67.86	0.54	0.674	Selected
5	0	0	2	0	2	7.14	-0.21	0.017	Rejected
6	0	1	0	0	1	3.57	0.11	0.227	Rejected
7	0	0	0	0	0	0.00	0.00	0.000	Rejected
8	7	6	3	1	17	60.71	0.96	0.864	Selected
9	2	1	0	1	4	14.29	0.21	0.152	Rejected
10	7	5	5	2	19	67.86	0.54	0.463	Selected
11	7	6	5	1	19	67.86	0.75	0.924	Selected
12	4	3	1	0	8	28.57	0.64	0.561	Selected
13	7	7	6	2	22	78.57	0.64	0.988	Selected
14	6	6	2	1	15	53.57	0.96	0.828	Selected
15	7	7	5	4	23	85.71	0.54	0.987	Rejected
16	7	7	4	5	23	82.14	0.54	0.508	Rejected
17	4	4	1	0	9	32.14	0.75	0.639	Selected
18	1	0	0	0	1	3.57	0.11	0.509	Rejected
19	0	1	0	0	1	3.57	0.11	0.227	Rejected
20	0	0	0	0	0	0.00	0.00	0.000	Rejected
21	3	1	1	0	5	17.86	0.32	0.322	Rejected
22	4	6	5	3	18	64.29	0.21	0.138	Rejected
23	5	4	2	2	13	46.43	0.54	0.292	Selected
24	6	6	7	5	24	85.71	0.00	0.066	Rejected
25	4	7	6	3	20	71.43	0.21	0.137	Rejected
26	0	0	0	0	0	0.00	0.00	0.000	Rejected
27	3	0	0	0	3	10.71	0.32	0.493	Rejected
28	6	7	5	4	22	78.57	0.43	0.443	Selected
29	6	7	3	1	17	60.71	0.96	0.932	Selected
30	5	5	0	2	12	42.86	0.86	0.486	Selected
31	6	6	1	2	15	53.57	0.96	0.462	Selected
32	5	5	2	3	15	53.57	0.54	0.223	Selected
33	7	2	4	0	13	46.43	0.54	0.611	Selected
34	4	7	0	2	13	46.43	0.96	0.541	Selected
35	7	1	4	0	12	42.86	0.43	0.486	Selected
36	7	7	2	3	19	67.86	0.96	0.613	Selected
37	7	5	2	1	15	53.57	0.96	0.936	Selected
38	7	7	7	5	26	92.86	0.21	0.996	Rejected
39	7	7	7	5	26	92.86	0.21	0.996	Rejected

Item No.	Frequency of correct answer given by group $G_1, G_2, G_3, G_4$				Total frequencies of correct answers $S_1+S_2+S_3+S_4+S_5+S_6$	$P_i$	$E^{1/3}$	r bis	Remark
	S1	S2	S3	S4					
40	7	7	7	6	27	96.43	0.11	0.677	Rejected
41	4	4	2	0	10	35.71	0.64	0.484	Selected
42	7	6	3	0	16	57.14	1.07	0.916	Selected
43	7	3	0	1	11	39.29	0.96	0.877	Selected
44	4	4	3	1	12	42.86	0.43	0.365	Selected
45	6	6	3	2	17	60.71	0.75	0.619	Selected
46	7	7	3	3	20	71.43	0.86	0.927	Selected
47	7	6	4	1	18	64.29	0.86	0.946	Selected
48	5	5	0	1	11	39.29	0.96	0.669	Selected

### Representative of the Test

Though the aforesaid criteria were the focal consideration for the final selection of the knowledge items, the care was taken not to avoid the important aspects if any. The information regarding Difficulty index, Discrimination index and Biserial correlation of items can be seen from table 4. Thus, in light of the three criteria, described above 48 items were finally selected out of 28 items, comprised of multiple choice or yes or no format which formed the actual format of the test to measure level of knowledge of member farmers of gram panchayat about PMFBY.

### Reliability of the Test

A test is reliable when it consistently produces the same results when it applied to the same sample. In the present study to test the reliability of the test, the split half method was used. The 28 statements were divided into two halves with 14 odd numbered in one half and 14 even-numbered statements in the other. These were administered to 30 respondents. Each of the two sets of statements was treated as a separate test and then co-efficient of reliability was calculated by the Rulon's formula (Guilford, 1954), which came to 0.80. Thus, the test developed was found highly reliable.

### Content validity of the test

The Biserial correlation was regarded as a measure of test item validity. Significant and highly significant Biserial correlation coefficient proved the construct validity of the items included in the knowledge test battery.

### Administering the knowledge test

The final knowledge test was administered on the selected sample member farmers of gram panchayat. The knowledge of member farmers of gram panchayat about PMFBY was studied by using developed test. The responses were collected in two point continuum viz. Yes and No with weightage of 1 and 0, respectively. All the 28 items in the

knowledge test read out to the member farmers of gram panchayat after establishing rapport with them. The member farmers of gram panchayat were asked to answer the items by themselves. Following are the statements on the level of knowledge of member farmers of gram panchayat about PMFBY. Please give your answers to the questions.

### CONCLUSION

The test developed was scientifically tested for its validity and hence, it can be very well used to measure the level of knowledge of member farmers of gram panchayat about Padhan Mantri Fasal Bima Yojana with necessary modification. There is enormous chance for improvement in the level of knowledge of member farmers of gram panchayat. They are directly connected with Krishi Vigyan Kendra, Agriculture Technology Management Agency, Agriculture Technology Information center of Anand and getting the information from their scientist.

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