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DEVELOPMENT OF A SCALE ON EMOTIONAL INTELLIGENCE OF SARPANCHES

B. J. Sangada[1], R. D. Pandya[2] and R. M. Bhuva[3]

1 Assistant Professor, Polytechnic in Agriculture, NAU, Vyara - 394650
2 Retd. Principal & Dean, N. M. College of Agriculture, NAU, Navsari - 396450
3 Assistant Professor, N. M. College of Agriculture, NAU, Navsari – 396450
E-mail: bhishman.sangada@nau.in

ABSTRACT

This study presents the development of an Emotional Intelligence (EI) scale using the Scale Product Method, integrating Thurston's equal appearing interval scale and Likert's summated rating scale. Methodologically, indicators were selected, items collected, and judgments obtained from experts to construct the scale. The final 18-item scale demonstrated high reliability and content validity, categorized Sarpanches into low, moderate, and high EI levels, and was administered using a five-point continuum. Results indicate significant correlations with independent variables. The study concludes by discussing the implications for enhancing emotional competencies among rural leaders, facilitating effective decision-making, and fostering community development in grassroots governance.

Keywords: *emotional intelligence (EI), scale product method and sarpanch*

INTRODUCTION

Emotional intelligence (EI) refers to the ability to recognize, understand, manage, and effectively use one's own emotions, as well as those of others. It encompasses a range of skills and competencies that enable individuals to navigate social interactions, manage relationships, and cope with challenges healthily and productively. Thurston's equal appearing interval scale (1928) and Likert's summated rating scale (1932) are quite well known. However, in the present study 'Scale Product Method' was used which is a combination of Thurston's technique of equal appearing interval scale for the selection of the items and Likert's technique of summated rating for ascertaining the response on the scale as proposed by Eysenck and Crown (1949).

OBJECTIVE

To develpment of a scale on emotional interlligence of sarpanches.

METHODOLOGY

The methodology for constructing the Emotional Intelligence (EI) scale involved four main steps. Firstly, 25 EI indicators were identified through a comprehensive literature review. To assess their suitability, a survey was conducted among 150 extension professionals, resulting in 103 responses. Weighted mean and standard error were calculated for each indicator based on these responses. Secondly, statements reflecting the feelings of Sarpanches were collected from relevant literature sources and expert consultations. These statements were then refined and edited to ensure clarity, resulting in a total of 75 selected items. Thirdly, a total of 120 experts in extension education were approached to rate the 75 items on an 11-point continuum from 'most unfavorable' to 'most favorable.' After eliminating indifferent judgments, responses from 74 judges were considered for further analysis. Lastly, Thurston's scaling technique was applied to analyze the judges' ratings, determining scale value (S) and interquartile value (Q) for each statement. Statements were selected for inclusion in the final EI scale based on their S and Q values. A standard procedure was followed as suggested by Rathod *et al.* (2023); Patel *et al.* (2023); Shah *et al.* (2023); Sharma (2023); Singh *et al.* (2023).

RESULTS AND DISCUSSION

Selection of indicators for construction of scale

After collection of reviews from the available literature, 25 indicators related to emotional intelligence were identified. A list of indicators was circulated among 150 extension professionals from that 103 responded and their opinions were obtained on 10 point continuum to know its appropriateness for the present study. The indicator wise frequencies were converted in to a master sheet. Weighted mean and standard error were calculated for each indicator. The values thus obtained were arranged in ascending order.

Item collection

The items making up an emotional intelligence scale are called statements. A statement may be defined as anything that is said about a psychological object (Edward, 1969). Initially, items reflecting the feelings of Sarpanches were collected from relevant literatures, by consulting the major advisor, experts and extension personnel of Navsari

Agricultural University and converted them in context to the present requirement. The statements, thus selected were edited on the basis of the criteria suggested by Edward (1969) and finally, 75 statements were selected as they were found to be non-ambiguous.

Judge's rating of Emotional intelligence statements

A schedule of 75 items was sent through 'Google forms' via email and WhatsApp as well as through direct personal contacts to 120 experts working in the discipline of extension education of SAUs of Gujarat and other states. The judges were requested to sort out 75 statements on 11 point continuum from 'most unfavourable' to 'most favourable'. Out of them, 94 judges were responded. Following the suggestion of Thurston and Chave (1928), responses of 20 judges were eliminated due to indifferent and careless judging. Finally, 74 schedules were kept for the construction of final scale.

Item analysis

The scaling technique developed by Thurston (1928) analyze the judges' rating on the relevancy of the emotional intelligence items on 1 to 11 point continuum which shows most unfavourableness to most favourableness toward each item. The responses of 74 judges on 75 items were transferred into the master sheet. In this scaling technique, scale value / median value (S) and interquartile value (Q) were found out for each statement.

Table 1: Distribution of frequency assigned for 3rd item by the judges on eleven point continuum

Sorting categories	1	2	3	4	5	6	7	8	9	10	11	Total
Distribution of judges' judgments on 3rd item	0	0	0	1	1	1	IIII	1	IIIII IIIII IIII	IIIII IIIII IIIII IIIII	IIIII IIIII IIIII IIIII III	**74**
Frequency	**0**	**0**	**0**	**1**	**1**	**1**	**4**	**1**	**14**	**24**	**28**	

The 11 points rating scale were assigned scores ranging from 1 for most unfavourable to 11 for the most favourable. Based on judgment, the median value / scale value of the distribution for the statement concerned was calculated with the help of following formula. The procedure for calculation of S and Q value of 3rd item is shown in table 1 and 2. The table 2 shows the continuum wise frequency of judgments made by the judges for the 3rd item.

The frequency obtained on 3rd item was used to work out the proportion (p) and cumulative proportion (cp) to find out the S and Q value. It is depicted in table 4.

Table 2: Summary of judgments on eleven point continuum for 3rd item

3rd item	Sorting Categories											S	Q
	1	2	3	4	5	6	7	8	9	10	11		
f	0.00	0.00	0.00	1.00	1.00	1.00	4.00	1.00	14.00	24.00	28.00		
p	0.00	0.00	0.00	0.01	0.01	0.01	0.05	0.01	0.19	0.32	0.38	10.1	1.6
cp	0.00	0.00	0.00	0.01	0.03	0.04	0.09	0.11	0.30	0.62	1.00		

S = Median or Scale value **Q** = Inter-quartile value

Table 4 shows the *f, p* and *cp* value of 3rd item. The proportions (*p*) was derived by dividing each frequency *f* by *n* (*n*=74), while in calculation of cumulative proportions (*cp*), the *p* value of given continuum was considered and added to the sum of all the p values below that continuum.

The formulation of classes was made by following the discrete method of statistics. Further, the scaling technique is basically working on median for calculating the *S* value. Therefore the formula is with 0.50 value.

If the median of the distribution judgement for each

item was taken as the *S* value of the item, then the *S* value can be found from the data arranged in the manner as shown in table 2 by means of the following formula.

$$S=L+\frac{0.50-\varepsilon Pb}{Pw}\times i$$

Where,

S = The median or scale value of the statement

L = The lower limit of the interval in which the median falls

Pb = The sum of the proportion below the interval in which the median falls

Pw = The proportion within the interval in which the median falls

i = The width of the interval, which was assumed as equal to 1.0 (one)

Substituting the number in the above formula to find out the scale value for the item no. 3 in table 2, we have

$$S=9.5+\frac{0.50-0.32}{0.34}\times 1$$

= 9.5 + 0.6 = 10.1

The scale value (S) was found in the same manner for the other items.

Thurstone and Chave (1928) used the inter-quartile range Q as a means of the variation of the distribution of the judgments for a given item. The inter-quartile range () for each item was also found out for determination of ambiguity involved in it. To determine the value of Q at 75th centile and 25th centile, the following formulas were used. The 75thcentile was obtained by the following formula.

$$C_{75}=L+\frac{0.75-\varepsilon Pb}{Pw}\times i$$

Where,

C_{75} = The 75th centile value of the statement

L = The lower limit of the interval in which the 75th centile falls

Pb = The sum of proportion below the interval in which 75th centile falls

Pw = The proportion within the interval in which the 75th centile falls

i = The width of the interval and is assumed to be equal to 1.0 (one)

In continuation of calculation of 3rd item in table 2, 75th centile was determined as;

= 10.5 + 0.34

= 10.84

The 25thcentile was obtained by the formula.

$$C_{25}=L+\frac{C\_25=L+}{Pw}\times i$$

Where,

C_{25} = The 25thcentile value of the statement

L = The lower limit of the interval in which the 25th centile falls

Pb = The sum of proportion below the interval in which the 25th centile falls

Pw = The proportion within the interval in which the 25thcentile falls

i = The width of the interval and is assumed to be equal to 1.0 (one)

In continuation of calculation of 3rd item in table 2, 25th centile was determined as;

= 8.5 + 0.73

= 9.23

Then the inter-quartile range worked out by taking the difference between C_{75} (Q_3) and C_{25} (Q_1).

$$Q= C_{75}- C_{25}$$

Thus,

Q= 10.84- 9.23

= 1.61 ≈ 1.6

According to Thurston scaling technique, only those items were selected whose S value is greater than Q value. In case of 3rd item, S = 10.1 and Q = 1.6, S value is greater than Q value, hence 3rd item was selected. In this manner, Q values for all remaining items were worked out.

Further, Thurstone and Chave (1928) described the criteria in addition to Q as a basis for rejecting the statements in scales constructed by equal appearing interval scaling method. Accordingly, when two or more items had the same scale values, those items having lowest Q values were selected. Furthermore, for sorting, the discussion with statistician and they suggested finding the mean of highest and lowest S value which is 9.79. We have selected the items which has S values above 9.79. The information in this regard is presented in table 3.

Table 3: Discrimination of items on the basis of S and Q values

Item No.	S value	Q value	Consent
16	10.62	1.31	Selected
18	10.34	1.68	Selected
8	10.32	1.78	Selected
28	10.22	1.43	Selected
17	10.15	1.88	Selected
3	10.13	1.59	Selected
19	10.09	1.80 (Lowest)	Selected
55	10.09	1.86	Not selected
7	10.08	1.63 (Lowest)	Selected
9	10.08	1.64	Not selected
12	10.02	1.72	Not selected
46	10.02	1.58 (Lowest)	Selected
29	10.00	2.03	Not selected
37	10.00	1.73	Not selected
52	10.00	1.65 (Lowest)	Selected
61	9.98	1.27 (Lowest)	Selected
22	9.98	1.90	Not selected
10	9.97	1.99	Selected
34	9.96	1.62	Selected
67	9.95	1.83	Not selected
70	9.95	1.76 (Lowest)	Selected
49	9.91	1.76	Selected
13	9.90	1.81	Selected
40	9.85	1.80	Not selected
64	9.85	1.63 (Lowest)	Selected
20	9.83	2.00	Not selected
31	9.83	1.80 (Lowest)	Selected
43	9.79	1.75	Not selected
58	9.79	1.73 (Lowest)	Selected
48	9.78	1.79	Not selected
23	9.78	1.53 (Lowest)	Selected
47	9.76	1.77	Not selected
4	9.73	1.68 (Lowest)	Selected
53	9.73	1.87	Not selected
11	9.72	1.83	Not selected
30	9.70	1.88	Not selected
36	9.70	1.84 (Lowest)	Selected

Item No.	S value	Q value	Consent
60	9.66	1.63 (Lowest)	Selected
5	9.66	2.17	Not selected
44	9.62	1.64	Selected
6	9.60	1.94	Not selected
50	9.60	1.89	Not selected
41	9.60	2.14	Not selected
63	9.60	1.84 (Lowest)	Selected
24	9.56	1.91 (Lowest)	Selected
56	9.56	2.04	Selected
57	9.55	1.82	Not selected
62	9.55	1.82	Not selected
25	9.55	1.66 (Lowest)	Selected
45	9.55	1.69	Not selected
42	9.55	1.86	Not selected
51	9.55	1.81	Not selected
21	9.54	1.82	Selected
32	9.50	1.72	Not selected
35	9.50	1.69 (Lowest)	Selected
2	9.46	1.54 (Lowest)	Selected
72	9.46	1.69	Not selected
71	9.45	1.90	Selected
68	9.43	2.38	Selected
54	9.42	1.85	Selected
59	9.38	1.64	Selected
39	9.36	1.79 (Lowest)	Selected
15	9.36	2.05	Not selected
65	9.34	1.63	Selected
1	9.33	1.83	Not selected
14	9.33	1.78 (Lowest)	Selected
74	9.32	2.31	Not selected
38	9.32	1.87 (Lowest)	Selected
26	9.30	1.62 (Lowest)	Selected
69	9.30	2.39	Selected
33	9.29	1.88 (Lowest)	Selected
27	9.29	1.98	Not selected
73	9.29	2.34	Not selected
66	9.18	2.41	Selected
75	8.97	2.68	Selected

Final statements for emotional intelligence scale

When there was a good agreement among judges in judging the degree of favourableness or unfavourableness of a statement, the Q value remains smaller as compared to the S value. Thus, those statements having S values greater than Q value were selected. Also, for the statements obtained similar scale values, those having lowest Q values were selected. Based on S value and Q value, 44 statements were selected. After that, from the 44 statements, those having difference between S value and Q value above 9.79 were considered for the present study. Thus, 18 statements numbered 16, 18, 8, 28, 17, 3, 19, 7, 46, 52, 61, 10, 34, 70, 49, 13, 64 and 31 were finally selected to constitute the emotional intelligence scale. Those 18 statements were randomly arranged to avoid the response bias. The final format of the scale is presented in table 4.

Table 4: Statements of scale (EI) finalised for the present study

Item No.	Statements	'S' Value	'Q' Value
16	Teamwork achieves goals. **(+)**	10.62	1.31
18	Unity strengthens teams. **(+)**	10.34	1.68
8	Confidence enhances self-efficacy. **(+)**	10.32	1.78
28	Internal motivation fuels drive. **(+)**	10.22	1.43
17	Collaboration powers success. **(+)**	10.15	1.88
3	Choose positivity to over negativity. **(+)**	10.13	1.59
19	Self-control empowers choices. **(+)**	10.09	1.80
7	Self-efficacy hinders personal growth. **(-)**	10.08	1.63
46	Team capabilities drive success. **(+)**	10.02	1.58
52	A mentor guides aspiring talent. **(+)**	10.00	1.65
61	Achievement orientation drives success. **(+)**	9.98	1.27
10	Commitment fuels progress. **(+)**	9.97	1.99
34	Self-awareness suppresses growth. **(-)**	9.96	1.62
70	Ethical responsibilities fail to steer decisions. **(-)**	9.95	1.76
49	Effective relationship management builds bonds. **(+)**	9.91	1.76
13	Empathy fosters connections. **(+)**	9.90	1.81
64	Impulse control undermines discipline. **(-)**	9.85	1.63
31	Adaptability inhibits resilience. **(-)**	9.83	1.80

Standardization of the scale

The validity and reliability were ascertained for scale standardization.

Reliability of the scale

Reliability refers to the consistency of scores obtained by the same individual when re-examined with test on different occasions or with different sets of equivalent items. The split-half technique was used to measure the reliability of the constructed scale. All the 18 statements were divided into two equal halves with 9 odd numbered and 9 even numbered statements. These were administered to 30 experts in the non-sample area via Google forms. The coefficient of reliability between these two sets of scores was calculated by Rulon's formula suggested by Guilford (1954).

The calculation of co-efficient to obtain reliability between the two sets was 0.98, which is significant at 1 per cent level. Spearman Brown formula (1910) was also used to get confirmation of calculation for reliability and was also 0.98. Hence, the scale developed was found highly reliable.

Validity of the scale

The validity test depends upon fidelity. It measures what it is to be purported to measure (Kerlinger, 1976). The validity issued to examine the content validity for determining sampling adequacy or ampleness of the substance. It infers the content, the issue and the subjects of an estimating instrument of the scale represented the domain subject matter under study. As many items covering the area as possible were selected by discussion with experts, reviewing the literature and adherence to the judges' ratings, it was presumed that the developed scale battery satisfied the content validity.

Administering the scale

The final set of emotional intelligence scale consisted of 18 statements in which 13 were found to be positive and 5 were negative. This was administered on the selected sample of Sarpanches. The responses were collected on five point continuum *viz*., strongly agree, agree, undecided, disagree and strongly disagree with weightage of 5, 4, 3, 2 and 1, respectively. The maximum score was 90 and minimum was 18.

Sr.	Categories	Class range
1	**Low emotional intelligence**	Up to 42
2	**Moderate emotional intelligence**	43 to 66
3	**High emotional intelligence**	Above 66

An arbitrary method was used for categorization. For that the higher score is subtracted from the lower score and divided by the number of categories. The obtained score is added into the lower score until you get the highest score. Later on, the same data were used to find out the correlation with independent variables.

CONCLUSION

In this study, an Emotional Intelligence (EI) scale was developed using the Scale Product Method, integrating Thurston's equal appearing interval scale and Likert's summated rating scale. Validity and reliability were established. The 18-item scale demonstrated high reliability and content validity. EI scores categorized Sarpanches into low, moderate, and high EI levels. Future research could explore the scale's applicability in diverse contexts, guiding interventions for enhancing emotional competencies among rural leaders. Strengthening EI can foster effective decision-making and community development in grassroots governance.

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CONFLICT OF INTEREST

The authors affirm that they do not have any conflicts of interest. It is noteworthy to mention that the authors are employed by the funding agency, a governmental organization.

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