

International Journal of Agriculture Extension and Social Development

Volume 8; Issue 11; November 2025; Page No. 159-163

Received: 21-09-2025
Accepted: 23-10-2025

Indexed Journal
Peer Reviewed Journal

Construction of a scale for measuring the level of satisfaction of the members of Farmer Producer Organizations (FPOs)

¹Harihara Tripathy, ²Gopika Somanath, ³Soumya Ranjan Behera and ³Neethu JS

¹Ph.D. Research Scholar, Kerala Agricultural University, Department of Agricultural Extension Education, College of Agriculture Vellayani, Thiruvananthapuram, Kerala, India

²Assistant Professor, Kerala Agricultural University, Department of Agricultural Extension Education, College of Agriculture Vellayani, Thiruvananthapuram, Kerala, India

³Ph.D. Research Scholar, Kerala Agricultural University, Department of Agricultural Extension Education, College of Agriculture Vellayani, Thiruvananthapuram, Kerala, India

DOI: <https://www.doi.org/10.33545/26180723.2025.v8.i11b.2631>

Corresponding Author: Harihara Tripathy

Abstract

The study aimed to develop and standardize a scale to measure the level of satisfaction of the members of Farmer Producer Organizations (FPOs). The summated rating method, developed by Likert (1932) and Edwards (1969), was used for this purpose. A total of 85 statements related to the level of satisfaction of the members of Farmer Producer Organizations (FPOs) were collected from literature and experts working with FPOs. After editing, 50 statements were retained as clear & non-ambiguous. Out of these, 37 statements were selected based on a relevancy score of over 85%, and finally, a total of 34 statements demonstrating t-values greater than 2.110 at the 0.05 level of significance were retained for inclusion in the scale. The finalized instrument showed high internal consistency, with a Cronbach's Alpha and strong split-half reliability. Exploratory factor analysis confirmed a five-dimensional structure, with factor loadings above 0.60 and an overall Average Variance Extracted of 0.768, indicating strong convergent validity. The final 34 items were grouped under five dimensions: Tangibles (7 items), Reliability (7 items), Responsiveness (8 items), Assurance (7 items), and Empathy (5 items) following the SERVQUAL model. The scale was administered on a five-point continuum, where scores for positive statements ranged from 'Strongly Agree' to 'Strongly Disagree' (5 to 1), and for negative statements, scoring was reversed.

Keywords: FPO, SERVQUAL model, scale development, reliability, validity

Introduction

Agriculture is the backbone of the Indian economy, playing a critical role in ensuring livelihood security, particularly in rural areas where the majority of the population depends on farming and allied activities. These livelihoods encompass both farm and non-farm activities, helping households secure food and income. The sector contributes approximately 18.3 per cent to India's GDP and provides employment to nearly 58.3 per cent of the population (PIB, 2023) ^[11]. Despite its importance, Indian agriculture faces significant challenges, including shrinking per capita land due to fragmentation of holdings, depletion of natural resources, growing competition for land from urbanization and industrialization, and decreasing interest of rural youth in farming—more than 40 per cent of whom express a desire to leave agriculture.

A majority of Indian farmers are small and marginal, with 86 per cent owning less than two hectares of land. On average, a farmer manages only around 1.16 hectares, making it difficult to adopt modern practices, enhance productivity, or achieve sustainable incomes. In response to these challenges, Farmer Producer Organizations (FPOs) or Farmer Producer Companies (FPCs) have emerged as a

promising solution. By pooling resources, accessing better technology, credit, and markets, and benefiting from economies of scale, FPO members can overcome the limitations of individual farming. FPOs also help reduce dependence on intermediaries in agricultural marketing, ensuring farmers receive a fairer share of consumer prices. Through collective action and bargaining power, farmers can improve productivity, income, and participation in the market, effectively transforming smallholders into more competitive agri-entrepreneurs (Jose *et al.*, 2023) ^[7].

While the structural and economic benefits of FPOs are widely recognized, an equally important aspect is the perception and satisfaction of the members themselves. The level of satisfaction among FPO members reflects how effectively the organization meets their expectations in areas such as transparency, support in inputs and marketing, access to services, training, and financial benefits. Understanding member satisfaction is crucial for assessing the overall performance and sustainability of FPOs, as satisfied members are more likely to actively participate, contribute to collective goals, and sustain long-term engagement. This study, therefore, focuses on evaluating the level of satisfaction of FPO members, providing insights

into both the successes and challenges faced by these organizations from the members' perspective.

Specific objective of the study

To develop a scale to measure the level of satisfaction of members of Farmer Producer Organizations (FPOs).

Identification of Dimensions

The dimensions of the level of satisfaction of members of FPOs were carried out using a scale developed on the basis of the SERVQUAL model (Zeithaml *et al.*, 1988), with necessary modifications to suit the FPO context. Accordingly, five core dimensions were considered most appropriate for assessing the level of satisfaction of members of FPOs, namely: Tangibles, Reliability, Responsiveness, Assurance, and Empathy.

Collection and edition of items

A total of 85 statements related to the level of satisfaction of members of FPOs were collected from literature and suggestions from experts in extension education. These statements were then edited using the 14 criteria suggested by Thurstone (1946) [13], Likert (1932) [9], and Edwards (1957) [3]. After editing, 50 statements were retained, which were clear & non-ambiguous.

Relevancy of the statements

A total of 50 statements were initially developed to measure the level of satisfaction of members of Farmer Producer Organizations (FPOs). These statements were sent to a panel of 100 experts, comprising Assistant Professors, Associate Professors, Scientists, and Extension personnel from State Agricultural Universities, Deemed Universities, as well as national institutions such as MANAGE and ICAR. The experts were instructed to assess the relevance of each statement using a 5-point Likert scale: Most Relevant (5), Highly Relevant (4), Relevant (3), Less Relevant (2), and Least Relevant (1). Out of the 100 experts consulted, each statement was carefully reviewed. Those that were ambiguous, unclear, or considered irrelevant were removed, following the established guidelines of Edwards (1969) [4], Thurstone and Chave (1929) [13], and Raj and Thomas (2022). The remaining statements were then rigorously evaluated using the Item-Content Validity Index (I-CVI), as recommended by Lynn (1986), to ensure their clarity and relevance. The Relevancy Score (%) of each statement was then calculated using the formula:

$$\text{Relevancy score (\%)} = \frac{\text{Total scores obtained on each items}}{\text{Maximum possible score}} \times 100$$

The 50 items were checked using the Item-Content Validity Index (I-CVI) method (Lynn, 1986). Items with a CVI score of 0.85 or higher were retained, as suggested by Polit and Beck (2006). After this process, 37 items were finalized under five dimensions.

Item Analysis (Index of Discrimination)

To analyze the items, the critical ratio (t-value) was calculated. This helps to find out how well each statement separates respondents with high satisfaction from those with low satisfaction, following the method given by Edwards

(1957) [3]. A total of 37 statements were tested to see if they were suitable for measuring the level of satisfaction of members of FPOs in Odisha and Kerala. For this, 72 farmers from non-sample areas were selected. The farmers rated each statement on a five-point scale (Strongly Agree to Strongly Disagree). Positive statements were scored 5, 4, 3, 2, 1, while negative statements were scored in the reverse order. Based on their total scores, the farmers were ranked from highest to lowest. The top 25% were placed in the high group and the bottom 25% in the low group. The 't' value formula was used to determine which statements could effectively distinguish between groups with high and low perceptions. The t-value (critical ratio) was then calculated for each statement using the following formula,

$$t = \frac{XH - XL}{\sqrt{\frac{[(\sum XH^2 - (\sum XH)^2 / N)] + [(\sum XL^2 - (\sum XL)^2 / N)]}{N(N-1)}}$$

Where,

XH= The mean score on a given statement for the high group

XL= The mean score on the same statement for the low group

$\sum XH^2$ = Sum of squares of the individual score on a given statement for high group

$\sum XL^2$ = Sum of squares of the individual score on a given statement for low group

$\sum XH$ = Summation of scores on given statement for high group

$\sum XL$ = Summation of scores on given statement for low group

N= Number of respondents in each group

As a result of the analysis, a total of 34 statements demonstrating t-values greater than 2.110 at the 0.05 level of significance were retained for inclusion in the scale. These items were finalized and categorized under five key dimensions of member satisfaction: Tangibles (7 items), Reliability (7 items), Responsiveness (8 items), Assurance (7 items), and Empathy (5 items).

Reliability

The reliability of the developed measurement scale was assessed to ensure the consistency and precision of the scores. Cronbach's Alpha and the split-half method were employed to evaluate internal consistency, with the split-half reliability coefficient calculated using the Spearman-Brown formula. The results indicated excellent reliability of the scale. Specifically, Cronbach's Alpha (α) was 0.955, reflecting a high level of internal consistency. Similarly, the split-half reliability coefficients, calculated using both Spearman-Brown and Guttman formulas, were 0.949, further confirming the scale's reliability.

Split half reliability,

$$r^{1/2} = \frac{N \sum XY - \sum X \sum Y}{\sqrt{[N \sum X^2 - (\sum X)^2][N \sum Y^2 - (\sum Y)^2]}}$$

Where,

X= Score of odd items, Y= Score of even items

$\sum X$ =sum of the socres of the odd number items

$\sum Y$ =sum of the scores of the even numbers items

$\sum X^2$ = sum of the squares of the odd number items

$\sum Y^2$ = sum of the squares of the even number items

Reliability co-efficient of the scale, (Spearman-brown formula)

$$R = \frac{2r^2}{1+r}$$

Where, $r_{1/2}$ = Half test reliability

Validity of the scale

Validity plays a crucial role in ensuring that a research tool captures the intended construct and enables meaningful and reliable conclusions (Singh, 2019). In the present study, the validity of the scale developed to assess the level of satisfaction of FPO members was examined through content validity and convergent validity. To further establish the validity of the scale, an Exploratory Factor Analysis (EFA) was carried out using principal component extraction with varimax rotation, which helped confirm the underlying dimensions of the construct. The EFA revealed satisfactory item loading across the five dimensions, with all factor loadings above 0.60 and the overall Average Variance

Extracted (AVE) stood at 0.768, confirming the convergent validity of the scale. Based on the results of this analysis, a final scale measuring the level of satisfaction among members of FPO members was developed, consisting of 34 statements.

Results and Discussion

The EFA revealed satisfactory item loading across the five dimensions, with all factor loadings above 0.60. Each sub-dimension exhibited values exceeding the recommended convergent validity benchmark of 0.60 (Hair *et al.*, 2020), signifying that the latent constructs effectively captured sufficient variance. The obtained values were as follows: Tangibles (0.868), Reliability (0.795), Responsiveness (0.770), Assurance (0.764), and Empathy (0.643). The overall AVE stood at 0.768, confirming the convergent validity of the scale (Fornell & Larcker, 1981) [5].

The internal consistency of the final 34-item scale was high, with a Cronbach's Alpha of 0.955, indicating excellent reliability (Nunnally & Bernstein, 1994) [10]. Split-half reliability was also significant, with Spearman-Brown coefficients of 0.949 (equal length) and 0.949 (unequal length), and a Guttman split-half coefficient of 0.949. The scales demonstrated strong internal consistency, surpassing commonly accepted reliability thresholds (DeVellis, 2017) [2], consistent with the high reliability reported by Lade *et al.* (2024) [8] in their study on FPC beneficiaries.

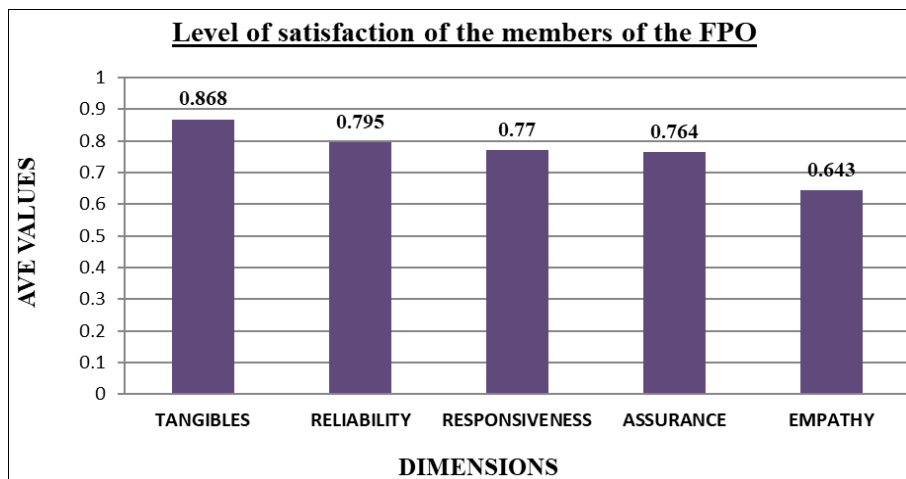


Fig 1: Average Variance Extracted for each of the five dimensions of the level of satisfaction of the members of FPOs.

This bar chart illustrated the AVE for each of the five dimensions of the level of satisfaction of the members of

FPOs. All dimensions surpassed the 0.6 thresholds, confirming good convergent validity.

Table 1: Descriptive Statistics of the level of satisfaction of the members of FPOs.

S. No.	Statements	t-value	Extraction	R ²	AVE
I	Tangibles - Physical facilities, equipment and appearance of the members.				
1	I acquired new physical assets with the income from the FPO.	4.000**	.934	0.871	0.868
2	I purchased new equipment and vehicles after joining the FPO.	2.400*	.901	0.813	
3	My strain in farming decreased since I am less bothered about input procurement and marketing.	2.873*	.949	0.901	
4	My standard of living has improved after joining this FPO.	3.162*	.944	0.892	
5	I feel more relaxed and assured while undertaking farming activities, after joining the FPO.	2.529*	.910	0.829	
6	I feel more confident in my profession after joining the FPO.	5.291**	.944	0.892	
7	The drudgery involved in farming reduced due to the use of various machineries and equipment.	3.162*	.938	0.879	
II	Reliability - The ability to provide the promised service dependably and accurately.				
1	Now I am better networked with my peer farmers.	5.291**	.877	0.770	0.795
2	I am able to obtain timely supply of inputs in a hassle free manner	4.000**	.948	0.898	

3	Securing credit is no more a matter of concern for me.	4.000**	.918	0.844	0.795
4	The services provided by our FPO are accurate and reliable.	5.000**	.880	0.774	
5	My input cost decreased.	3.162*	.896	0.803	
6	The marketing costs and associated market risks decreased.	4.000**	.948	0.898	
7	Our FPO provides accurate information regarding its services.	5.000**	.761	0.579	
III	Responsiveness - Willingness to help the members and provide the required service.				
1	My knowledge regarding the schemes for the farmers and FPOs increased.	4.000**	.849	0.721	0.770
2	My knowledge on grading, sorting and quality control of the agricultural commodities increased.	3.277*	.933	0.871	
3	Empowered with the knowledge and skills on online marketing.	4.097**	.866	0.750	
4	Now I am better aware of the importance of the quality of inputs used and the products.	5.291**	.944	0.891	
5	Now I am better aware about the quality of produce and good agricultural practices.	6.000**	.896	0.803	
6	I have acquired the skill to operate new machineries and equipment.	4.097**	.852	0.726	
7	I am aware of the rules and regulations with respect to the operation of the FPOs.	3.500**	.800	0.640	
8	I have received timely assistance from our FPO in resolving issues related to the marketing and sales of my produce.	2.529*	.870	0.757	
IV	Assurance - Knowledge and skill generation and the ability to inspire trust and confidence among the members				
1	The feeling of belongingness in an organization and working as a team has improved my morale.	6.000**	.746	0.556	0.764
2	I am in a better state of wellbeing after joining this FPO.	6.300**	.875	0.765	
3	I am satisfied with the benefits accrued from the FPO.	3.277*	.787	0.619	
4	The collaborative environment within the FPO fosters trust and confidence among all members.	6.000**	.950	0.903	
5	I feel that I was better off when I was doing individual farming.	4.437**	.963	0.928	
6	I feel that the combined effort brought better success to each member.	4.000**	.933	0.870	
7	I feel that the leadership of my group is able and inspiring.	5.291**	.840	0.706	
V	Empathy - The care and individualized attention the firm provides to its members				
1	The returns are proportionately and fairly divided among the members.	6.000**	.932	0.868	0.643
2	The group members support each other during times of hardships.	5.291**	.747	0.557	
3	Every member is given the freedom to express their ideas.	5.291**	.665	0.442	
4	The group leaders are empathetic and maintain good relationship with the members.	5.291**	.755	0.569	
5	The group's resources are mobilized to support individual farmers during times of risks and losses.	6.000**	.883	0.780	
Ave-Convergent Validity = (0.868 + 0.795 + 0.770 + 0.764 + 0.643)/5 = 0.768					

Table 2: Reliability Statistics 1

Reliability Statistics			
Cronbach's Alpha	Part 1	Value	.911
		N of Items	17 ^a
	Part 2	Value	.920
		N of Items	17 ^b
	Total N of Items		
Correlation Between Forms			.904
Spearman-Brown Coefficient	Equal Length		.949
	Unequal Length		.949
Guttman Split-Half Coefficient			.949
a. The items are: V1, V2, V3, V4, V5, V6, V7, V8, V9, V10, V11, V12, V13, V14, V15, V16, V17.			
b. The items are: V18, V19, V20, V21, V22, V23, V24, V25, V26, V27, V28, V29, V30, V31, V32, V33, V34.			

Table 3: Reliability Statistics 2

Cronbach's Alpha	N of Items
.955	34

The final development process yielded a robust 34-item instrument measuring level of satisfaction of the members of FPO finalized under five dimensions: Tangibles (7 items), Reliability (7 items), Responsiveness (8 items), Assurance (7 items), and Empathy (5 items). The item pool was rigorously validated through exploratory factor analysis, content relevance assessment, and reliability testing, ensuring its empirical and conceptual integrity.

Conclusion

This study successfully developed and validated a 34-item scale to measure the level of satisfaction among members of

Farmer Producer Organizations (FPOs) in the non-sampling areas of Kerala and Odisha, encompassing five key dimensions: Tangibles, Reliability, Responsiveness, Assurance, and Empathy. The scale demonstrated high internal consistency (Cronbach's Alpha = 0.955) and strong convergent validity (AVE = 0.768), confirming its robustness in assessing members' satisfaction. Among the dimensions, Tangibles and Reliability were particularly prominent, highlighting the critical role of physical facilities, equipment, members' appearance, and the dependable delivery of promised services. The validated scale offers a scientifically sound and comprehensive tool for capturing members' experiences and perceptions, providing valuable insights for researchers, policymakers, and FPO practitioners. It can serve as a benchmark for satisfaction levels across states, track changes over time, and identify strengths and areas for improvement within FPOs. Additionally, the scale has practical applications for guiding evidence-based strategies, evaluating the impact of interventions, schemes, and training programs, and ensuring that farmers' voices remain central in shaping the growth and effectiveness of the FPO ecosystem.

Utilization of the scale

This scale offers a scientifically validated instrument to systematically measure the level of satisfaction among members of Farmer Producer Organizations (FPOs). By providing a structured and reliable way to capture members' experiences and perceptions, it enables researchers, policymakers, and practitioners to gain deeper insights into the functioning and effectiveness of these organizations. The scale can be used in future studies to benchmark

satisfaction levels across different states, track changes over time, and compare outcomes among diverse groups of farmers. It can also serve as a diagnostic tool for FPO leaders and managers to identify strengths and areas needing improvement, thereby enabling evidence-based strategies for enhancing organizational performance and member engagement. Furthermore, government agencies, NGOs, and development practitioners can employ the scale to evaluate the impact of various interventions, schemes, and training programs targeted at strengthening FPOs. In this way, the tool not only contributes to academic research but also provides practical applications in guiding decision-making, fostering accountability, and ensuring that the voices of farmers remain central to the evolution of the FPO ecosystem.

References

1. Dechamma S, Krishnamurthy B, Lakshminarayan MT, Shivamurthy M. Development of the scale to measure the attitude of farmers towards Farmer Producer Organizations (FPOs). *Int J Curr Microbiol App Sci*. 2020;9(11):3705-3711.
2. DeVellis RF. *Scale Development: Theory and Applications*. 4th ed. Thousand Oaks (CA): Sage Publications; 2017.
3. Edwards AL. *Techniques of Attitude Scale Construction*. Bombay (Mumbai): Vakils, Feffer and Simons Pvt Ltd; c1957.
4. Edwards AL. *Techniques of Attitude Scale Construction*. Bombay: Vakils, Feffer and Simons Pvt Ltd; c1969.
5. Fornell C, Larcker DF. Evaluating structural equation models with unobservable variables and measurement error. *J Mark Res*. 1981;18(1):39-50.
6. Frankenberger TR, McCaston MK. The household livelihood security concept. *Food Nutr Agric*. 1998;12(3):30-35.
7. Jose AE, Jayalekshmi G, Lade AH, Karde R. Socio-psychological constructs and perceived economic variables on entrepreneurial behavior among Farmer Producer Organization members in Kerala: a comprehensive analysis. *Asian J Agric Ext Econ Soc*. 2023;41(9):241-250.
8. Lade AH, Ahire RD, Kausadikar KD. Construction of a scale for measuring consequences of farmer producer company on its beneficiaries. *Int J Agric Ext Soc Dev*. 2024;7(4):435-440.
9. Likert R. *A Technique for the Measurement of Attitudes*. New York: The Science Press; c1932.
10. Nunnally JC, Bernstein IH. *Psychometric Theory*. 3rd ed. New York: McGraw-Hill; 1994.
11. Press Information Bureau, Government of India. *Livelihood of Farmers*. New Delhi (India): Ministry of Agriculture and Farmers Welfare; c2023. <https://www.pib.gov.in/PressReleaseIframePage.aspx?PRID=1906888>.
12. Sharma NR. Construction of scale for perception of farmers towards Farmer Producer Organization. *Gujarat J Ext Educ*. 2023;35(1):34-37.
13. Thurstone LL. The measurement of attitude. *Am J Sociol*. Chicago: University Press; c1946. p. 39-50.