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# A methodological pathway to quantify subjective well-being of organic paddy farmers in Andhra Pradesh: An OECD based approach

**[1]Mallela Bandhavya, [2]V Sailaja, [3]P Ganesh Kumar, [4]S Hemalatha and [5]B Ramana Murthy**

[1]Ph.D. Scholar, Department of Agricultural Extension Education, S.V. Agricultural College, ANGRAU, Tirupati, Andhra Pradesh, India

[2]Professor, Department of Agricultural Extension Education, S.V. Agricultural College, ANGRAU, Tirupati, Andhra Pradesh, India

[3]Associate Professor, Department of Agricultural Extension Education, S.V. Agricultural College, ANGRAU, Tirupati, Andhra Pradesh, India

[4]Professor, Department of Agronomy, S.V. Agricultural College, ANGRAU, Tirupati, Andhra Pradesh, India

[5]Assistant Professor, Department of Statistics and Computer Applications, S.V. Agricultural College, ANGRAU, Tirupati, Andhra Pradesh, India

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**Corresponding Author:** Mallela Bandhavya

**Abstract**

Subjective well-being (SWB) is a critical yet often under-measured aspect of agriculture, particularly among organic paddy farmers who navigate diverse livelihood and emotional stressors. Despite its significance, a standardized, context-specific tool to assess their psychological well-being has been lacking. This study developed and validated the Subjective Well-Being of Organic Paddy Farmers (SWBOPF) Scale, guided by the OECD well-being framework.

The research was conducted in Chittoor district, Andhra Pradesh, selected purposively for its demographic diversity, active organic farming ecosystem, and field accessibility. Notably, Chittoor served as a non-sample area to minimize bias in future scale validation. Sixty organic paddy farmers listed on the PGS-India website were purposively selected, representing variations in age, gender, and landholding. An initial pool of 46 items was generated through literature review and expert consultations, refined to 32 using Edwards' (1969) criteria. Responses were collected on a five-point Likert scale, and Exploratory Factor Analysis (EFA) was applied to extract dimensions.

The final SWBOPF Scale included 25 items grouped under seven dimensions: Occupational Outlook (0.219), Relationships (0.181), Depression-Ridden (0.137), Optimistic Outlook (0.127), Pessimistic Outlook (0.125), Anxiety-Ridden (0.119), and Life Satisfaction (0.092) with their respective weightage indicated in parentheses**,** explaining a cumulative variance of 81.849%, explaining a cumulative variance of 81.849%. The scale demonstrated strong content validity (S-CVI = 0.84), acceptable sampling adequacy (KMO = 0.738; Bartlett's test significant), and high reliability (Cronbach's alpha = 0.896; split-half reliability = 0.969).

The SWBOPF Scale offers a scientifically sound and contextually relevant tool for assessing farmer well-being, with potential applications in agricultural policy formulation, extension design, and rural mental health interventions.

**Keywords:** Andhra Pradesh, farmer mental health, OECD framework, Organic paddy farming, Psychometric validation, Subjective well-being.

## Introduction

Contemporary agriculture is confronted with complex and multifaceted challenges, as reflected in the rise in farmer suicides, rural-to-urban migration, and the declining interest of youth in farming. These trends indicate deeper issues related to farmer dissatisfaction and compromised well-being. Organic paddy farmers, in particular, face additional stressors due to market uncertainties, certification pressures, and production risks. If these challenges remain unaddressed, they could contribute to a significant decline in food grain production and rural livelihoods. Despite their essential role in sustaining the agricultural economy, the well-being of farmers often remains overlooked. This calls for timely and systematic measurement of their subjective well-being, especially to identify those at risk and extend necessary psychological and institutional support. A proactive approach not only enhances farmer welfare but also strengthens the resilience and productivity of organic farming systems.

Recognizing the value of well-being, the third United Nations Sustainable Development Goal— "To ensure healthy lives and promote well-being for all at all ages"—positions well-being as a fundamental human right and a key indicator of social progress. In addition to physical health, the emotional and psychological well-being of farmers deserves equal attention. Among the various approaches to measuring well-being, subjective well-being (SWB) offers a multidimensional perspective,

encompassing how individuals internally evaluate their life experiences.

Subjective well-being is a well-established construct in psychological research, comprising both cognitive judgments (e.g., life satisfaction) and affective responses (e.g., positive and negative emotions). These dimensions are known to influence life outcomes and decision-making (Karen, 2013) [7]. As a psychological concept, SWB reflects how individuals assess their lives based on personal experiences and emotional states (Peterson *et al*., 2005) [13]. It represents a person's internal perception of life quality (Zhang, 2010) [15] and is inherently subjective—individuals determine for themselves whether their lives are going well (Diener, 1984) [3]. Accordingly, SWB is typically measured through self-reported instruments (e.g., Cantril, 1967; Diener *et al*., 1985) [1, 2]. Within rural development contexts, improving subjective well-being is viewed as both a critical goal and a key outcome of sustainable development strategies (Meyer *et al*., 2021) [9].

In response to the growing demand for rigorous measurement, the Organisation for Economic Co-operation and Development (OECD) has developed comprehensive guidelines for assessing subjective well-being. These guidelines offer a standardized, multidimensional framework that includes life satisfaction, emotional states, and domain-specific evaluations—making them particularly suited for designing context-specific assessment tools.

In Andhra Pradesh, organic paddy farmers operate under conditions markedly different from those in conventional agriculture. Challenges such as premium market demands, certification protocols, labor intensity, and income volatility introduce unique stressors that are often overlooked by general measurement tools. Although the importance of farmer well-being is increasingly recognized, existing tools lack agricultural and cultural specificity. As a result, they fail to capture the nuanced realities of organic farmers. There is a clear need for a scientifically validated, context-specific scale rooted in global frameworks such as the OECD's to accurately assess the subjective well-being of organic paddy farmers and inform effective policy and support interventions.

## Methodology

### 1. Subjective well-being

For this study, subjective well-being (SWB) is operationally defined as a person's cognitive and affective evaluations of their life. This definition accounts for both short-term moods and long-term judgments of life progress. This construct was selected because perceptions are vital in subjective measures. The assessment is collected through self-report questions asking respondents to rate how they feel (Nicklin, 2022) [10]. The construct is particularly relevant for understanding rural farmer experiences. It captures individuals' own assessments of their quality of life within their specific agricultural context.

### 2. Operationalization of subjective well-being of organic paddy farmers

Specifically, for this research, subjective well-being of organic paddy farmers was operationalised as self-perceived well-being of the organic paddy farmers in varying degrees of positive and negative emotions of life. This operationalization focuses on how organic paddy farmers evaluate their lives regarding positive and negative emotions.

### 3. Procedure followed for the construction of subjective well-being scale for organic paddy farmers

The following steps were carried out to construct the scale to measure the subjective well-being of organic paddy farmers

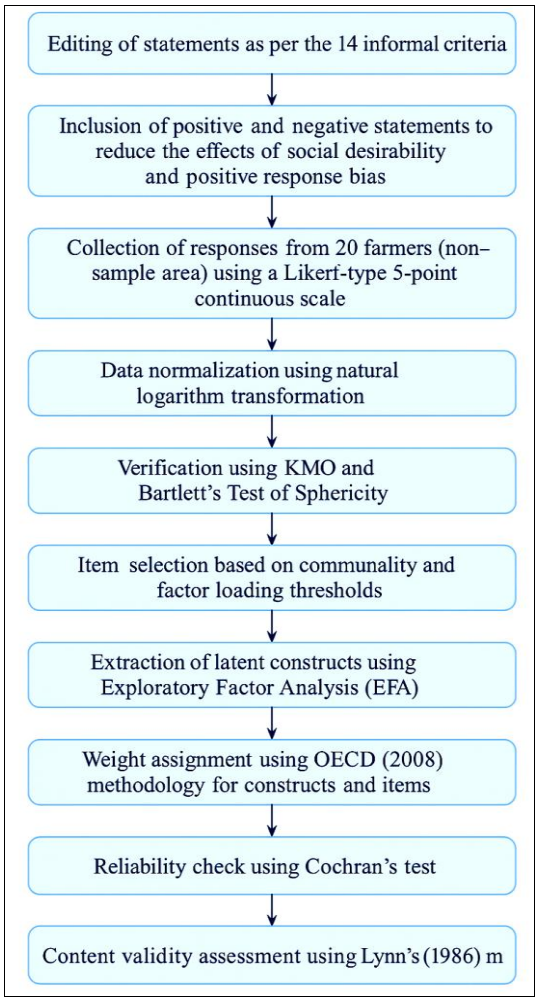


**Fig 1:** Flow diagram to explain methodological pathway for scale construction

### Scale Construction Procedure

The construction of a scale to measure subjective well-being of organic paddy farmers followed a systematic approach based on established psychometric principles. The methodology consisted of ten sequential steps as outlined below.

### Step 1: Definition of Universe of Content

The universe of content was defined as the comprehensive domain encompassing all possible statements that could be made about the subjective well-being of organic paddy farmers. This universe represented the theoretical foundation for item generation and ensured comprehensive coverage of the construct under investigation.

**Step 2: Item Generation and Collection**
An extensive literature review was conducted to gather statements pertaining to farmers' subjective well-being. Multiple sources were consulted including academic books, peer-reviewed journals, magazines, newspapers, and research articles. Additionally, expert consultations were conducted with professionals from extension services, research institutions, and teaching domains, as well as practicing farmers. Input was also sought from agricultural scientists and psychiatrists to ensure incorporation of relevant psychological parameters. Through this comprehensive approach, a preliminary pool of 46 statements was compiled.

**Step 3: Item Editing and Refinement**
The initial 46 statements underwent rigorous editing based on the 14 informal criteria established by Edwards (1957) [4]. Following this systematic editing process, 14 statements were deleted, resulting in a refined pool of 32 statements.

**Step 4: Data Collection and Response Format**
A structured questionnaire comprising 32 refined statements was administered to 60 certified organic paddy farmers from Chittoor district, Andhra Pradesh. The list of certified farmers was obtained from the PGS-India website (PGS-India, 2021) [14]. The farmers were selected from a non-sample area to ensure independence from the main study population. Responses were collected using a five-point Likert scale with the following scoring system: 1 = Strongly Disagree (SDA), 2 = Disagree (DA), 3 = Undecided (UD), 4 = Agree (A), 5 = Strongly Agree (SA)
This response format allowed for capturing varying degrees of agreement and disagreement with each statement, providing sufficient variability for subsequent statistical analyses.

**Step 5: Data Preparation and Correlation Matrix Development**
Given the polytomous nature of the data (ordinal scale responses), data transformation was performed using natural logarithm to normalize the distribution before conducting factor analysis. Factor analysis, recognized as the "queen of analytic methods," was employed to determine the number and nature of underlying variables among the larger set of measures and to extract common factor variance from the dataset. A correlation matrix was subsequently calculated to examine the interrelationships among the statements. Principal Component Analysis (PCA) was selected as the primary extraction method for identifying latent factors underlying the survey items.

**Step 6: Statistical Adequacy Testing**
The appropriateness of the data for factor analysis was evaluated using two key statistical tests. The initial 32×32 correlation matrix developed through SPSS software was found to be non-positive definite (NPD) during the first PCA run. Consequently, five statements with communalities ≤0.700 were removed for the second PCA run. The Kaiser-Meyer-Olkin (KMO) test and Bartlett's Test of Sphericity were employed to assess sampling adequacy and the suitability of the correlation matrix for factor analysis.

**Step 7: Exploratory Factor Analysis (EFA) and Latent Construct Extraction**
Exploratory Factor Analysis was conducted to extract latent constructs from the scale. The following cut-off criteria were established: communalities ($h^2$) ≥0.700, factor loadings ≥0.600, and Item Content Validity Index ≥0.500. The rotation matrix of EFA was used to calculate the weightages of sub-indicators. Instead of using software-generated eigen values, calculated eigen values (C. Eigen) were computed following the procedure suggested by Nicoletti *et al*. (2000) [11] and OECD (2008) [12] to quantify the weights of both indicators and sub-indicators.

**The weightage calculation involved two steps**
1. Factor loadings in each column were squared to obtain squared factor loadings, making the scale sum to unity
2. The squared factor loadings were divided by their respective calculated eigen values to obtain the weightage of each sub-indicator

The weight of a particular statement was determined by the corresponding calculated value with the highest factor loading in that particular row. The calculated eigen value of each factor was obtained by summing up the squared factor loadings of all sub-indicators in that factor.

**Step 8: Content Validity Assessment**
Content validity was assessed to ensure the representative adequacy of the scale content. Following Lynn's (1986) [8] recommendation, 24 experts from multidisciplinary fields including agricultural extension scientists, psychiatrists, and psychology professors were consulted. The experts rated the relevance of each item using a 5-point Likert scale ranging from 1 (not relevant) to 5 (highly relevant), with 3 representing an undecided rating.
The Item Content Validity Index (I-CVI) was calculated using the formula: I-CVI = (Number of experts giving rating 4 or 5)/(Total number of experts)
The Scale Content Validity Index (S-CVI) was calculated using the formula: S-CVI = (Number of items with I-CVI ≥ 0.79)/(Total number of items)
Items with I-CVI ≥ 0.79 were considered valid based on the judgment threshold for 24 experts.

**Step 9: Reliability Assessment**
Reliability of the scale was assessed to ensure consistency and precision of measurement. The processed set of statements was administered to a fresh group of 20 farmers (10% of the actual sample size of n=200) from Chittoor district, Andhra Pradesh, selected from a non-sample area. Two methods were employed for reliability testing:

**Split-Half Method:** The scale was divided into two halves with all even statements in one half and all odd statements in another. The correlation coefficient between the two halves was calculated, and reliability was computed using the Spearman-Brown formula:

$$rSB = (2\times rhh)/(1+rhh)$$

where rhh = Pearson correlation between odd and even statements.

**Cronbach's Alpha**: To address limitations of the split-half approach, Cronbach's alpha (α) was calculated using the formula:

$$\alpha = (K/(K-1)) \times (1 - (\Sigma\sigma^2yi/\sigma^2x))$$

where:

- K = Number of items in the scale
- $\sigma^2yi$ = Variance of item i
- $\sigma^2x$ = Variance of the total scale

The reliability assessment was conducted using SPSS version 26, including the Guttman split-half coefficient of reliability.

### Step 10: Final Scale Construction

The final Subjective Well-Being of Organic Paddy Farmers Scale (SWBOPF scale) was constructed based on the results of factor analysis, validity, and reliability assessments. The scale weights were assigned to seven latent indicators based on their calculated eigen values, determined by dividing each individual factor's eigen value by the sum of all seven calculated eigen values.

### Statistical Software

All statistical analyses were conducted using SPSS version 26 and IBM AMOS version 26 to ensure accuracy and reliability of the computations involved in the scale construction process.

## Results

### Scale Construction Results

The systematic scale construction process yielded a comprehensive instrument for measuring subjective well-being among organic paddy farmers. The results of each analytical step are presented below.

### Statistical Adequacy Assessment

The Kaiser-Meyer-Olkin (KMO) test results are presented in Table 1. The initial 32×32 correlation matrix was non-positive definite (NPD) during the first PCA run, necessitating the removal of five statements with communalities ≤0.700. The second PCA run yielded a KMO value of 0.738 (later refined to 0.78), which falls within Kaiser's (1974) [6] "middling" range (0.70-0.79), indicating adequate sampling adequacy for factor analysis. The Bartlett's Test of Sphericity was statistically significant ($\chi^2$ = 1450.755, df = 351, p < 0.001), confirming that the correlation matrix was suitable for factor analysis.

**Table 1:** KMO and Bartlett's Test for all 2 runs of PCA

| KMO and Bartlett's Test | | Run 1 | Run 2 |
|---|---|---|---|
| Kaiser-Meyer-Olkin Measure of Sampling Adequacy | | NPD | 0.738 |
| Bartlett's Test of Sphericity | Approx. Chi-Square | | 1450.755 |
| | df | | 351 |
| | Sig. | | 0.000 |

### Factor Structure and Variance Explained

The exploratory factor analysis revealed a seven-factor structure that explained 81.849% of the total variance in the dataset. Table 2 presents the eigenvalues and variance explained by each factor. The factors demonstrated eigenvalues greater than 1.0, supporting the retention of seven distinct factors. The scree plot (Figure 2) visually confirmed the seven-factor solution, showing a clear elbow at the seventh factor.

**Table 2:** Total variance explained by initial eigenvalues and extraction sums of squared loadings

| Component | Initial Eigenvalues | | | ESSL | | | RSSL | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | % of Variance | Cumulative% | Total | % of Variance | Cumulative% | Total | % of Variance | Cumulative% |
| 1 | 9.221 | 34.153 | 34.153 | 9.221 | 34.153 | 34.153 | 4.849 | 17.961 | 17.961 |
| 2 | 3.454 | 12.792 | 46.945 | 3.454 | 12.792 | 46.945 | 4.005 | 14.835 | 32.796 |
| 3 | 2.661 | 9.855 | 56.8 | 2.661 | 9.855 | 56.8 | 3.037 | 11.249 | 44.045 |
| 4 | 2.402 | 8.895 | 65.695 | 2.402 | 8.895 | 65.695 | 2.781 | 10.3 | 54.345 |
| 5 | 1.928 | 7.139 | 72.834 | 1.928 | 7.139 | 72.834 | 2.769 | 10.256 | 64.601 |
| 6 | 1.269 | 4.701 | 77.535 | 1.269 | 4.701 | 77.535 | 2.637 | 9.768 | 74.368 |
| 7 | 1.165 | 4.314 | 81.849 | 1.165 | 4.314 | 81.849 | 2.02 | 7.48 | 81.849 |

**Note:** ESSL = Extraction Sums of Squared Loadings; RSSL = Rotation Sums of Squared Loadings

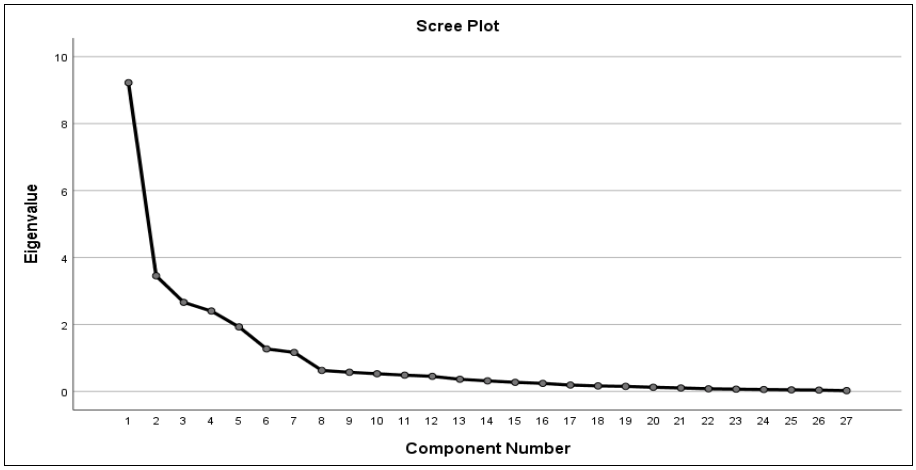


**Fig 2:** Scree plot graph representing eigen values of Indicator

### Item Analysis and Communalities

Table 3 presents the communalities, weightages, and validity indices for all statements. Following the application of cut-off criteria (communalities ≥0.700, factor loadings ≥0.600, and I-CVI ≥0.500), 25 statements were retained for the final scale. Seven statements failed to meet the communality threshold and were excluded from further analysis.

**Table 3:** Sub-indicators with communalities, weightages and validity (Selected Items)

| S. No. | Statements | $1h^2$ | $2h^2$ | W | I-CVI |
|---|---|---|---|---|---|
| 1 | Happiness and suffering are eternal laws of the universe | 0.858 | 0.869 | 0.167 | 0.79 |
| 2 | I am not forced to do agriculture | 0.734 | 0.751 | 0.109 | 1.00 |
| 3 | In the present scenario, agriculture is nothing but a torture | 0.851 | 0.857 | 0.262 | 0.79 |
| 4 | Often, I face more health problems while involving in farming activities | 0.867 | 0.894 | 0.146 | 0.83 |
| 5 | Often, I do not get interested to participate in social activities | 0.903 | 0.914 | 0.211 | 0.79 |
| 6 | I go to sleep and wake up with worrisome thoughts about farming | 0.759 | 0.755 | 0.222 | 0.83 |
| 7 | I am not apprehending about my future | 0.737 | 0.757 | 0.247 | 0.79 |
| 8 | I am feeling of dysphoria when I get thoughts about farming | 0.738 | 0.741 | 0.233 | 0.58 |
| 9 | Most of the time I do the best and most interesting things | 0.878 | 0.882 | 0.286 | 0.79 |
| 10 | I live my life as I wanted, I won't change anything if I reborn | 0.809 | 0.789 | 0.174 | 0.79 |
| 11 | When I am upset, I talk to my loved ones | 0.76 | 0.764 | 0.169 | 0.88 |
| 12 | I feel that the Government is giving necessary support to farmers | 0.879 | 0.884 | 0.13 | 0.92 |
| 13 | Till now, I have not received the important things that I want in my life | 0.761 | 0.803 | 0.234 | 0.88 |
| 14 | I am thinking to quit agriculture due to various problems | 0.741 | 0.75 | 0.1 | 0.79 |
| 15 | I am very likely to get upset as a farmer | 0.784 | 0.778 | 0.236 | 0.83 |
| 16 | I become more nervous easily in critical conditions (like climate, pests, COVID-19 *etc.*) | 0.762 | 0.76 | 0.24 | 0.88 |
| 16 | I often do not burst into tears due to failure as a farmer | 0.757 | 0.761 | 0.237 | 0.83 |
| 17 | I am proud to say myself as a farmer | 0.765 | 0.764 | 0.254 | 0.79 |
| 18 | I think agriculture is stressful job as it is dependent on climate | 0.748 | 0.752 | 0.101 | 0.88 |
| 19 | Most of the time I feel happy with my life | 0.918 | 0.924 | 0.221 | 0.83 |
| 20 | The condition of my life is satisfactory | 0.863 | 0.751 | 0.369 | 0.83 |
| 21 | I feel that people are naturally friendly and helpful | 0.882 | 0.897 | 0.206 | 0.79 |
| 22 | I invest more in agriculture than returns which forces me into debts | 0.796 | 0.815 | 0.135 | 0.54 |
| 23 | I feel life will be good when I look back later | 0.855 | 0.858 | 0.258 | 0.92 |
| 24 | I wish I were never born as a farmer | 0.802 | 0.801 | 0.237 | 0.83 |
| 26 | I endorse other farmers taking extreme steps, like suicide | 0.892 | 0.891 | 0.251 | 0.83 |
| 27 | I feel this is the worst time of my life | 0.82 | 0.826 | 0.133 | 0.83 |
| 28 | I had mostly turmoil relationships with family, friends, and neighbours | 0.683 | NP | NP | NP |
| 29 | Most of the times, my life is very close to my ideals | 0.513 | NP | NP | NP |
| 30 | I am not happy with my financial ability which forced me into debts to fulfil family basic needs | 0.599 | NP | NP | NP |
| 31 | I feel to quit as a farmer, but I have poor skills in other occupations | 0.689 | NP | NP | NP |
| 32 | I earn very less from agriculture which forces me to take loans | 0.600 | NP | NP | NP |

$h^2$ = Communality; NR= No Run; NP=Not Pertinent; I-CVI= Item-Content validity index; S-CVI Scale-Content validity index=0.84; W=Weights for individual items

### Content Validity Results

The content validity assessment involved 24 experts from multidisciplinary fields. The Item Content Validity Index (I-CVI) was calculated for each statement, with a threshold of ≥0.79 for retention. Two statements (S8 and S23) failed to meet this criterion and were excluded from the final scale. The Scale Content Validity Index (S-CVI) was calculated as 0.84, exceeding the required threshold of 0.79, indicating that the SWBOPF scale achieved adequate content validity for measuring subjective well-being among organic paddy farmers.

### Reliability Assessment Results

The reliability analysis was conducted using multiple approaches. Table 4 presents the comprehensive reliability statistics for the scale.

**Table 4:** Reliability of Subjective Well-Being of Organic Paddy Farmers Scale (SWBOPF scale)

| Reliability Statistics | | | R1 | R2 |
|---|---|---|---|---|
| Cronbach's alpha | Part 1 | Value | 0.820 | 0.825 |
| | | N of Items | 14[a] | 13[a] |
| | Part 2 | Value | 0.759 | 0.742 |
| | | N of Items | 13[b] | 12[b] |
| | Overall | | 0.896 | 0.894 |
| | Total N of Items | | 27 | 25 |
| Correlation Between Forms | | | 0.927 | 0.933 |
| Spearman-Brown Coefficient | Equal Length | | 0.962 | 0.966 |
| | Unequal Length | | 0.962 | 0.966 |
| Guttman Split-Half Coefficient | | | 0.951 | 0.956 |

The final scale demonstrated excellent reliability with a Cronbach's alpha of 0.894, which according to George and Mallery's (2003) [5] criteria falls in the "good" range (>0.8).

The split-half reliability coefficient was 0.941, and the Spearman-Brown reliability coefficient was 0.969, both indicating high internal consistency.

**Factor Loadings and Weightages**

Table 5 presents the detailed factor loadings and weightages for all indicators and sub-indicators. The analysis revealed seven distinct factors with varying loadings and calculated weightages based on the squared factor loadings divided by their respective calculated eigen values.

**Table 5:** Factor loadings and weightages of Indicators and sub-indicators

| | F1 | F1sq | WF1 | f2 | F2sq | WF2 | f3 | F3sq | WF3 | f4 | F4sq | WF4 | f5 | F5sq | WF5 | f6 | F6 sq | WF6 | f7 | F7sq | WF7 | h2 | I-CVI | weight |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| s1 | 0.48 | 0.23 | 0.05 | 0.17 | 0.03 | 0.01 | 0.24 | 0.06 | 0.02 | 0.68 | 0.47 | 0.17 | 0.29 | 0.08 | 0.03 | -0.02 | 0.00 | 0.00 | -0.10 | 0.01 | 0.00 | 0.87 | 0.63 | 0.17 |
| s2 | 0.73 | 0.53 | 0.11 | 0.20 | 0.04 | 0.01 | 0.04 | 0.00 | 0.00 | 0.20 | 0.04 | 0.01 | 0.12 | 0.01 | 0.01 | 0.19 | 0.03 | 0.01 | 0.30 | 0.09 | 0.04 | 0.75 | 1.00 | 0.11 |
| s3 | 0.27 | 0.07 | 0.01 | 0.19 | 0.04 | 0.01 | 0.09 | 0.01 | 0.00 | 0.08 | 0.01 | 0.00 | 0.85 | 0.72 | 0.26 | 0.06 | 0.00 | 0.00 | 0.08 | 0.01 | 0.00 | 0.86 | 0.71 | 0.26 |
| s4 | 0.84 | 0.71 | 0.15 | 0.07 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.23 | 0.05 | 0.02 | 0.35 | 0.12 | 0.04 | -0.01 | 0.00 | 0.00 | -0.05 | 0.00 | 0.00 | 0.89 | 0.83 | 0.15 |
| s5 | 0.08 | 0.01 | 0.00 | 0.92 | 0.84 | 0.21 | -0.04 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.10 | 0.01 | 0.00 | 0.04 | 0.00 | 0.00 | 0.22 | 0.05 | 0.02 | 0.91 | 0.71 | 0.21 |
| s6 | 0.22 | 0.05 | 0.01 | -0.03 | 0.00 | 0.00 | 0.82 | 0.67 | 0.22 | 0.03 | 0.00 | 0.00 | -0.14 | 0.02 | 0.01 | 0.06 | 0.00 | 0.00 | -0.08 | 0.01 | 0.00 | 0.76 | 0.83 | 0.22 |
| s7 | 0.26 | 0.07 | 0.01 | 0.14 | 0.02 | 0.00 | -0.01 | 0.00 | 0.00 | -0.05 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.81 | 0.65 | 0.25 | 0.12 | 0.01 | 0.01 | 0.76 | 0.71 | 0.25 |
| s8 | 0.12 | 0.01 | 0.00 | 0.02 | 0.00 | 0.00 | 0.84 | 0.71 | 0.23 | 0.01 | 0.00 | 0.00 | -0.07 | 0.00 | 0.00 | -0.04 | 0.00 | 0.00 | 0.11 | 0.01 | 0.01 | 0.74 | 0.58 | 0.23 |
| s9 | 0.07 | 0.01 | 0.00 | 0.22 | 0.05 | 0.01 | 0.03 | 0.00 | 0.00 | 0.89 | 0.79 | 0.29 | 0.11 | 0.01 | 0.00 | 0.13 | 0.02 | 0.01 | 0.08 | 0.01 | 0.00 | 0.88 | 0.75 | 0.29 |
| s10 | 0.28 | 0.08 | 0.02 | 0.54 | 0.29 | 0.07 | -0.13 | 0.02 | 0.01 | 0.09 | 0.01 | 0.00 | -0.02 | 0.00 | 0.00 | 0.21 | 0.04 | 0.02 | 0.60 | 0.35 | 0.17 | 0.79 | 0.79 | 0.17 |
| s11 | 0.22 | 0.05 | 0.01 | 0.82 | 0.68 | 0.17 | -0.08 | 0.01 | 0.00 | 0.11 | 0.01 | 0.00 | 0.04 | 0.00 | 0.00 | 0.13 | 0.02 | 0.01 | 0.05 | 0.00 | 0.00 | 0.76 | 0.88 | 0.17 |
| s12 | 0.79 | 0.63 | 0.13 | 0.23 | 0.05 | 0.01 | 0.04 | 0.00 | 0.00 | 0.18 | 0.03 | 0.01 | 0.28 | 0.08 | 0.03 | 0.30 | 0.09 | 0.03 | 0.04 | 0.00 | 0.00 | 0.88 | 0.92 | 0.13 |
| s13 | 0.39 | 0.15 | 0.03 | -0.01 | 0.00 | 0.00 | 0.12 | 0.02 | 0.00 | 0.01 | 0.00 | 0.00 | -0.10 | 0.01 | 0.00 | 0.40 | 0.16 | 0.06 | 0.69 | 0.47 | 0.23 | 0.80 | 0.71 | 0.23 |
| s14 | 0.70 | 0.49 | 0.10 | 0.30 | 0.09 | 0.02 | 0.09 | 0.01 | 0.00 | 0.11 | 0.01 | 0.00 | 0.08 | 0.01 | 0.00 | 0.37 | 0.14 | 0.05 | 0.11 | 0.01 | 0.01 | 0.75 | 0.75 | 0.10 |
| s15 | 0.13 | 0.02 | 0.00 | -0.01 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.35 | 0.12 | 0.04 | -0.08 | 0.01 | 0.00 | 0.79 | 0.62 | 0.24 | 0.10 | 0.01 | 0.00 | 0.78 | 0.75 | 0.24 |
| s16 | -0.02 | 0.00 | 0.00 | 0.09 | 0.01 | 0.00 | 0.85 | 0.72 | 0.24 | 0.11 | 0.01 | 0.00 | 0.14 | 0.02 | 0.01 | -0.01 | 0.00 | 0.00 | -0.02 | 0.00 | 0.00 | 0.76 | 0.88 | 0.24 |
| s17 | 0.14 | 0.02 | 0.00 | 0.08 | 0.01 | 0.00 | -0.03 | 0.00 | 0.00 | -0.01 | 0.00 | 0.00 | 0.84 | 0.70 | 0.25 | -0.07 | 0.00 | 0.00 | 0.17 | 0.03 | 0.01 | 0.76 | 0.83 | 0.25 |
| s18 | 0.70 | 0.49 | 0.10 | 0.10 | 0.01 | 0.00 | 0.29 | 0.08 | 0.03 | 0.15 | 0.02 | 0.01 | 0.05 | 0.00 | 0.00 | 0.15 | 0.02 | 0.01 | 0.34 | 0.12 | 0.06 | 0.75 | 0.79 | 0.10 |
| s19 | 0.06 | 0.00 | 0.00 | 0.94 | 0.88 | 0.22 | 0.02 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.14 | 0.02 | 0.01 | 0.12 | 0.02 | 0.01 | -0.02 | 0.00 | 0.00 | 0.92 | 0.88 | 0.22 |
| s20 | 0.05 | 0.00 | 0.00 | 0.19 | 0.04 | 0.01 | 0.03 | 0.00 | 0.00 | 0.08 | 0.01 | 0.00 | 0.25 | 0.06 | 0.02 | 0.11 | 0.01 | 0.00 | 0.86 | 0.74 | 0.37 | 0.86 | 0.71 | 0.37 |
| s21 | 0.12 | 0.01 | 0.00 | 0.91 | 0.82 | 0.21 | 0.03 | 0.00 | 0.00 | 0.22 | 0.05 | 0.02 | 0.02 | 0.00 | 0.00 | 0.05 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 0.90 | 0.75 | 0.21 |
| s22 | 0.81 | 0.65 | 0.13 | 0.01 | 0.00 | 0.00 | -0.03 | 0.00 | 0.00 | 0.19 | 0.03 | 0.01 | 0.35 | 0.12 | 0.04 | 0.00 | 0.00 | 0.00 | 0.07 | 0.00 | 0.00 | 0.82 | 0.75 | 0.13 |
| s23 | 0.35 | 0.12 | 0.02 | -0.03 | 0.00 | 0.00 | -0.02 | 0.00 | 0.00 | 0.85 | 0.72 | 0.26 | -0.07 | 0.00 | 0.00 | 0.10 | 0.01 | 0.00 | 0.06 | 0.00 | 0.00 | 0.86 | 0.54 | 0.26 |
| s24 | -0.09 | 0.01 | 0.00 | -0.19 | 0.04 | 0.01 | 0.85 | 0.72 | 0.24 | -0.02 | 0.00 | 0.00 | 0.15 | 0.02 | 0.01 | 0.09 | 0.01 | 0.00 | 0.05 | 0.00 | 0.00 | 0.80 | 0.92 | 0.24 |
| s25 | 0.09 | 0.01 | 0.00 | 0.23 | 0.05 | 0.01 | 0.06 | 0.00 | 0.00 | 0.09 | 0.01 | 0.00 | 0.17 | 0.03 | 0.01 | 0.80 | 0.63 | 0.24 | 0.17 | 0.03 | 0.01 | 0.76 | 0.83 | 0.24 |
| s26 | 0.40 | 0.16 | 0.03 | -0.01 | 0.00 | 0.00 | 0.03 | 0.00 | 0.00 | 0.08 | 0.01 | 0.00 | 0.83 | 0.69 | 0.25 | 0.15 | 0.02 | 0.01 | -0.09 | 0.01 | 0.00 | 0.89 | 0.75 | 0.25 |
| s27 | 0.53 | 0.28 | 0.06 | 0.12 | 0.02 | 0.00 | 0.07 | 0.01 | 0.00 | 0.61 | 0.37 | 0.13 | 0.01 | 0.00 | 0.00 | 0.35 | 0.13 | 0.05 | 0.17 | 0.03 | 0.01 | 0.83 | 0.71 | 0.13 |
| Eigen | *6* | 4.85 | 1 | *4* | 4.01 | 1 | *4* | 3.04 | 1.04 | *4* | 2.78 | 1 | *3* | 2.77 | 1 | *3* | 2.64 | 1 | *3* | 2.02 | 1 | | | |
| WF | | 0.219 | | | 0.181 | | | 0.137 | | | 0.127 | | | 0.125 | | | 0.119 | | | 0.092 | 1 | | | |

**Final Scale Structure**

The final Subjective Well-Being of Organic Paddy Farmers Scale (SWBOPF scale) comprised seven latent indicators with their respective weightages and statement distributions as shown in Table 6.

**Table 6:** Subjective well-being of organic paddy farmers scale (SWBOPF scale)

| S. No. | Statements | Weightage |
|---|---|---|
| **A.** | **Depression-ridden (0.137)** | |
| *1. | I go to sleep and wake up with worrisome thoughts about farming | 0.222 |
| 2. | I often do not burst into tears due to failure as a farmer | 0.237 |
| *3. | I wish I were never born as a farmer | 0.237 |
| **B** | **Anxiety-ridden (0.119)** | |
| *1. | I am very likely to get upset as a farmer | 0.236 |
| *2. | I become more nervous easily in critical conditions (like climate, pests, COVID-19 *etc.*) | 0.240 |
| 3. | I am not apprehending about my future | 0.247 |
| **C** | **Optimistic outlook (0.127)** | |
| 1. | Happiness and suffering are eternal laws of the universe | 0.167 |
| *2. | I feel this is the worst time of my life | 0.133 |
| 3. | Most of the time I do the best and most interesting things | 0.286 |
| **D** | **Pessimistic outlook (0.125)** | |
| *1. | I endorse other farmers taking extreme steps, like suicide | 0.251 |
| *2. | In the present scenario, agriculture is nothing but a torture | 0.262 |
| 3. | I am proud to say myself as a farmer | 0.254 |
| **E** | **Occupational outlook (0.219)** | |
| *1. | I am thinking to quit agriculture due to various problems | 0.100 |
| 2. | I am not forced to do agriculture | 0.109 |
| *3. | I think agriculture is stressful job as it is dependent on climate | 0.101 |

| | | |
|---|---|---|
| *4. | Often, I face more health problems while involving in farming activities | 0.146 |
| *5. | I invest more in agriculture than returns which forces me into debts | 0.135 |
| 6. | I feel that the Government is giving necessary support to farmers | 0.130 |
| **F** | **Relationship (0.181)** | |
| 1. | Most of the time I feel happy with my life | 0.221 |
| *2. | Often, I do not get interested to participate in social activities | 0.211 |
| 3. | I feel that people are naturally friendly and helpful | 0.206 |
| 4. | When I am upset, I talk to my loved ones | 0.169 |
| **G** | **Life satisfaction (0.092)** | |
| 1. | The condition of my life is satisfactory | 0.369 |
| *2. | Till now, I have not received the important things that I want in my life | 0.234 |
| 3. | I live my life as I wanted, I won't change anything if I reborn | 0.174 |

**Statement-wise Analysis**

The statement-wise analysis revealed that "The condition of my life is satisfactory" from the life satisfaction factor received the highest individual weightage of 0.369, followed by "Most of the time I do the best and most interesting things" from the optimistic outlook factor with a weightage of 0.286. The detailed breakdown of all statements with their specific weightages is provided in the complete scale structure.

**Structural Representation**

Figure 3, created using IBM AMOS software version 26, illustrates the indicators, sub-indicators, and their respective factor loadings for the Subjective Well-Being of Organic Paddy Farmers' scale. The figure provides a visual representation of the factor structure and the strength of the loadings, demonstrating the relationships and associations between different indicators and factors.

The final SWBOPF scale successfully captured the multidimensional nature of subjective well-being among organic paddy farmers through seven distinct but interrelated factors, encompassing psychological, social, and occupational dimensions of farmer well-being.

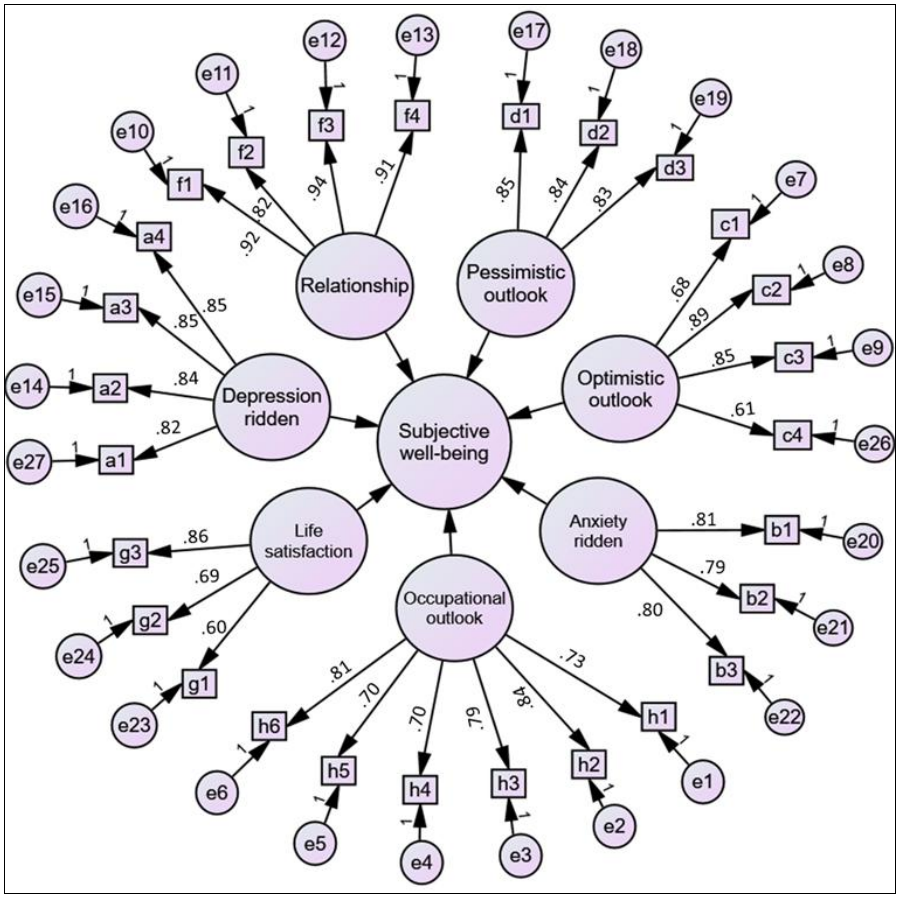


**Fig 3:** Indicators and sub-indicators of Subjective well-being scale of organic paddy farmers

**Conclusion**

This study successfully developed and validated the Subjective Well-Being of Organic Paddy Farmers (SWBOPF) Scale, a critical, context-specific instrument for quantifying farmer well-being. Built on the OECD framework and robust psychometric principles, the 25-statement scale is structured across seven key dimensions, with Occupational Outlook emerging as the most significant factor influencing farmer well-being, closely followed by Life Satisfaction.

The SWBOPF Scale demonstrates strong validity and reliability, offering a scientifically sound tool for assessing the psychological well-being of organic paddy farmers. It provides a vital resource for policymakers, extension professionals, and support organizations to effectively identify at-risk farmers and design targeted interventions.

The findings underscore the necessity of agricultural policies and programs that actively address and enhance these key dimensions of well-being, particularly occupational satisfaction and overall life quality. Although developed locally, the scale's rigorous methodology allows for its adaptation and validation in diverse global agricultural contexts. This research contributes significantly to agricultural psychology and lays a strong foundation for future studies on farmer well-being, the evaluation of intervention efficacy, and cross-cultural comparisons—ultimately fostering more sustainable and farmer-centric agricultural practices worldwide.

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