Development and Standardisation of a Livelihood Security Scale to Assess the Success of a Youth-based Project

Abstract

An attempt was made in the present study to develop a standardized scale to analyses the livelihood security of of youth beneficiaries under ARYA project. The livelihood security scale consists of Eight dimensions viz., economic security, health security, migration component, social security, ecological security, psychological security, food security, and physical security and the scale was considered highly reliable and valid. The livelihood scale consists of 46 statements were administered to 32 youth beneficiaries under ARYA project in Krishi Vigyan Kendra, Papparappaty in the state of Tamil Nadu during 2022-2023. It is found thatyouths have been spread over better to average (75.00 %) level of livelihood category followed by poor livelihood category (25.00 %).

Keywords: Scale, livelihood security, economic security, reliable, valid.

Introduction

By embracing innovation and harnessing the potential of youth, we can integrate modern techniques, precision farming, and digital technologies into the sector. This synergy between age-old wisdom and youthful dynamism can lead to sustainable agricultural practices that are environmentally friendly, economically viable, and socially equitable. However, empowering youth in agriculture requires a holistic approach that addresses various aspects. Access to quality education, vocational training, and mentorship programs are essential to equip young farmers with the skills and knowledge they need to thrive. Additionally, financial support, access to land, and technology transfer are crucial to overcome the barriers faced by aspiring young agricultural entrepreneurs. Collaborative efforts among governments, educational institutions, private sector entities, and civil society organizations are imperative to create an enabling environment that encourages youth participation in agriculture. The active involvement of youth in agriculture is a transformative force that can shape the future of our food systems and rural communities. By providing young people with the tools, support, and opportunities they need, we can unlock their potential to drive innovation, sustainability, and inclusive growth

Thus, realising the importance of rural youth in agricultural development especially from the point of view of food security of the country, ICAR has initiated a programme on "Attracting and Retaining of Youth in Agriculture (ARYA)". during 2015-16. "Under this scheme, special efforts are being taken up to attract the rural youth under the age of 35 years in agriculture to provide income generating opportunities and engage them in agriculture. The oriented youth groups may function as role models for other youth by demonstrating the potentiality of the agri-based enterprises and by imparting training to others. Skill development of rural youth is helping in regaining their confidence levels to pursue farming as a profession, besides generating additional employment opportunities to absorb under employed and unemployed rural youth in secondary agriculture and service-related activities in rural areas". [11]

Livelihood security: Livelihood security is operationalized as "capabilities, assets including both material and social resources and activities required for a means of livelihood earned under ARYA Project."

There is no scale to measure the livelihood security of youth beneficiaries under ARYA project in Karnataka., hence the present research study was carried out to develop and standardize a scale to to measure the livelihood security of youth beneficiaries under ARYA project in Karnataka.

Methodology

The present study was carried out during 2022-23 for developing and standardizing a scale to measure the livelihood security of youth beneficiaries under ARYA project. The developed scale was used to measure the livelihood security of youth beneficiaries under ARYA project in Krishi Vigyan Kendra ,Papparappaty in the state of Tamil Nadu. Thirty-two youth beneficiaries were interviewed for the purpose. Based on the cumulated score, the respondents were categorized as poor, good and better levels of livelihood security considering mean and half standard deviation as a measure of check.

Results and Discussion

Development of scale to measure the livelihood security of youth beneficiaries under ARYA project

"The method of summated rating scale suggested by Likert (1932) and Edwards (1969) were followed in the development of the livelihood scale following six stages viz., (1) identification of components, (2) collection and editing of statements, (3) relevancy test, (4) item analysis, (5) reliability and (6) validity". (Naveen et al., 2018)

Identification of components: Eight major dimensions related to livelihood security of youths were identified based on review of literature and discussion with the experts. The dimensions identified were economic security, social security, migration component, ecological security, psychological security, physical security, health security, and food security.

Collection and editing of statements: A tentative list of 120 statements pertaining to livelihood security of youths was collected through extensive review of literature and by consulting experts. These 120 statements were edited as per the 14 criteria enunciated by Edwards (1969) and Thurstone and Chave (1929). As a consequence, 87 statements of livelihood security were retained for further analysis.

Relevancy test: The proforma containing 87 items measuring livelihood security were given to 85 judges by means of google forms and handed over personally to critically evaluate the relevancy of each item in five-point continuum *viz.*, Most Relevant (MR), Relevant (R), Somewhat Relevant (SWR), Less Relevant (LR) and Not Relevant (NR) with the score of 5,4,3,2 and 1, respectively. The experts/judges were also requested to make necessary modifications and additions or deletion of statements if they desired to. A total of 61 judges/experts returned the questionnaires duly completed and the livelihood security statements were considered for further processing. From the data gathered, 'relevancy percentage (RP)' and 'mean relevancy score (MRS)' were worked out for all the 87 statements. Using these criteria, individual statements were screened for relevancies using the following formulae.

i) Relevancy Percentage (RP): It was obtained by using the following formula

$$R.P. = \frac{MR\times5 + R\times4 + SWR\times3 + LR\times2 + NR\times1}{\text{Maximum possible score}} \times 100$$

ii) Mean Relevancy Score (MRS): It was worked out using the following formula

$$M.R.S. = \frac{MR\times5 + R\times4 + SWR\times3 + LR\times2 + NR\times1}{\text{Number of judges/experts responded.}}$$

Accordingly, statements having 'relevancy percentage' of 75 per cent and above and mean relevancy score of 3.75 and above were considered for final selection. Accordingly, 60 statements were retained after relevancy test and these statements were suitably modified and written as per the comments of the judges wherever applicable.

Item analysis: "for item analysis**,** 32 respondents were selected from the non-sample area and the respondents were asked to indicate their degree of agreement or disagreement with each of the 60 statements on a five-point continuum ranging from 'strongly agree' to 'strongly disagree'. Based upon the total scores, the respondents were arranged in descending order". [12] The top 25 per cent of the respondents with their total scores were considered the high group and the bottom 25 per cent as the low group. These two groups provide criterion groups in terms of evaluating the individual statements suggested by Edwards (1969). 't' value was calculated for each of the statement by using following formula:

$$t = \frac{\bar{X}_H - \bar{X}_L}{\sqrt{\frac{\sum X_H^2 - \frac{(\sum X_H)^2}{n} \times \sum X_L^2 - \frac{(\sum X_L)^2}{n}}{n(n-1)}}}$$

Where,

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

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

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

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

n = Number of respondents in each group

$\sum$ = Summation

t = The extent to which a given statement differentiates between the high and low groups.

After computing the 't' value for all the 60 items, forty-six statements with 't' value equal to or greater than 1.67 (which were significant for at least 5% level) were finally selected and included in the final livelihood scale.

Reliability: "Reliability refers to precision of the scale constructed for any purpose. A reliability test will be *reliable* when it gives the same repeated result under the same conditions. In any social science research, a newly constructed scale must be tested for its reliability before it is used. The split-half method was employed to test the reliability of the livelihood security

scale". [13] The value of correlation coefficient was 0.8281 and this was further corrected by using Spearman Brown formula to obtain the reliability coefficient of the whole set. The 'r' value of the scale was 0.905, which was significant at one per cent level indicating the high reliability of the scale. It was concluded that the livelihood security scale constructed was reliable.

a) Half test reliability formula

$$r_{1/2} = \frac{N(\sum XY) - (\sum X)(\sum Y)}{\sqrt{(N\sum X^2 - (\sum X)^2)\,(N\sum Y^2 - (\sum Y)^2)}}$$

Where,

$\sum X$= Sum of the scores of the odd number items

$\sum Y$ = Sum of the scores of the even number 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

b) Whole test reliability formula

$$r_{1/1} = \frac{2_{r1/2}}{1 + r_{1/2}}$$

Where,

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

Validity: "It refers to how well a scale analyses what it is purposed to measure. The data was subjected to statistical validity, which was found to be 0.951 for scale which is greater than the standard requirement of 0.700 (Validity=$\sqrt{r_{11}}$)". [13] Hence, the validity coefficient was also found to be appropriate and suitable for the tool developed. Thus, the developed scale to analyze the livelihood security of youths under ARYA project is feasible and appropriate.

Administration of scale and method of scoring: The final scale consists of 46 statements for measuring the livelihood security of youths under ARYA project in eight dimensions. The response will be collected on a five-point continuum, *viz.*, Strongly Agree, Agree, Undecided, Disagree and Strongly Disagree with an assigned score of 5,4,3,2 and 1 for positive statements and reverse scoring for negative statements respectively.

Table 1: Scale to to measure the Economic security of youth beneficiaries under ARYA project

Sl. No	**statements**	**SA**	**A**	**UD**	**DA**	**SDA**
1.	Agriculture is the main source of income after ARYA project					
2.	Skill development under ARYA increased the employment opportunities					
3.	ARYA made me as a main source of income in my family					
4.	ARYA project created a pathway for year-round agriculture work					
5.	The dependency on credit decreased after ARYA					
6.	Living standard of the family progressed positively after the ARYA project					
7.	Project led to increase in mechanization in my field					

Table 2: Scale to to measure the social security of youth beneficiaries under ARYA project

8.	I am part of any of the cooperative societies after the ARYA program					
9.	Frequency of my participation in the various training projects increased after ARYA					
10.	I am interested in joining any of the agriculture certificate programs after ARYA					
11.	My visit to the nearby RSKs, KVKs, SAU's farm clinics increased after ARYA					
12.	ARYA convince me an ideology of "each for all, all for each"					

Table 3: Scale to to measure the migration component of youth beneficiaries under ARYA project

13.	ARYA project stopped me from migrating to nearby city					
14.	I have no major reasons to move out of the village after ARYA					
15.	My expenditure on temporary migrations decreased after ARYA					
16.	Modern skill sets in agriculture is fulfilled in my own village because of ARYA					
17.	I got employment in my own village after ARYA					
18.	My need of, off season migration to other villages/towns/cities stopped after ARYA					

Table 4: Scale to to measure the physical security of youth beneficiaries under ARYA project

19.	I own a house after ARYA					
20.	Purchased new farm machineries and tools after project					
21.	ARYA is responsible for increasing my land holding size					
22.	My buffer stocks of food grains and fodder crops increased after ARYA					
23.	Possess a new bore well out of increased income due to ARYA project					
24.	Project helped me afford a vehicle/vehicles					

Table 5: Scale to to measure the psychological security of youth beneficiaries under ARYA project

25.	ARYA improved my skills, knowledge, and managerial ability in agriculture					

26.	Project increased my risk bearing ability					
27.	My decision taking ability enhanced after the project					
28.	I value scientific views after the project					
29.	ARYA changed my view of agriculture as a less profitable activity					
30.	ARYA project made me realize the importance of contingency planning in agriculture					
31.	Trying innovative ideas in agriculture increased because of the project					

Table 6: Scale to measure the health security of youth beneficiaries under ARYA project

32.	Cleanliness and hygiene are given priority in the family after the project					
33.	I visit hospitals for the primary health care instead of trying unscientific medications myself					
34.	Regular health checkups are made					
35.	ARYA project was responsible for purchasing insurance cover to me and my family					

Table 7: Scale to measure the ecological security of youth beneficiaries under ARYA project

36.	ARYA project realized the importance of organic farming					
37.	The training project taught me optimum natural resource allocation will reduce the burden on ecosystem					
38.	I learnt the technique of rainwater harvesting from the training project					
39.	ARYA project helped me in better waste management techniques					
40.	Reduced the usage of chemical fertilizers in my field					
41.	ARYA project skilled me in IPM, INM and IFS techniques					

Table 8: Scale to measure the food and nutritional security of youth beneficiaries under ARYA project

42.	Most of my family requirements of food grains are produced in my field after ARYA					
43.	Project encouraged me to take up the cultivation of nutria-cereals in my field					
44.	Suffering from malnutrition decreased after project					
45.	Per capita consumption of fruit, vegetables, milk, and egg increased after ARYA project					
46.	Balanced diet of my family gained momentum after ARYA					

B. livelihood security of youth beneficiaries under ARYA project

The livelihood scale developed was administered to 32 youth beneficiaries under ARYA project in Krishi Vigyan Kendra, Papparappaty in the state of Tamil Nadu during 2022-23. The results (Table 9) revealed that a larger proportion of the youths belonged to average (40.62) and better level (34.37) of livelihood security whereas one-fourth of the respondents comes under low level of livelihood security. . The results of the study showed that ARYA project had a remarkable progress in enhancing socio- economic status, skill sets, and employment opportunities of the youths and also agriculture became the main source of income. The following results were assessed using the progress or the changes observed in the areas like decrease in the dependency on the informal source of credit, reduction in migratory needs, increase in employment opportunities in the village etc., after the implementation of ARYA project.

Table 9. livelihood security of youth beneficiaries under ARYA project

Sl. No.	livelihood categories	Youth beneficiaries	Mean	Standard

					deviation
		Number	**Per cent**	171.15	13.47
1.	Poor (< 164.42 score)	8	25.00		
2.	Average (164.42 to 177.89 score)	13	40.62		
3.	Better (>177.89 score)	11	34.37		
Total		32	100.00		

Conclusion

The livelihood scale developed is found to be reliable and valid, hence it can be used to analyze the livelihood security of youth beneficiaries under ARYA project. The livelihood scale when administered to the youth beneficiaries under ARYA project revealed that three-fourth of the youths (75.00%) had an average to better livelihood security.

References

1. Edwards, A.L., 1969, Techniques of attitude scale construction. VIkils, Feger and Dimons Pvt. Ltd., 9, Sport Road, Ballard Estate, Bombay: 34-37.
2. Likert, R.A., 1932, A technique for assessing attitudes. *Archives of Psychology*, New York: 140.
3. Naveen Kumar, P., Narasimha, N. and Lakshminarayan, M.T., 2018, Development of a scale to analyze the well-being of farmers in Kolar district of Karnataka. *J. Sci. Res. and Reports*, 19(2):1-7.
4. Thurstone, L.L. and Chave, E.J., 1929, The analyses of attitude. *Chicago University Press, United States of America:* 39-40.
5. Debasis Jayapuria, 2015, attitude of rural youth regarding participation in Agricultural activities of Patan block of Jabalpur district. M.Sc. (Agri.) thesis, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur.

6. Tripathi, H., Dixit, V. B., Singh, S and Yadav, R. 2018. Measuring the Attitude of Rural Youth Towards Farming: An Explorative study of Haryana. Haryana Veterinarian 57(2): 183-188.
7. (Angaitkar, A. G., Janjal, V. B., Barse., K. N. and Shedge, V. R. 2013. Problems faced by rural youth while choosing agriculture as their profession. Agriculture Update 8(4): 685-686.
8. Shireesha, K., Satyagopal, P. V., Lakshmi, T., Ravindrareddy, B. and Prasad, S. V. 2016. Correlates of Profile and Attitude of Youth Towards Farming. International Journal of Agricultural Science and Research 7(1): 43-52.
9. Giuliani, A., Sebastian, M., Courtney, P., Nicole Perkins., Ingrid Flink., Oliveros, O and Wongtschowski, M. 2017. Realities, perceptions, challenges and aspirations of rural youth in dry land agriculture in the Midelt province, Morocco. Sustainability. 9, 871.
10. Shireesha, K., Satyagopal, P.V., Lakshmi, T., Prasad, S.V and Reddy, B.R. 2017. Youth in farming personal, economic and socio-psychological analysis, The Andhra Agricultural Journal, 64 (1): 226-233.
11. Vishal Yadav. Attracting and Retaining of Youth in Agriculture (ARYA). Open Access Multidisciplinary Monthly Online Magazine Volume: 04 Issue: 02 February 2023 Article No: 05
12. VJagadeesh MT, Jagadish KS. A scale to analyse the perception of farmer-bee keepers towards bee keeping. The Pharma Innovation Journal 2022; SP-11(3): 1471-1474
13. James DJ, Shivamurthy M, Lakshminarayan MT, Ganesamoorthi S. Development of a Scale to Analyse the Perception of Krishi Vigyan Kendra Scientists Regarding Social media for Agricultural Development. Journal of Scientific Research. 2020;64(1):64.