

Construction and administration of knowledge test to measure the financial literacy of farmers in Tamil Nadu

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ABSTRACT

Finance is a critical input for crop production. It has greater influence on timely availability of farm inputs and adoption modern crop production technologies at farm level. Frequent inflow and outflow of finance in crop production make farm financial management as complex one. This unique nature of farm financial management calls for farmer to act as an entrepreneur. Being an farm entrepreneur, the farmer should have enough financial literacy for effective financial management. In this context, a study was conducted to assess the financial literacy of jasmine farmers as jasmine is the crop which requires frequent cash inflow and outflow. Standardized knowledge test was employed to assess the financial literacy of farmers. For that, 100 farmers from Erode district and 100 famers from Madurai district were surveyed. It was concluded that, Erode farmers has high financial literacy than Madurai farmers as they have gained some knowledge through training programmes.

KEY WORDS : Financial literacy, NAIP, Knowledge test and Financial management

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Financial literacy has assumed greater importance in the recent years, as financial management have become increasingly complex and there is an information asymmetry leading to making informed decisions more difficult for the decision makers. The unique nature of financial management calls for the corporates to have separate functional department for management of finance. The small and medium enterprises were also having specialized personals for financial management. For these specialized personals, the level of financial literacy is likely

to be higher compared to the other peoples and they were able to make proper decision in terms of financial planning, acquisition and allocation of finance. In case of farming sector, the commercialization of Indian agriculture calls for the farmer to act an entrepreneur. They have to make right decision in production and marketing aspects. Agricultural finance has been an important input for successful crop production. Need for efficient farm financial management assumed critical importance. Financial literacy of farmer played a vital role in efficient farm financial management. Financial literacy is defined as the knowledge acquired through formal education or by practice, to manage one's own personal financial needs (Garman and Fogue, 2006). In other words, financial literacy is the ability to use knowledge and skills to manage financial resources effectively for a lifetime of financial well-being (PACFL, 2008). In this study the financial literacy is defined as the knowledge on management of farm financial activities viz., farm financial planning, acquisition of finance and allocation of finance.

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Financial literacy and profitability :

Being a critical input for crop production, agricultural finance has been supplied through various agencies such as public sector banks, private sector banks, regional rural banks, cooperatives NGOs, NBFCs etc., Various schemes such as Kisan Credit Card (KCC), Interest subvention schemes, Agri-gold loan schemes etc. have been floated to ensure timely availability of credit to the farmers. Through various means, the flow of short term institutional credit has been increased from 2.06 lakhs crores in 1997-98 to 3.19 lakhs crores in 2010-11. In this contribution of commercial banks was high (67.93 %) compared to cooperatives (20.22 %) and RRBs (11.85 %). Agricultural credit dispersed in Tamil Nadu was 27000 crores in 2006-07. In which public sector banks contribution was 58.70 per cent followed by private sector banks (33.18 %), cooperatives (4.86 %) and RRBs (3.28 %). Even though the quantum of credit increased over the year, the accessibility and proper utilization of credit was the major concern. One of the major reasons might be lack of financial literacy among farmers. It significantly affects the farm profitability and makes the farmer more prone to indebtedness (Kishore, 2012). None of the study has focused on assessment of financial literacy of farmers. An initiative was made to assess the financial literacy of farmer through standardized knowledge test.

Financial literacy of jasmine farmers :

Tamil Nadu is one of the leading jasmine producing States in India and it contributes 24.22 per cent of India's share. Being as cash crop, cultivation of jasmine involves frequent inflow and outflow of money and it demands proper farm financial management. The most of the jasmine growers were small and marginal farmers. They don't maintain any farm records and they were managing their farm finance based on heuristics only. The project "Value chain on flowers for domestic and export markets" funded under National Agricultural Innovation Project, ICAR, New Delhi was implemented by Tamil Nadu Agricultural University addressed this issue through trainings. The jasmine farmers were trained on different farm financial management aspects such as farm financial planning, acquisition of finance and allocation of finance. This might have significant influence on the financial literacy of farmers and ultimately it would influence their financial management. In this context, a study was carried out to measure the financial literacy of farmers.

METHODOLOGY

The present study has focused on assessment of financial literacy among jasmine growers. Keeping these things in mind, NAIP intervention and non-intervention approach was used for the study. Erode, Coimbatore and

Dindigul were the NAIP intervention districts, from these three districts, Erode district was randomly selected for the study. From the non-NAIP zone, Madurai district was randomly selected for the study. From the each selected districts, two blocks were randomly selected and from each selected blocks two revenue villages were selected randomly, in each village 25 farmers were selected randomly, in total 200 farmers were contacted for the survey and it comprised 100 NAIP farmers and 100 non-NAIP farmers. Standardized knowledge test was developed to measure the financial literacy of jasmine farmers by adopting the procedure followed by Jha and Singh (1970).

Standardized knowledge test :

Item collection :

For constructing knowledge test, a set of questions (items) were identified based on review of relevant literature and consultation with relevant subject matter specialist. Totally 60 items covering all the knowledge aspects of financial literacy such as financial planning, acquisition of finance and allocation finance were identified. The items were edited and drafted in such a way that each item highlighted only one idea and did not have any ambiguity.

Judges opinion :

The identified items were sent to 30 judges and they are asked to rate all the questions for their relevance in assessing the financial literacy of farmers on the three point continuum of relevance *viz.*, most relevant, relevant, not relevant. They have liberty to add, delete modify any of the questions. Individual mean and coefficient of variation for each item and whole mean and coefficient of variation were calculated. The 52 items with mean value above than whole mean value (> 2.44) or the items with coefficient of variation below whole coefficient of variation (< 189.44) were retained in the knowledge test.

Item analysis :

The selected items were administered to 60 respondents in the non-sampling area. Scores of 1 and 0 were given to "correct" and "incorrect" answers, respectively. The total scores for each respondent were calculated and arranged in descending order. The 60 respondents were divided into six group's *i.e.* 10 respondents in each group. The groups were named as G1, G2, G3, G4, G5 and G6. The range of score obtained by the respondents of six groups is given in the Table A.

For the purpose of item analysis, the middle two groups G3 and G4 were eliminated and retained four extreme groups with high and low scores (Singh, 2006). The data pertaining to the response for all the items in respect of these four groups were tabulated for calculating the difficulty and discrimination indexes.

Appendix 1 : Knowledge test to measure the financial literacy of farmers

Item No.	Items
	Financial planning
1.	The basic components of farm budget are? a) Income b) Expenditure c) Both d) None
2.	When farmer should prepare the farm budget? a) Before the season b) After the season c) Mid of the season d) whenever I need
3.	Alternative plans should be evaluated based on a) Experience b) Budget c) Large farmer opinion d) Trader opinion
4.	Short term financial plan is prepared for? a) < 1 year b) 1-3 years c) 3-5 years d) > 5 years
5.	Short term financial plan refers to a) Crop plan b) Land development plan c) Irrigation plan d) Farm building plan
6.	Which one of the cost is included in crop budget? a) Building cost b) Land development cost c) Seed cost d) None of the above
7.	Long term financial plan is prepared for? a) < 1 year b) 1-3 years c) 3-5 years d) > 5 years
8.	Which one of the cost is included in long term financial plan? a) Fertilizer cost b) Seed cost c) Machinery cost d) All
11.	Crop diversification would ____ the financial risk. a) Increase b) Reduce c) Not affect d) both a and b
	Acquisition of finance
	<i>Savings</i>
12.	Formal source of saving refers to saving with a) Banks b) Nearby farmer c) Friends and family members d) Traders
13.	Informal source of saving refers to saving with a) Banks b) Nearby farmer c) Post office d) Chit funds
14.	Name the document(s) required for opening SB account in nationalized banks a) Ration card b) Voter ID c) both a and b d) Medical certificate
15.	What is the interest rate for SB account in nationalized banks a) 3.5% b) 5% c) 7% d) 9%
16.	What is the minimum balance required to open a SB account a) Nil b) 500 c) 1000 d) 1500
17.	What is the maximum amount of withdrawal using ATM card in a single day a) Rs 10000 b) Rs 20000 c) Rs 30000 d) Rs 40000
18.	Normally bank passbook is used to make withdrawal of Rs. _____ a) > 40000 b) < 40000 c) 10000-20000 d) All
19.	What are all the different type of chalans available with the banks a) Pay-in slip, b) Withdrawal chalan c) DD chalan, D) All the above
21.	How many free transactions can you make in other bank ATMs in a single month? a) 2 b) 4 c) 6 d) 8
24.	What is the current interest rate for bank deposits of one year? a) 7.5 % b) 8.5 % c) 9.5 % d) 10.5 %
	<i>Borrowings</i>
26.	Formal finance refers to availing finance from a) Banks b) Traders c) Private money lenders d) All the above
27.	What are the basic documents required to avail crop loan in nationalized bank for jasmine crop? a) Land document b) Ration card c) NOC d) All the above

Contd.....Appendix 1

Contd..... Appendix 1

28. What kind of collateral is required for availing crop loan from a nationalized bank
a)Crop land b) Machinery c) Building d) None of the above
29. What is the maximum amount of crop loan sanctioned by nationalized banks for jasmine crop per ha?
a)Rs 10000 b) Rs 15000 c) Rs 20000 d) Rs25000
30. What is the interest rate charged by the nationalized banks for crop loan up to 3 lakhs?
a)4% b) 7% c) 9% d) 11 %
31. What is the interest rate charged by the nationalized banks for crop loan more than 3 lakhs?
a)9.5% b) 10% c) 11% d) 12%
32. What is the interest subsidy received by the farmer, if he repays the crop loan on time?
a)2% b) 3% c) 4% d) 5 %
33. Collateral is not required for the crop loan up to Rs._____ lakhs
a)0.5 b) 1 c) 1.5 d) 2
34. What is the legal action taken by the banks on crop loan defaulters? (Correct/Incorrect)
35. What are the basic documents required to avail agri-gold loan from nationalized banks
a)Ration card b)Medical certificate
c) Educational certificate d) Purchase bill
36. What is the interest rate charged for agri-gold loan in nationalized banks
a)7% b) 9% c) 11 % d) 13 %
38. What is the amount of loan sanctioned by the banks for a gram of gold?
a) Rs 2000 b) Rs 2500 c) Rs 3000 d) Rs 3500
39. What is the legal action taken by the banks on agri-gold loan defaulters? (Correct/Incorrect)
40. Kisan credit card is issued by
a)Nationalized Banks b) Post office c) Cooperatives c) Panchayat union
43. What is the legal action taken by the banks on machinery loan defaulters? (Correct/Incorrect)
Allocation of finance
46. On what basis do you allocate the money borrowed/sourced?
a) Based on budget b) Experience c) Nearby farmer c) Big farmer
47. Indiscriminate spending will leads to_____ (Profit / Loss)
48. Expenditure should be linked to anticipated income (True/False)
49. Money spends on different farm activities should be based on the significance of that activity in crop production. (True/False)
50. What is the cost repeatedly incurred in jasmine cultivation?
a)planting material cost b) Drip irrigation c) Fertilizer cost d) All the above
51. Which is the one time expenditure in jasmine cultivation?
a)Planting materials cost b) Fertilizers cost c) Labour cost d) All the above

Table A : Respondents score

Group	Score	Number of respondents
G1	42 - 37	10
G2	36 - 32	10
G3	31 - 29	10
G4	28 - 26	10
G5	25 - 23	10
G6	22 - 17	10

ANALYSIS AND DISCUSSION

The findings of the presents study as well as relevant discussion have been presented under following sub heads :

Difficulty index :

The index of item difficulty was worked out as the percentage of the respondents answering on items correctly (Barman and Kumar, 2010). The assumption in this item index of difficulty was that, the difficulty is linearly related to the level of respondents' knowledge about different farm financial aspects. When a respondent answered an item correctly, it was assured that the item was less difficult than his ability to cope with it. The difficulty index was computed by averaging the proportion of correct answers in high group and the proportion of correct answers in low group :

$$\text{Difficulty index(P)} = \frac{R_U < R_L}{N_U < N_L}$$

where,

P = is the index of difficulty

R_U = is the number of examinees answering correctly in the upper group

R_L = is the number of examinees answering correctly in the lower group

N_U = is the number of examinees in the upper group

N_L = is the number of examinees in the lower group

After calculating difficulty index for 52 items, the items with difficulty value ranging from 0.3 to 0.7 were retained for knowledge test. Based on this criterion, eight items were eliminated from the knowledge test and remaining 44 items were retained for further analysis.

Discrimination index :

Discrimination index was referred to the extent to which an item discriminates well informed individual from the poorly informed ones. This had been defined as an unbiased index of absolute difference in the number of discriminations made between the upper group and the lower group *i.e.*, the difference between the proportion of correct answers of the high group and low group respondents (Singh, 2006).

$$V = N \frac{R_U}{N_U} - \frac{R_L}{N_L}$$

where,

R_U = is the number of examinees answering correctly in the upper group.

R_L = is the number of examinees answering correctly in the lower group.

N_U = is the number of examinees in the upper group.

N_L = is the number of examinees in the lower group.

V = is the discriminating power or validity

After calculating discrimination index, 40 items with discrimination value more than 0.2 were retained in the knowledge test.

Item validity :

Biserial correlation was used to test the validity of selected items, when the criterion of validity is regarded as internal consistency. It was the relationship between the right or wrong scores that, respondents receive on a given item and the total score that the respondents receive when summing up their scores across the remaining items. It values ranges from -1.0 to +1.0. A larger biserial correlation value indicates that, respondents with high score on the overall test also getting item right (which we would expect) and the students with low scores on the overall test are getting the item wrong. Even though biserial value of 0.15 was recommended, 0.25 was considered as good one. Keeping this in view, with the help of formula used by Guilford (1965), the biserial correlation was calculated. In this study biserial correlation was calculated for 40 items and all the 40 items

were retained in the knowledge test as all the items had the biserial value of more than 0.25. The selected 40 items are given in the appendix 1.

Item reliability :

Reliability was the accuracy or precision of a measuring instrument (Kerlinger, 2004). The reliability of the test is calculated by Kuder-Richardson formula ($K-R_{20}$). If $K-R_{20}$ value is more than 0.71, the measuring instrument is reliable in assessing the financial literacy of farmers.

$$r = \frac{K}{K-1} \left(1 - \frac{\sum p_i q_i}{N} \right)$$

where,

r = Kuder- Richardson value

K = Number of items in the test

P = Proportion of the respondents who answered each items correctly

q = Proportion of the respondents who answered each item incorrectly

σ^2 = Variance of the total test scores

The calculated $K-R_{20}$ was 0.870 for the present study and it explained that, the constructed knowledge test items were most reliable in measuring the financial literacy of farmers.

Item administration :

The selected items were administered to the sample farmers in the study area. Scores of 1 and 0 were given to "correct" and "incorrect" answers, respectively. The total score for each respondent were calculated and this score will depict the financial literacy of jasmine farmers in the study area. The formula used for the calculation of knowledge index of each respondent was :

$$\text{Knowledge index} = \frac{K}{P} \times 100$$

where,

K= Knowledge scores obtained by an individual respondent

P= Maximum possible scores for all items

Financial literacy score :

The standardized knowledge test was administered to 100 NAIP farmers and 100 non-NAIP farmers in the study area. The average financial literacy score of NAIP farmers were 28.94 (72.35 per cent) and non-NAIP farmers were 23.12 (57.80 per cent). It revealed that, NAIP farmers who attended the training programmes got higher financial literacy score than non-NAIP farmers. The t-test (Salehin *et al.*, 2009) results showed that, there was a significant difference between the financial literacy of NAIP and non-NAIP farmers as indicated by calculated t value (10.1785) was more than that of table t value (1.9842).

REFERENCES

- Barman, U. and Kumar, B. (2010). A Test to Measure Knowledge of Extension Personnel on Farmers' Group Dynamics. *Indian Res. J. Extn. Edu.*, **10**(3): 119-124.
- Garman, T.E. and Forgue, R.E. (2006). *Personal Finance* (8th edition). Boston: Houghton Mifflin Company.
- Guilford, J.P. (1965). *Fundamental statistics in psychology and education*. New York, McGraw Hill Book Company. 317-319.
- Jha, P.N. and Singh, K.N. (1970). A test to measure farmers' knowledge about High-Yielding Varieties Programme. *Inter Discipline*, **7**(1): 65-67.
- Kerlinger, F. N. (2004). *Foundations of Behavioral research* (2nd Ed.). Surjeet Publications, DELHI (INDIA).
- Kishore, Krishna. N.T. (2012). Agriculture credit in India : An integrated rural credit approach. *Internat. J. Scientific & Res. Publications*, **2**(3): 1-5.
- Salehin, M.M., Kabir, M.S., Morshed, K.M. and Farid, K.S. (2009). Socio-economic changes of farmers due to adoption of rice production technologies in selected areas of Sherpur district. *J. Bangladesh Agric. Univ.*, **7**(2): 335-341.
- Singh, A.K. (2006). *Tests, measurements and research methods in behavioural sciences* (5th Ed.). Bharati Bhawan, NEW DELHI (INDIA).

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