Original Research Article

Cultivating Adaptation: A Study of FPO Farmer Preferences for Climate-Smart Training in the Western zone of Tamil Nadu

ABSTRACT

Tamil Nadu government has conducting frequent training programs for farmers for their development. Training programs was conducted at regular intervals to the farmer members of FPO's in the combination of both classroom training and field visits. It was important for the training centers to know about the reasons of farmers for attending the training programs and their preference mode of training. Rank based quotient (RBQ) was utilized to analyze the reasons of farmer member's for attending the training program from the districts of Coimbatore and Nilgiris. Conjoint analysis was used to find out the preference of training modes of the training programs, the sample size consists of 80 farmer respondents of FPO's. Training mode, Frequency of training, Number of days, Duration of the training attributes were selected for the experiment. From the results of conjoint it was observed 2 days training program from morning 10 am to evening 5 pm with the combination of both classroom training and field visits need to be conducted only once in the year was mostly preferred by the farmer members. Number of days was the major influencing attributes for attending the training programs by farmers. It was observed that inviting experienced farmers as trainers or guest speakers was consider as the main reasons of farmers for attending the training programs.

Keywords: *Conjoint analysis, Preference, Training Design, Farmers Producers Company*

1. INTRODUCTION

Farmers Producer Organizations (FPO's) are progressing as an essential structure in the arena of agricultural and rural development programmes. The primary operations of the FPOs include the supply of seed, market linkages and fertilizer, machinery, training, financial, networking and technical advice. The main aim of the FPOs is to increase the income for the producers through an organization of their own. Tamil Nadu government has started for imparting training and education with a view to raise the level of knowledge & attitudinal changes among the farmers towards agribusiness. The Farmers Training Centre are created and funded by the State Government, and its major objective is to teach farmers and farmworkers.Human growth and development include training. Practical application was stressed more than theoretical information to help people learn more, become more skilled, and modify their attitudes. A key component of the rapid transmission of technology to farmers is training, which is also a means of enhancing farmer's socioeconomic conditions and improving their agricultural output. Providing farmers with training and instruction focused on productivity is crucial for the successful implementation of the new agricultural plan. The success or failure of many trainings would mainly depend upon the preference of farmers towards training programs. For farmers to progress, it is vital to assess the effects of the training plan they get rather than just giving them training, which is insufficient. The primary objective of the study is to examine the preference of farmer members of FPO's in the Western zone towards training program and to develop a training model based on the farmers preference for organising capacity building programs.

2. REVIEW OF THE STUDY

Mishra (2017) conducted a study on farmers' preference towards training and found that farmers have favourable opinions towards training programs.

It's critical to determine "the trainees' preferred mode of training in terms of the method of perception by which they prefer to take in new information," according to **Lujan and DiCarlo (2006).**

The ability to converse, exchange ideas, and knowledge are all made possible by face-to-face interaction, which inspires farmers **(Russ-Eft, 2002).** Most of the time, interaction is preferred, but the trainer must set out time for it to happen during training.

Small farmers have a low level of learning experience **Balamurugan (2015)** on the subject of sugarcane farming. They recommended that perceptual adjustments among sugarcane producers should be supported through extension educational programmes like trainings, discussion sessions, demonstrations, and field trips, among other things.

The training method becomes less attractive as the time commitment increases. According to **Salas, Wildman, and Piccolo (2009),** simulation is advantageous despite its high cost because it may "collapse time and space"

Growth of skill, knowledge and abilities are few positive results of training assistance which is not just farmer's improvement but also economic growth of the country. The enhancement of farmers' skills, knowledge, and talents are just a few of the beneficial outcomes of training interventions that also contribute to the nation's economic development **(2017) Sharma *et al.***

The development of human skills requires training, which also serves as a stimulant for socioeconomic growth. Human efficacy and efficiency are increased through planned, purposeful processes. Similar to this, farmer training programmes aim to increase farmers' productivity in the field **(Sajeev *et al*., 2012).**

The primary goal was to provide training that was specific to the needs of the farmers and farm women in the area of the KVK villages. Agricultural demonstrations and vocational training were to be used to accomplish this **(Acharya and Chatterjee, 2019).**

By increasing farm productivity, income, and employment through the use of agricultural innovation developed at the research station, KVK trainings are assisting in improving the poor socio-economic conditions of farmers, farm women, and rural youths in rural India **(Dubey et al. 2008).**

In their study of Bangladeshi small farmers, **Murshed-E-Jahan and Pemsl (2011)** came to the conclusion that increasing farmers' ability through training is more beneficial than providing them with financial help in terms of increasing output and revenue.

According to a study by **Tripp and Hiroshimil (2005),** training method was framed t for improving farmers' abilities to do tasks associated with agriculture.

According to **Punia et al. (2007)**, training is a capacity-building, knowledge-transfer, and awareness-raising process that encourages greater engagement and improved decision-making.

According to **Torraco (2005),** when presenting a frame work it is vital to provide an explanation of its intellectual underpinnings, its interrelationships, and the conceptual logic behind it.

3.MATERIALS AND METHODS

The data was collected from the farmer members of FPO's who have attended the TNSFAC sponsored training programs conducted in the Western Zone of Tamil Nadu to assess the reasons for attending the training programs and preference towards the training mode conducted. Totally 80 farmer respondents were selected as the sample in Coimbatore and Nilgiris district of the western zone of Tamil Nadu.

3.1 Ranking Based Quotient (RBQ)

Ranking Based Quotient (RBQ) was used to find the reason for attending the training programs by farmers. The rank given by the farmers were converted into RBQ score by using the formula. Rank based quotient was done in this study as outlined by Sabarathnam, 1988.

$$RBQ = 100 = \frac{\sum F_i (n+1-i)}{N \times n} \times 100$$

RBQ-Rank Based Quotient
fi = frequency of attributes for the i^{th} promotional strategy
N = Number of respondents
n = Maximum number of ranks given by the farmers for encouraging factors
i= Rank of the attributes

The variables which encouraged farmers to participate in training programs are as follows

S.NO	Statement
1	Providing financial incentives or subsidies
2	Networking and knowledge sharing
3	Offering training sessions at convenient times and locations
4	Providing hands-on learning opportunities
5	Inviting experienced farmers as trainers or guest speakers
6	Incorporating interesting activities and group discussions
7	Offering customized training based on individual needs

The statement with the highest RBQ score were consider as the top most variables which encouraged farmers to participate in training programs.

3.2 CONJOINT ANALYSIS

The Conjoint analysis was used to find the preference of training mode by the farmer members of FPO's. There were two major steps in designing a conjoint analysis study (1) identifying relevant attributes and possible values of attribute, and (2) designing the conjoint experiment.

3.2.1 Identifying relevant attributes – a personal interview

The identification of the relevant attributes and attribute levels was an important stage in the conjoint study. Common methods for deriving the list of relevant attributes - also known as 'factors' - in conjoint studies include personal interviews, expert judgment, group interviews, or computerized methods. The personal interview method was selected to identify the relevant attributes and attribute level.

Conjoint analysis had been widely used in examining preference for a wide range of attributes. In this research, the conjoint analysis did not include a large number of attributes because the respondents might find it difficult to evaluate many attributes at a time. A large number of attributes would also increase the number of possible hypothetical models, which might confuse the respondents. Taking into accounts academic experts and published literatures in reputed journals only four important attributes (training mode, frequency of training, no of days, duration of training) were selected for the experiment. Eighty-one combinations could be formed from these four attributes. Orthogonal design was used to simplify this combination in order for farmers to find it easy. The attributes and attribute levels are given in the Table 1.

To test the correlation among the attributes, Pearson correlation coefficient and Kendall-tau was calculated. It was considered a strong correlation if the correlation coefficient was greater than 0.8 and a weak correlation if the correlation coefficient was less than 0.5.

Table 1: Details of training dimensions and its attributes

SI.NO	Attribute		Attribute levels
1	Training mode	a	Classroom training
		b	Field training
		c	Combination of both
2	Frequency of training	d	Once in 3 months
		e	Once in 6 months
		f	Annually
3	Number of Days	g	2 days
		h	3 days

		i	5 days
4	Duration of the training	j	9 am - 5 pm
		k	10 am - 4 pm
		l	10 am - 5 pm

3.2.2 Experiment design

Since these four attributes will form eighty-one models (3*3*3*3=81) Orthogonal design was chosen to achieve the best model of main effects. The developed models from the orthogonal design were directly presented to respondents; and the respondents were asked to express their strength of preference of each model according to their preference. The basic model of conjoint analysis assumed a linear relationship between utility and each attribute level as follows:

U (X)= $\sum_{i=1}^{m} \sum_{j=1}^{k} a_{ij} x_{ij} \cdots\cdots (1)$

Where

U(X) = overall utility of a profile

αij =the part-worth contribution or utility associated with the

j [th] level *m k* ... ki) of attribute

xjj = 1 if the jth level of the ith attribute is present; = 0 otherwise

ki = number of levels of attribute i

m = number of attributes

The importance of an attribute, i is defined in terms of the range of the part-worths, αij, across the levels of that attribute.

The attribute's importance is calculated to determine its importance relative to other attributes,

W = $\frac{I}{\sum_{i=1}^{n} I}$ so that $\sum_{i=1}^{m} W$=1

OLS regression technique was applied to estimate the preference functions of each respondent. Dependent variable was the profile rating, and independent variables were formed by the coded attribute levels. The estimated regression coefficients were then interpreted as the part-worth utilities that made up overall ratings of the profiles. The attribute's importance was understood as the extent to which each attribute contributed to the determination of the utility, i.e., to the overall preference. At last, total utility of every model was computed and ranking was given and the best model was selected.

4. RESULTS AND DISCUSSION

4.1 Reasons of farmer members for attending the training programs

To find the reasons of farmer members for attending the training programs, data were collected from the farmer respondents of FPO's who were participated in the training programs and analysed. The results are shown in the table 2.

Table.2 Reasons for attending the training programs

S.NO	Statement	RBQ	Rank
1	Inviting experienced farmers as trainers or guest speakers	73.39	**I**
2	Providing financial incentives or subsidies	68.03	**II**
3	Providing hands-on learning opportunities	66.43	**III**
4	Networking and knowledge sharing	62.86`	**IV**
5	Offering training sessions at convenient times and locations	59.46	**V**
6	Offering customized training based on individual needs	55.00	**VI**
7	Incorporating interesting activities and group discussions	48.21	**VII**

It could be concluded from the table that among the various services offered by the training centres, inviting experienced farmers as trainers or guest speakers were ranked first in RBQ with the score value of 73.39 followed by Providing financial incentives or subsidies ranked second with the score value of 68.03, Providing hands-on learning opportunities ranked third with the score valueof 66.43. Networking and knowledge sharing ranked fourth with the score value of 62.86, followed by

fifth rank were given for Offering training sessions at convenient times and locations with the score value of 59.46. Ranks of sixth and seventh in RBQ analysis were given for Offering customized training based on individual needs and incorporating interesting activities and group discussions respectively.

From the result it could be concluded that inviting experienced farmers as trainers or guest speakers was the major reason of farmers for attending the training programs. So, the training centres should take care of conducting the training programs with experienced guest speakers or farmers as trainers followed by providing financial incentives or subsidies and providing hands-on learning opportunities to the farmer members.

4.2 Preference of farmer members of FPOs in Western zone on the training design

The application of appropriate training design can help the farmer members of FPOs to maximize the benefits of training. Most of the time, the farmers were engaged with farming activities. It is highly important to find a suitable training design in terms of training mode, frequency of training, number of days and duration of training program. Hence, the preferences towards the training dimension were studied. The results of the analysis including correlation coefficients and estimation of part-worth scores, are presented table 3.

Table 3. Utilities

		Utility Estimate	Std. Error
Training mode	Classroom training	-.003	1.484
	Field training	-.285	2.198
	Combination of both	.288	1.942
Frequency of training	Once in 3 months	-.283	1.484
	Once in 6 months	-.895	2.234
	Annually	1.178	2.234
Number of Days	2 days	1.657	1.470
	3 days	1.548	1.572
	5 days	-3.205	1.649
Duration of the training	9 am - 5 pm	.586	1.484
	10 am - 4 pm	-1.537	2.198
	10 am - 5 pm	.951	1.942
(Constant)		7.956	1.365

Correlations[a]

	Value	Sig.
Pearson's R	.636	.004
Kendall's tau	.444	.008

a. Correlations between observed and estimated preferences

Total utility: (0.288+1.178+1.657+0.951=4.074)

The correlation between the observed and estimated preferences Pearson's R (0.636) and Kendall's tau (0.444) indicated that there was reasonably higher agreement between the averaged profile ratings and the predicted utility from the conjoint analysis. It could be concluded that the goodness-of-fit of the conjoint analysis is satisfactory.

Part worth utility was used to know the importance of each training design dimension which in turn provided information about the willingness of farmer members of FPOs for attending the training programmes. It could be inferred from the results that with respect to training mode, farmer members of FPOs preferred the combination of both classroom training and Field visit (0.288). The training

mode such as classroom training alone (-0.003) and field visit alone (-0.285) had negative utility on the preference of training design. As most of the farmers who attended the training program were not literate, they preferred to have combination of both classroom training and Field visit.

In case of frequency of training program, farmer members of FPOs preferred to have annually (1.178). The respondents did not prefer to have training once in three month (-0.283) and once in six month (-0.895), as evidenced by the disutility among farmer members of FPOs on the preference of training design.

The sample respondents showed preference to have two days training (1.657) followed by three days (1.548) whereas farmer members of FPOs showed negative utility for five days training (-3.205). With respect to duration of the training program, the respondents preferred to have 10 am to 5 pm (1.942) followed by 9 am to 5 pm (1.484) time duration to attend the training program. The respondents showed negative utility for the time duration of 10 am to 4 pm (-0.1.537).

Table 4. Average Importance Values

Training mode	21.896
Frequency of training	21.465
Number of Days	36.709
Duration of the training (Hours)	19.931

From the table 2, number days (36.71) was most preferred attribute in designing the training program followed by training mode (21.896) and frequency of training (21.465). Among the four training design dimensions, duration of the training (19.931) got least influence on preference of farmer members of FPOs. Average importance of training duration, mode, frequency was found to be almost 80 per cent of the total importance score.

Further, it could be concluded from the discussion that farmer members of FPOs preferred to have annually one training program. The most preferred training mode was combination of both classroom training and Field visit for two days with the duration of 10 am to 5 pm. The total highest utility value arrived for this training design was 4.074.

5. CONCLUSION

The proposed initiative is to design an annual two-day training program, commencing from 10 am to 5 pm, comprising a blend of classroom sessions and field visits. The combination of classroom training and field visits would ensure that farmers have a solid understanding of the theoretical as well as the practical application of these concepts. During the program, experienced farmers will act as trainers and guest speakers. Through the expertise of seasoned farmers, attendees will gain valuable skills and practical knowledge that can significantly contribute to their growth and success in the realm of agribusiness.

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