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# Development of Tool to Measure the Farmers' Perception towards Dairy-Based Farmer Producer Companies

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ABSTRACT

A scale to measure the perception towards dairy-based farmer producer companies (FPC) in India was developed. A list of positive and negative (70:30) items related to the perception towards dairy-based FPCs was prepared based on fourteen criteria advocated by Edward (1969), and 40 such items were got rated by 60 experts with massive knowledge in the field of farmer producer companies. For calculating the scale value, the score of each item was calculated based on an individual expert's score. The scale took into account the maximum twenty-five percent of total item value with the maximum score and the bottom-most twenty-five percent of total item value with the bottom-most score. Finally, the t value was calculated and the items having an at-value of more than 1.75 were selected and incorporated into the final schedule. Based on the calculated values, 36 items were selected and finally, the scale's reliability is 0.862 and validity is .0844 for the consistency of the results.

## INTRODUCTION

Farmer producer corporations are commonly considered as a hybrid of non-public corporations and cooperative societies. The idea of the farmer producer-company is intended to blend the productivity of a corporation with the spirit of old-style cooperatives societies (Trebbin and Hassler, 2012). The cooperative society model is solitary of the choices available for farmers to establish themselves by value addition and business ownership to pace up in the supply chain. However, many inadequacies have infected the cooperative system in the region. (Sontakki, 2012). The FPO's primary activities include the procurement of inputs such as seeds, fertilizers, and equipment, as well as business connections, training, backward and forward linkages, credit facilities, and technical consultancy services to farmers. The farmer producer company assists farmers in the production of a variety of agricultural products. Farmer producer companies provide additional effectiveness for small and marginal farmers to compete in the agricultural market, which helps to reduce transaction costs, inputs cost, enhance the input accessibility, increase outputs, access market information, access to new innovative and feasible technology, rolling into high-priced markets and allowing them to get high prices (Stockbridge, 2003 and Manaswi, 2018). The collectivization of small and marginal farmers has become even more important, but farmer participation in agricultural product marketing activities remains very low (Singh, 2017). According to research, smallholders can significantly enhance their income from agriculture and allied activities if they participate in the post-production activities like processing and marketing. As a result, the emphasis on agricultural development has shifted from production-led extension to market-led extension to enhance market connectivity (Shepherd, 2007). There have been several models of collective action approaches like farmer cooperatives societies, farmer interest groups, farmer organizations, self-help groups, and commodity-based organizations, but many of them are facing a lack of long-term viability, economic sustainability, and active participation of farmers in various stages of FPCs development and FPCs activities. As a result, they become short-lived, insignificant, and unsustainable.

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Few studies have been conducted to assess farmers' attitudes toward farmer producer organizations (Mukherjee, 2018). So, for their sustainable growth and group cohesiveness developments among farmer producer companies' shareholders, it is necessary to measure the perception of farmers toward farmers' producer companies.

## METHODOLOGY

The method of the summated rating was used to develop a perception scale toward dairy-based farmer producer companies (Likert, 1932). The standard procedure was considered for measuring the perception of dairy farmers towards dairy-based farmer producer companies and this procedure was also followed by Kumar et al., (2015); Kumar et al., (2016) and Rai (2017). A tentative list of 45 items relating to farmer producer companies and their benefit perceived by the farmers was collected from secondary sources like a review of literature, published reports, and consultation with experts. The positive and negative items were carefully selected to reduce the effects of social desirability and positive response bias, as well as to maintain the respondents' consistency in responding to the assertions (Lal, 2014). These items were corrected and edited in accordance with the 14 informal criteria proposed by Likert and Edwards (1932). After removing, forty items were kept after editing out of forty-five items.

A list of 45 edited items was e-mailed and also handed over personally to 60 judges who have expertise in the area to give responses on a 5-point continuum i.e., five for Strongly Agree (SA), four for Agree (A), three for Undecided (UD), two for Disagree (DA) and one Strongly Disagree (SD) because five continuum process gives more freedom to experts for their choice (Edwards, 1969). The judges were requested to read and analyse each item carefully. Experts were also requested to make necessary modifications in items (editing, deleting) if they desired so. Thirty-eight judges mailed the questionnaire back with their responses after fifteen days and their responses were considered for item analysis.

Analysing the items is a major and essential step in developing valid and reliable scales (Lal et al., 2014). The judges were asked to rate every item on a five-point scale ranging from five for Strongly Agree (SA), four for Agree (A), three for Undecided (UD), two for Disagree (DA), and one Strongly Disagree (SD) for positive items and the scoring pattern is reversed for the negative items. Lastly, by adding the scores of each item, the total individual judge's scores were calculated.

The scores of each respondent against each item were arranged in a descending order based on the total individual scores. Two groups, i.e., high group and the low group were formed based on the total individual score for evaluating the individual items. The higher group comprised the top 25 per cent of judges with their total individual scores and the lower group comprised the bottom 25 per cent of judges with their total individual scores (Mukesh, 2016). The t-values were then calculated by discriminating between higher and lower group responses for each item using the t-value calculation formula (Edwards, 1969). As a result, of the 38 judges who were given the items to getting a response for item analysis, the ten judges with the highest and ten judges with the lowest scores were used as criterion groups to calculate the t value of each item using the t-test. Cronbach's alpha (α) was used to determine the reliability of the tool. To calculate the Cronbach's alpha value for the reliability test, SPSSv21 statistical software was used. The content validity of the developed scale was tested, the scale's content validity was confirmed by expert judgment, as was the content's representativeness of sampling adequacy.

## RESULTS AND DISCUSSION

A total, forty-five items were used for t-value calculation but the item having t- value higher than 1.75 was selected for final inclusion in the perception scale, and others were rejected (Likert, 1932 and Thurstone 1961). Thus, only thirty-six (27 positive and 9 negative) items were incorporated in the final perception scale for measuring the perception of dairy farmers toward dairy-based farmer producer companies. A quick look at Table 1 indicates that most of the dairy farmers were having a positive attitude about dairy-based farmer producer companies that ranged from medium to high. The t-values are significant at a 5% level of significance. Both type items, i.e., positive (+) and negative (-) were incorporated in the scale to minimize the effects of social attractiveness and positive response bias. The items 10, 18, 22, 23, 24, 25, 29, 30, and 34 were negative, whereas the others were all positive (Table 1). The items, with a t-value of less than 1.75 were dropped from the further process of scale development.

### Reliability and validity of the scale

Various procedures were developed to quantify the scale's reliability and validity. For reliability testing between odd and even scores, the coefficient of correlation was 0.763, and the Spearman-Brown coefficient value was 0.862. Both of which were found to be significant at the 1% level, indicating the scale's reliability.

$$\gamma_{SB} = \frac{2r\, r_{hh}}{1 + r_{hh}} = \frac{2 * .763}{1 + .763} = 0.862$$

Cronbach's alpha value was used to re-authenticate reliability which is given below:

$$\alpha = \frac{K}{k-1}\left(1 - \frac{\Sigma_{i=1}^{i=k}\sigma^2 y_i}{\sigma^2 x}\right) = \frac{36}{35}\left(1 - \frac{12.78}{87.12}\right) = 0.877$$

These results showed that the scale was accurate in its measurements. The overall content validity of the scale (S-CVI value) was 0.884, indicating that the scale was content-wise valid for administering to the researchable population.

### Administration of the scale

The final constructed scale (Table 1) containing 36 items can be administrated to dairy farmers on a five-point scale: five for strongly agree (SA), four for Agree (A), three for natural (N), two for disagree (DA), and one for strongly disagree (SDA) and the reverse scoring pattern for negative items. The highest and lowest possible scores range from 180 to 36. The farmers are categorized in a low, medium, and high level of perception based on the mean and standard deviation. The higher result indicates that the dairy farmers have a favourable view of dairy-based farmer-producer companies.

**Table 1.** Final items of perception scale and their analysis

| S.No. | Items | Critical value (t) | Mean | SD |
|---|---|---|---|---|
| 1 | FPCs help to enhance farmers' backward and forward linkage with several enterprises. | 2.342 | 3.79 | 0.670 |
| 2 | Members of FPCs have better accessibility to agricultural services. | 2.927 | 3.68 | 0.758 |
| 3 | Membership of FPCs helps to enhance knowledge about good agricultural practices. | 2.971 | 4.10 | 0.628 |
| 4 | Membership of FPCs enhances individual bargaining power in the market. | 3.341 | 3.86 | 0.599 |
| 5 | FPCs help in reducing the transport cost of members. | 2.324 | | 0.506 |
| 6 | Members of FPCs have access to well-developed processing facilities. | 2.424 | 3.57 | 0.640 |
| 7 | FPCs help in eliminating middlemen from the value chain. | 2.074 | 3.78 | 0.632 |
| 8 | FPC provides ensured prices and a suitable market of products to farmers. | 2.197 | 3.18 | 0.640 |
| 9 | FPC, s provides a quick, digital, and transparent payment system. | 3.985 | 3.15 | 0.496 |
| 10 | Very little or no role of members in decision-making activities of FPCs (-) | 2.475 | 3.94 | 0.736 |
| 11 | One of the main objective of FPCs is to maximize the benefits of members. | 4.645 | 3.18 | 0.677 |
| 12 | FPCs help in e capacity building of its members. | 3.242 | | 0.758 |
| 13 | FPCs enhance employment opportunities in the rural areas. | 3.634 | 4.18 | 0.628 |
| 14 | Due to a lack of awareness among members, only a few people take benefit from FPC. | 3.576 | 3.89 | 0.599 |
| 15 | FPCs enhance the societal status of any individual. | 3.964 | 3.78 | 0.506 |
| 16 | FPCs help in increasing self-confidence, change the attitude and behaviour of members toward dairy farming. | 4.471 | 3.54 | 0.640 |
| 17 | FPCs encourage group cohesion among the farmers. | 4.001 | | 0.636 |
| 18 | FPC creates a lot of conflict among the farmers (-) | 2.967 | 3.74 | 0.636 |
| 19 | FPCs are the ideal platform to bridge the gap between extension personnel and farmers. | 2.961 | 3.12 | 0.474 |
| 20 | FPCs enhances the buying capacity of farmer. | 3.985 | 4.18 | 0.832 |
| 21 | FPCs is a latent tool for women empowerment | 2.390 | 4.00 | 0.483 |
| 22 | FPCs are not able to supply needed input to farmers at right time on competitive price (-) | 2.071 | 1.78 | 0.474 |
| 23 | To abide by the rules and regulations of FPC are very difficult (-) | 2.131 | 1.65 | 0.496 |
| 24 | FPCs do not have any political influences from outside. (-) | 1.801 | 1.81 | 0.639 |
| 25 | Only the large farmers are benefited through FPCs (-) | 2.142 | 1.75 | 0.632 |
| 26 | FPC help members to overcome from production and marketing risk of dairy farming | 3.555 | 4.01 | 0.709 |
| 27 | Leadership quality is the major factor for the successful running of FPCs | 2.132 | 3.58 | 0.552 |
| 28 | All members have equal power and right in FPCs on resources and decision making | 2.925 | 3.43 | 0.504 |
| 29 | Membership of FPCs is not beneficial to farmers (-) | 2.321 | 1.41 | 0.490 |
| 30 | FPCs are creating discrimination among members of society. (-) | 1.986 | 1.13 | 0.490 |
| 31 | Farmers feel empowered after joining FPCs. | 4.124 | 3.87 | 0.474 |
| 32 | FPCs develop entrepreneurial ability and habits among the members. | 5.112 | 4.21 | 0.639 |
| 33 | The input provides by FPC has good quality and competitive price than another similar seller of this product in the market. | 5.985 | 3.90 | 0.533 |
| 34 | FPCs are not easy to register and run successfully (-). | 2.076 | 1.75 | 0.736 |
| 35 | FPCs help enhance the producer's share in consumer rupees. | 5.679 | 4.14 | 0.526 |
| 36 | FPC enhances the socio-economic status of members and helps in providing livelihood security to farmers. | 5.859 | 4.32 | 0.501 |

## CONCLUSION

The present study has revealed the influence of the psychometric tool to assess the perception of farmers towards dairy-based farmer producer companies. It has concentrated among the individual on the different important aspects of dairy-based farmer producer company among the members. The degree of freedom rule methodology based on t-values was applied for selecting the items because it is more strict and authentic than Edward's rule of thumb. The appropriate use of the Cronbach alpha coefficient for reliability has been done with paramount care. Then, using Lynn's methodology, scale-content validity index values (S-CVIs) should be generated. Any academics or stakeholders can utilize this methodological approach to quantify a participant's perception or any other psychological component regarding any extension program or scheme.

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