



Identification of Core Competencies for Managing Farmer Producer Organizations Using Factor Analysis

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ABSTRACT

The study was conducted to identify core competencies essential for efficient management of Farmer Producer Organizations (FPOs) and their contribution to performance of FPOs in the national capital region of Delhi during 2021. Using random sampling procedure, data were collected from 80 farmer-directors from twelve FPOs in six districts of Delhi, Haryana and Uttar Pradesh in NCR of Delhi. Since directors of FPOs were found to lack managerial capabilities, they were exposed to several training programmes on how to manage their FPOs efficiently. But gaining knowledge and skills may not reflect in the competencies of trained farmers. Competency being the ability to apply knowledge and skill in accomplishing a task successfully, to measure the degree of competency possessed by directors of FPOs, a competency inventory was developed. The data were subjected to factor analysis to arrive at significant core competencies vital for success of FPOs. The factor analysis could confirm that six core competencies as indispensable for managing producer companies were; competencies for planning and business development, marketing management, controlling operations, financial management, democratic leadership, and managing business operations. Out of these, four competencies were found to significantly contribute to the performance of FPOs.

INTRODUCTION

Farmer producer companies are member-based organizations meant to do agribusiness aggregating and marketing farm produce of small and marginal farmers to profit from economies of scale and to avert exploitation of market intermediaries. Farmer Producer Organizations (FPOs) can be an important platform for transforming smallholder farming, increasing agricultural productivity and farmers' income (Mukherjee et al., 2018). In 2019, Government of India has announced formation of 10,000 new FPOs on cluster basis under Central Sector Schemes. for development of FPOs over the next five years to ensure economies of scale for farmers. (Press Information Bureau, February 09, 2021). These FPOs get supported by several promoting agencies including NABARD, SFAC,

NAFED, NCDC and ICAR in terms of technical, managerial and financial aspects (Kumari et al., 2022). A great hope was raised by Venkatesan et al., (2020) as they opined that FPOs would usher in economic growth, enhanced per capita income and bring in new opportunities for value addition and processing of agricultural products.

Like any other businesses, the FPOs also require technical and managerial expertise to carry on their business operations for making their FPOs sustainable and profitable for all shareholders. (Parthiban et al., 2015; Kumar et al., 2022). All the agribusiness operations can be conducted by board of directors possessing adequate managerial competencies. Importance of managerial competencies was emphasized in many research studies: 'professional and honest management is essential to run farmers'

cooperatives' (Gupta, 1989); 'competent and convincing management' (Chamala & Shingi, 1997), and 'management and entrepreneurial skills' essential for successful and stable organizations. (Pingali et al., 2005). SFAC (2012) explicitly pointed out the importance to build governance structure and develop managerial capabilities for successful FPOs. Some other researchers have reported lack of managerial skills as the primary cause of failure of producer companies. These were: lack of management skills, lack of entrepreneurial spirit, and lack of long-term business plans (Senanayake, 2004); lack of entrepreneurial and management skills (Esham & Usmi, 2007); lack of business leadership and business strategy (NABCONS, 2011); lack of professional managers among board of directors (Singh & Singh, 2012) and lack of knowledge about running business (Venkataraman, 2017).

All these research studies emphasized that the significant challenge faced by FPOs was lack of professional management capabilities among office bearers for running the farmer producer organisations efficiently. Office bearers need competencies to develop agri-business plans and implement them, manage finances and marketing operations of producer companies. Building managerial competencies among FPO directors assume urgency and relevancy. Competence means ability to apply the knowledge and skill in completing a task. So, measuring degree competency of directors of FPO will be essential and valuable for understanding the functioning of producer company. Hence, this study has attempted to assess degree of managerial competencies of office bearers and identify core competencies essential for efficient management of FPOs to move further towards realizing the goal of better farm incomes for small and marginal farmers.

METHODOLOGY

The National Capita Region (NCR of Delhi was selected purposively. Twelve farmer producer organizations, which were Farmer Producer Company (FPCs) under the section 581(C) of Indian Companies Act, 1956 as amended in 2013, were selected for the study. These FPCs were functioning for more than three years from the villages of six districts, two each from Delhi, Haryana and Uttar Pradesh of NCR of Delhi. From each FPC, about seven office bearers were selected, adjusting the total sample size of the study up to 80. A detailed interview schedule was prepared and the data were collected through personal interview method.

Competence is operationally defined as the degree of ability to do something successfully and efficiently. Competence includes not just knowledge and skill, but the ability to use and apply knowledge and the skill in completing a task. So, a scale to measure the degree of competence of office bearers of FPO was developed using summated rating method. First, managerial skills and competencies required to run the farmer producer company were identified and listed. This list of managerial competencies was shown to experts and judges from the disciplines of agricultural extension, agricultural economics and agribusiness management to arrive at a final chosen list of managerial competencies that may be essential for running the farmer producer company. They were: planning and business development, managing the operations, controlling operations, democratic leadership, financial management and marketing management.

Then self-assessment statements were written for each competency. Thirty-four statements were made by taking care to write simple statements representing farming situations. These were then screened using the fourteen criteria proposed by Edward & Kilpatrick (1948) & Edwards (1969) for scale construction. A final set of twenty-five statements were selected through judging by the experts and judges for achieving clarity. A pilot survey with farmers was done for further refining the scale items. Thus, the competency inventory was made on six competencies to elicit response of agreement on five-point rating scale of very little true, somewhat true, moderately true, highly true, and very highly true, with scores of 1, 2, 3, 4, and 5. Data were collected from 80 respondents (office bearers of FPOs) by recording responses on competency inventory. Factor analysis (with principal component analysis and varimax rotation) was done to confirm clustering of statements under specific core managerial competency. Inter-correlation coefficients were calculated to test whether these competencies were independent of one another.

RESULTS AND DISCUSSION

First, existing literature was scanned to enlist managerial functions and scrutinized by experts for choosing the most essential management functions. It was found that management is a general term, and comprises of several managerial functions: short-term planning, long-term or strategic planning, developing business projects, organising, directing, leading, motivating, decision-making, delegating, supervising, monitoring, coordinating, budgeting, reporting, managing finances, and managing and controlling business operations. In addition, FPOs need such skills as marketing, enrolling members, aggregating farm produce, accounting and bookkeeping and finally coordinating all the activities of FPOs. With so many variables under management it becomes very difficult to provide a simplified model for parsimonious explanation for the concept of managerial competencies for running FPOs. There is a need to reduce the number of these management variables into meaningful sets or components.

Second, competence statements were written for the chosen set of managerial functions, including marketing, planning, coordinating, controlling, leading, motivating, decision-making, supervising, and managing finances & business operations. Competency inventory was developed with 25 statements judged by experts. The detailed procedure is already mentioned in previous section. In this stage, the attempt to reduce the number of management variables was done by experts working with FPOs. They could choose only those managerial variables - competencies relevant to the directors of FPOs.

Third stage is a statistical procedure to cluster related variables into meaningful components. In this stage, the raw scores of the competency inventory scale were subjected to factor analysis to arrive at the final list of core competencies essential for managing FPOs. Factor analysis was first developed by Thurstone (1931) to propose his multiple factors theory of intelligence and pioneered a new trend that gradually replaced the unidimensional factor in social research. In this study, factor analysis was adopted to reduce the number of variables to a small set of factors to facilitate understanding of the concept of managerial competency.

Table 1. Total variance explained and number of components (factors) extracted by Factor Analysis (Principal component analysis with varimax rotation)

Component	Total variance explained								
	Initial eigen values			Extraction sums of squared loadings			Rotation sums of squared loadings		
	Total	Percent of variance	Cumulative (%)	Total	Percent of variance	Cumulative (%)	Total	Percent of variance	Cumulative (%)
1	4.654	18.615	18.615	4.654	18.615	18.615	4.218	16.871	16.871
2	3.627	14.508	33.123	3.627	14.508	33.123	3.227	12.909	29.780
3	2.800	11.201	44.324	2.800	11.201	44.324	3.027	12.107	41.887
4	2.527	10.108	54.431	2.527	10.108	54.431	2.609	10.435	52.322
5	1.864	7.456	61.887	1.864	7.456	61.887	2.020	8.080	60.402
6	1.387	5.547	67.434	1.387	5.547	67.434	1.758	7.032	67.434
7	1.195	4.781	72.215						
8	.947	3.788	76.003						

Factor analysis is a statistical procedure that brings together those closely related variables together. The technique of factor analysis helps researchers to differentiate the factors by grouping variables into different dimensions or factors, each of which is ideally unrelated with the others. In factor analysis, principal component analysis was done to get the amount of variance explained by each variable (the scale item or statement). The initial eigenvalues, variance explained, percent of variance and percent of total variance are presented in Table 1. The eigenvalues of about six components were included and the six components or factors could explain 67.43 per cent of total variance.

Since our objective was to minimize the number of variables that have high loadings on each factor, varimax rotation was used to get component matrix with factor loadings on six factors. The variables (scale item or statement) with highest factor loadings on a single factor will be grouped under that factor. This component matrix of six factors is presented in Table 2. The results in Table 2 are the final results of six factors, the output of factor analysis. The results reveal the factor loadings and factors. The variables with highest factor loading are highlighted to show that those variables are clustered under that factor.

The first five variables (marked P1 to P5) were found to cluster under the factor 1, This factor1 is labelled as Competency for planning and business development. This factor on planning competency includes such variables as goal-clarity, shared vision by pooling ideas from all for strategic planning, making operational plans, short and long-term plans, and skills in writing business plans. The next factor had a mix of two sets of variables, three marked MK1 to MK3 represented marketing management and two variables marked M3 and M4 with highest factor loadings in Factor 2 and this can be labelled marketing management competency. This factor on managing marketing competency clustered the variables as market intelligence, orientation for direct marketing, developing marketing strategies, conflict resolution mechanisms and delegation of works with authority and responsibility. The next factor 3 is found to cluster five variables marked C1 to C5 represented controlling business operations and this factor can be termed competency for controlling operations. Under this competency of controlling operations, the clustered variables included monitoring implementation of plans, developing control mechanisms, constantly watching changing business environment,

handling uncertainties, mitigating risks and adjusting to changes in market forces. The fourth one, factor 4 is found to cluster four variables marked F1 to F4 represented financial management and this factor can be termed as financial management competency. This factor on managing finances of FPOs has clustered such

Table 2. Factor Loadings on six identified factors depicting six managerial competencies

Variables	Factors					
	1	2	3	4	5	6
Planning and business development						
P1	.871	.047	-.065	-.030	-.092	.022
P2	.910	.039	-.078	.031	.031	.018
P3	.896	-.024	-.045	-.086	.012	.093
P4	.922	.022	-.097	-.073	.010	-.015
P5	.898	.067	-.126	-.008	.002	.004
Marketing management						
M3	.008	.820	-.023	.034	.013	.086
M4	-.133	.736	-.086	-.142	.060	-.154
MK1	.123	.772	.071	.115	.033	.296
MK2	.132	.764	.149	.181	.033	.272
MK3	.066	.774	-.112	.028	.076	.133
Controlling operations						
C1	-.121	-.028	.809	.046	.103	-.096
C2	.026	-.049	.839	-.092	.103	.081
C3	-.139	.141	.805	-.031	.139	-.061
C4	-.032	-.011	.777	.087	-.114	-.003
C5	-.146	-.107	.539	.006	-.259	-.085
Financial management						
F1	.081	-.011	.064	.814	-.109	.237
F2	-.007	.004	.000	.830	-.060	.149
F3	-.138	.261	.023	.709	.101	-.306
F4	-.158	-.010	-.055	.651	.104	-.331
Democratic leadership						
D1	-.004	-.045	-.117	.190	.514	.154
D2	-.068	.141	.019	.242	.616	.101
D3	-.028	.035	.078	-.313	.763	.001
D4	.053	.066	.076	-.186	.779	-.181
Managing business operations						
M1	.046	.219	-.066	-.032	.088	.750
M2	-.001	.212	-.072	.013	.019	.775

variables as regular recording of income statement and balance sheet, assessing fund status of FPO, raising concern for breakeven point in agribusiness and managing cash flows and arranging working capital for every operating cycle of agribusiness. The fifth one, factor 5 is found to cluster four variable marked D1 to D4 represented democratic leadership and this competency can be labelled as democratic leadership competency. This factor on democratic leadership competency included member's belief in mutual help and cooperation, decision-making through democratic process, enabling leadership, commitment, and encouraging whole-hearted participation of members in all activities of FPO. The last one, factor 6 is found to cluster only two variables represented by managing business operations. This can be labelled as competency for managing operations. This factor on managing business operations clustered variable as adhering to uniform rules and policies in business operation and coordination skills for smooth operation of business affairs.

In the second stage, managerial competencies (scale items or statements included in competency inventory) were decided by the experts. This pre-designed set of variables under six managerial competencies have been confirmed by this confirmatory factor analysis, which in itself is a very significant finding of this study. Since these competency statements were rated by the respondents of the study - directors of FPOs and since the scores are those given by directors of FPOs, these six core managerial competencies have passed through three stages and finally confirmed statistically by factor analysis. Thus, management has been found to be a multiple-factor concept and the management competencies of FPO are grouped under six core competencies essential for FPOs – is a significant finding from this study. Thus, it can be observed that these six competencies can be ascertained as core competencies needed to manage the farmer producer organisation successfully by the office bearers. The core competencies were, in their order of importance:

- (i) Competency for planning and business development
- (ii) Marketing management competency
- (iii) Competency for controlling operations
- (iv) Financial management competency
- (v) Democratic leadership competency and
- (vi) Competency for managing business operations.

Frequency distribution of core managerial competencies

The results given in Table 3 indicated that the frequency distributions of respondents on various competency scores were found to fall into normal distributions with slight skewness in some of them. This result indicates that these frequencies are found to distribute more or less evenly on either side of mean, thereby falling closer to population. The computed degrees of competencies of the sample of the study represent the reality of levels of competency among directors of FPOs.

Correlation among core managerial competencies

One of the pre-conditions is that the factors extracted from factor analysis should ideally be unrelated to one another and that they are independent in character.

To test whether these are independent competencies or overlap on one another, the combined scores of this new set of competencies were subjected to correlation analysis. The results are given in Table 4. It is evident from the results that they were independent competencies and did not overlap, except in two cases. Competency for planning and business development and competency for controlling operations were found to be related and their association was negative and significant at 0.05 level of probability. This negative association was inevitable as these two phenomena of planning and controlling were reciprocal in nature. Controlling function is necessary to monitor and watch proper implementation of business plans of the FPO. One guards the other. Marketing management competency and competency for managing business

Table 3. Mean scores and standard deviation of the six core competencies for managing the FPO

Core competencies	Mean	Standard deviation	Min–Max	Frequency distribution			
				Low	Medium	High	Total
Competency for planning and business development	18.23	4.464	6–25	18.75	63.75	17.50	100
Marketing management competency	17.73	4.523	9–25	22.50	57.50	22.00	100
Competency for controlling operations	16.69	4.043	10–24	22.50	56.25	21.25	100
Democratic leadership competency	14.73	3.048	10–20	16.25	60.00	23.75	100
Financial management competency	13.93	3.337	7–20	18.75	63.75	17.50	100
Competency for managing operations	8.40	1.572	4–10	13.75	57.50	27.75	100

Table 4. Inter correlations among the six core managerial competencies

Inter-correlations with competency variables	PB	CO	DL	FM	MO	MM
Planning and business development (PB)	-	-.196*	-.012	-.096	.086	.071
Controlling operations (CO)	-.196*	-	.022	.025	-.111	-.038
Democratic leadership (DL)	-.012	.022	-	-.080	.032	.130
Financial management (FM)	-.096	.025	-.080	-	-.015	.090
Managing operations (MO)	.086	-.111	.032	-.015	1-	.332**
Marketing management (MM)	.071	-.038	.130	.090	.332**	-

* Significant at 0.05 level of probability; ** Significant at 0.01 level of probability

operations were also found to be significantly and positively associated at 0.01 level of probability. These two managerial competencies act complementary to each other and contribute to better performance of FPOs.

CONCLUSION

Farmer producer organizations are formal agribusiness companies owned by farmers and must be managed effectively by directors of the FPOs. This study could identify six core managerial competencies through rigorous measures scrutiny and statistical techniques. The study established that managerial competency is not unidimensional but involved multiple factors. Competency inventory helped in understanding and measuring managerial competency. Frequency distributions of these six factors fell into normal distributions indicating close relation to the population and real-life settings. Correlation analysis among the six competency factors has confirmed that they are independent components of management. These results have implications for policy makers, trainers and FPO promoting institutions to focus on developing these essential core competencies among board of directors for efficient agribusiness management. So, it is imperative to develop training modules and promotion strategies to teach and enable farmers and directors of FPOs and make them competent.

REFERENCES

- Chamala, S., & Shingi, P. M. (1997). *Establishing and strengthening farmer organizations*, Chapter 21, In: Swanson, Burton, E., Bentz, Robert P., & Sofranko, Andrew J. (ed) *Improving Agricultural Extension: A Reference Manual*, FAO, UN, Rome.
- Edwards, A. L. (1969). *Techniques of attitude scale construction*. Vakils, Feiffer and Simons, Bombay.
- Edwards, A. L., & Kilpatrick, F. P. (1948). A technique for the construction of attitude scales. *Journal of Applied Psychology*, 32(4), 374.
- Esham, M., & Usmi, K. (2007) Evaluating the performance of farmer companies in Sri Lanka: A case study of Ridi Bendi Ela Farmer Company. *The Journal of Agricultural Sciences*, 3(2), 86-100.
- Gupta, V. K. (1989). *Guide to monitoring and evaluation of small farmers' cooperatives in Asia*, p. 121. Rome: FAO.
- Kumar, R., Kumar, S., Pundir, R. S., Surjit, V., & Rao, C. S. (2022). FPOs in India: Creating enabling ecosystem for their sustainability. ICAR-National Academy of Agricultural Research Management, Hyderabad, India. pp 22.
- Kumari, N., Malik, J. S., Arun, D. P., & Nain, M. S. (2022). Farmer producer organizations (FPOs) for linking farmer to market. *Journal of Extension Systems*, 37(1), 1-6.
- Mukherjee, A., Singh, P., Ray, M., Satyapriya, & Burman, R. R. (2018). Enhancing farmers' income through farmers' producer companies in India: Status and roadmap. *Indian Journal of Agricultural Sciences*, 88(8), 1151-1161.
- NABCONS. (2011) *Integration of Small Producers into Producer Companies- Status and Scope*, NABARD Consultancy Services Private Limited. Hyderabad.
- Parthiban, Sakthi, R., Nain, M. S., Singh, R., Kumar, S., & Chahal, V. P. (2015). Farmers' producer organisation in reducing transactional costs: a study of Tamil Nadu mango growers' federation. *Indian Journal of Agricultural Science*, 85(10), 1303-1307.
- Pingali, P. Y., Khwaja, & Meijer, M. (2005). Commercializing small farms: Reducing transaction costs. ESA Working Paper No. 5-8. Agricultural and Development, Economics Division. Rome: FAO.
- Press Information Bureau. (2021, February 9). *Central sector scheme "Formation and Promotion of 10,000 new Farmer Producer Organizations (FPOs)" of Rs. 6865 crore* [Press release]. Retrieved from <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1696547#:~:text=Keeping%20this%20in%20mind%2C%20Government,provision%20of%20Rs%206865%20crore>.
- Senanayake, M. S. (2004). What is ailing farmer companies of Sri Lanka in their transformation into successful business entities? Over view of policy issues. In: *3rd International conference of the Japan Economic Policy Association*. Meiji University, Japan.
- SFAC. (2012). Building sustainable farmer producer organisations: challenges and way forward. small farmers' agribusiness consortium, New Delhi.
- Singh, S., & Singh, T. (2012). Producer companies in India: a study of organization and performance. *Draft report submitted to Ministry of Agriculture, GoI. IEG, Delhi*.
- Thurstone, L. L. (1931). The measurement of social attitudes. *The Journal of Abnormal and Social Psychology*, 26, 249-269.
- Venkataraman, G. (2017). Farmer producer companies a response. *Economic and Political Weekly*, 40, 70-74.
- Venkatesan, P., Sontakki, B. S., Shenoy, N. S., Sivaramane, N., & Sivakumar, P. S. (2020). Impact of farmer producer organizations in fostering community entrepreneurship. *Indian Journal of Extension Education*, 56(2), 111-117.
- Verma, A. K., Singh, A. K., Dubey, S. K., Singh, O. P., Doharey, R. K., & Bajpai, V. (2020). Constraints faced by board of members of farmer producer organizations. *Indian Journal of Extension Education*, 56(3), 75-78.