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Relationship of self-efficacy and social capital in relation to perceived performance of producer organizations in Chhattisgarh: A qualitative approach

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Abstract
Farmer producer organizations are characterized by farmer groups organized with an objective to make profits be increasing economies of scale and working like a corporate organization. Establishment and promotion of farmer collectivization can provide a platform to farmers for receiving much-required information, sharing of knowledge, sharing the production, and marketing risks and adoption of market-led production of agricultural products. Grass root level actions on collectivization of the marginal agrarian folks can improve their livelihood support as income, self-respect, bargaining power etc as compared to the individual approach. present study was conducted to analyze the relationship between social capital, self-efficacy and perceived performance and thereby proposing a model by joining two streams of thoughts; the role of social capital and self-efficacy that influence the perceived performance and role of Self efficacy as mediator that influence the relationship between social capital and perceived performance. In the process of social capital influencing performance of FPCs, self-efficacy played a significant role as a partial mediator. Hence a policy shift on training motivating and critically evaluating members of FPCs should be of utmost importance right from the stage of forming the FPCs. Since self-efficacy had a mediating role, variables like means to get things done if opposed, ability to achieve aims and goals, dealing efficiently with unexpected events, ability to handle unforeseen situations, finding several solutions of a problem and capacity to handle any situation indicated the areas where individual capacity building and training programmes must be focused upon. A strong sense of building these variables will help policy makers on the focus shift towards group performance variables.

Keywords: Farmer Producer Company, social capital formation, performance variables, group performance

Introduction

Producer Organizations are private entities characterized by the organization to make profits and perform various functions such as economic, social etc. (of which few functions maybe not for profit), they may operate in micro as well as macro-level and they evolve over a period (Bosc, *et al.* 2002) [6]. It is argued that the establishment and promotion of farmer collectivization can provide a platform to farmers for receiving much-required information, sharing of knowledge, sharing the production, and marketing risks and adoption of market-led production of agricultural products such as a shift from regular food crop to a cash crop. (Barghouti *et al.* 2004; Bikkina *et al,* 2018) [4, 5]. A study conducted by Trebbin (2014) [17] demonstrated the potential of Producer Organizations as an interface between smallholder farmers and supermarket chains in India. Furthermore, Nirgude *et al.* (2020) [12] demonstrated the power of collectivization on grapes cultivation through Abhinav Farmer Club (Farmers club having presence across India) and found better farm economics for farmers collective approach compare to individual approach. Therefore, it can be argued that grass root level actions on collectivization of the marginal agrarian folks can improve their livelihood support as income, self-respect, bargaining power etc as compared to the individual approach (Agarwal B., 2010) [1].

In India, Producer organizations in the farming sector are legalized as Producer Companies (PC). They are one of the legal entities among others which is relatively new for any agricultural produce, artisanship, forest producer or any other primary activity or service which promotes the interest of farmer/producers and consumers. PC as a special case of producer organization is registered under the Section IX-A of the Companies Act 1956, reference section 465(1) of the Companies Act, 2013.

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The Department of Agriculture, Cooperation and Farmers Welfare, Government of India in 2013 introduced a National Policy for Farmer Producer Organization (FPO) and identified PC as the most appropriate entity to mobilize farmers and build their capacity to improve access to investments, technology, inputs, markets and to address the many challenges faced by farming community (NIAM, N.D.; Ministry of Agriculture, 2013).

As significant studies have documented the numerous benefits of collectivization of farmers (Balakrishnan et al, 2018; Trebbin, 2014; Agarwal, 2010; Deepa *et al.*, 2018; Kumar et al, 2015; Barghouti *et al.* 2004; Bikkina *et al,* 2018) [4, 17, 1, 7, 10, 5], it is also evident that FPOs are encountering various problems such as lack of vision, lack of professionalism, weak planning etc. (Joshi and Choudhary, 2018) [9]. Furthermore, a smaller number of successful links between producer organizations and retail chains were also observed in India (Shah, 2016) [15].

The empirical finding reveals that if a village has social cohesiveness and an external agent (qualified), it can achieve significant success in Agriculture and other developments. A study conducted by Nithya et al (2019) [13] exemplify the potential of social capital in the socio-economic development of smallholder farmers such as pooling of resources, joint cultivation and marketing practices and thereby maintaining relationships and trust-based interactions. A case study of the Gal Oya Farmer Organization substantiates the economic benefits in terms of increasing the area cultivated and irrigated, water use efficiency, productivity, and profitability due to collective action of farmers to manage 'deficit water supply' (Uphoff, & Wijayaratna, 2000) [18]. Other studies also had congruent empirical findings, for instance, a study conducted by Svendsen and Svendsen, 2001 demonstrated that an appropriate level of social capital will save the cost associated with monitoring and transaction of *Danish Cooperative Dairy*. Further, a study conducted by Xu, (2018) [19] DE marketing the influence of bonding social capital over bridging social capital significantly with positive effects on cooperative members' income increase.

FPCs in the State of Chhattisgarh
A total of 26 registered FPCs were there in the state involved in production and selling of fruits and vegetables collectively, input supply, input dealership and bulk purchase of inputs and their sales to members, milk production, mushroom and its value-added products, vermicompost and non-timber forest produces. Out of these, 5 performing FPCs were chosen for the study to have a proportionate sampling of the state geography with a sample size of 363 members thereof. The major businesses of FPOs in the region are found to be production and marketing of fruits and vegetables collectively, input supply, the dealership in inputs and bulk buying of inputs and their sales to members, milk production, mushroom and its value-added products, vermicompost and NTFPs etc. (Joshi *et al.* 2018) [9].

Conceptual Framework and Methodology
The purpose of this study is to identify and examine the underlying factors responsible for performance of farmers' groups in producer companies which are performing fairly well on the ground. A study demonstrates the effect of member farmers groups' on-farm performance and indicates that member farmers are more likely to be early adopters of technology and improve farm productivity (Ainembabazi ET.

al. 2017) [2]. In this study, FPO Performance indicators were taken from the study of Bikkina *et al.* (2018) [5] based on seven performance criteria i.e. Financial Services, Input supply services, Procurement and Packaging services, Marketing Services, Insurance services, technical services and Networking services.

Chhattisgarh state is divided into 3 sub agroclimatic zones namely Northern Hills, Central Plains and Bastar Plateau. Looking to the concentration of FPCs in the three zones, 1 FPC from Northern hill zone, 2 from central plains and 2 from Bastar plateau were selected for the study. Accordingly, a 10% proportionate sample of total member farmers was taken from the FPCs resulting in a total sample size of 336.

To investigate the impact of social capital on the progressive FPC of Chhattisgarh, the following *hypothesis* was formulated to investigate the impact of demonstrates the effect of member farmers groups on farm performance.

H1: Social capital has a positive impact on the Performance of PC
The one-dimensional General Self-Efficacy scale (GSE) was used in this study to predict participant behaviour, providing a quick yet reliable instrument for reaping the potential advantages of General Self-Efficacy in organisational research (Schwarzer & Scholz, 2000) [14].

H2: Social Capital has a positive impact on Self Efficacy
The importance of self-efficacy as a mediating factor in the link between social capital and PC performance was also investigated, as was the following *hypothesis.*

H3
Results and Discussion
Major descriptors of FPCs were age of the FPC, legal forms, nature of POPI, years of involvement with farmers prior to FPC promotion, No. of shareholders, authorised capital (in Rs. Lakhs), major commodities of FPC, yearly board meeting and yearly annual general meetings conducted. Produce Company Korea Agro Producer Company Limited (KAPCL) dealt with multi-commodities and have maximum number of members. The turnover of KAPCL was 44.00 (Rs. lakhs) with profit of 19.00 (Rs. lakhs). Bhumgadi Mahila Krushak Producer Co. Ltd (BMKPCL) had the highest turnover of 428.49 (Rs. lakhs) and profit of 88.48 ((Rs. lakhs). This producer company also had the maximum number of shareholders. Brief profile and business performances of selected FPCs are illustrated in table 2 and 3.

Descriptive Statistics (DS) of Socio-Economic Characteristics
The socio-economic parameters of selected FPCs comprises of age, education, landownership, experience respectively. The table 4 depicts descriptive statistics and histogram results in which respondent belonged from age group (19-85 years) with maximum number of respondents belonging to age group of 31 to 40 years which represents a fairly young population. Moreover, for gender maximum number of respondents were male with an education level of at least graduate and having an average experience of farming association with the group ranging between one to two years. Furthermore, for land-ownership respondent ranged from 1 hac to 5 hac with average land holding of 2 hac. The experience among respondent ranged from 1 to 9 years with average experience of 3 years.

Descriptive Statistics for selected variables

The variables selected and studied as independent variables are Input supply and assistance (INSA), Price negotiation for input (PNI), Extension and advisory service provision (EAS), Agricultural productivity changes (APC), Market Access (MA), Price increase for produce (PIP), Bargaining Power (BP), Risk Management (RM), Reduction in Transaction Cost (RTC), Economy of Scale (ES), Vertical Integration (VI), Processing and Value Addition (PVA), Joint use of Equipment and Storage (JUE), Quality Assurance (QA), Social Cohesion (SC), Trust and Partnership among Members (TP), Special Skill Development (SCD), Entrepreneurship Culture (ENT). The mean value of respondents for all the variables are shown in table 5.

Table 1: Brief Profiles of the FPCs

Age of the FPC	Legal Form	Nature of POPI	Years of involvement with farmers prior to FPC promotion	No. of shareholders	Authorised Capital (in Rs. Lakhs)	Major commodities FPC deals with	Yearly board meeting conducted	Yearly Annual general meetings conducted
6	Korea Agro Producer Company Limited	KVK, NRLM	5	590	10	Mustard Oil, Detergent Powder, Detergent Powder premium, Desi Urad Dal, Kulthi Dal, Masur Dal, Desi Arhar Dal (Toor Dal), Moong Dal, Desi Rice, Roasted and Split Horse Gram, Desi Jeraphool Classic Rice	10	6
3	Jai Kopeshwar Nath Krishak Utpadak Company Limited Bhendri	NABARD	3	154	5.5	Paddy seed	12	01
6	Ojasvee Krishak Utpadak Sansthan, Kurud, Dhaamtari (CG)	NRLM	5	536	2	Organic rice(black rice, Green rice zinc rice)and vegetables	8	12
8	Mahanadi Farmer Producer Company Pvt Ltd, Lakhanpuri, Kanker C.G.	Technoserve	1	767	11	Custard Apple Pulp, Blackberry Pulp, Mango Pulp.	3	1
5	Bhumgadi mahila krushak Producer Co. Ltd Bastar	(NRLM)	4	6100	8.1	Tamarind, maize, cashew, amchur, kodo, kutaki, ragi, turmeric, black gram, black rice, red rice and vegetables.	12	1

Table 2: Business performance of selected FPCs

Name of the Producer Company	Year/turnover	Turnover (In Rs. lakhs)	Profit (In Rs. lakhs)	No. of members	Total no. of shares of the company
KAPCL	2021	44.00	19.00	5900	5900
JNKPC	2021	44.20	12.42	81	154
OKUS	2021	56.72	16.36	200	536
MFPCL	2021	68.39	12.19	767	767
BMKPCL	2020	428.49	88.48	5227	6700

Where, KAPCL= Korea Agro Producer Company Limited, JNKPC = Jai Kopeshwar Nath Krishak Utpadak Company Limited Bhendri, OKUS = Ojasvee Krishak Utpadak Sansthan, Kurud Dhaamtari (CG), MFPCL = Mahanadi Farmer Producer Company Pvt ltd, Lakhanpuri, Kanker C.G., BMKPCL = Bhumgadi mahila krushak producer Co. Ltd Bastar

Table 3: Descriptive statistics of socioeconomic characteristics for selected FPCs in the study area

Statistic	Age	Gender	Edu	Landownership	Experience
Minimum	19.00	1..00	1.00	1.00	1.00
Maximum	85.00	2.00	6.00	5.00	9.00
Median	38.00	1.00	4.00	3.00	2.00
Mean	38.04	1.00	3.42	2.00	3.00
Standard Error	0.51	0.03	0.08	0.05	0.09
Variance (n-1)	96.25	0.24	2.35	0.79	3.24
Standard deviation	9.81	0.49	1.53	0.89	1.80

Table 4: Descriptive statistics of socioeconomic characteristics for selected FPCs in the study area

Statistic	Age	Gender	Edu	Landownership	Experience
Minimum	19.00	1..00	1.00	1.00	1.00
Maximum	85.00	2.00	6.00	5.00	9.00
Median	38.00	1.00	4.00	3.00	2.00
Mean	38.04	1.00	3.42	2.00	3.00
Standard Error	0.51	0.03	0.08	0.05	0.09
Variance (n-1)	96.25	0.24	2.35	0.79	3.24
Standard deviation	9.81	0.49	1.53	0.89	1.80

Table 5: Descriptive Statistics

	Mean	Std. Deviation
INSA	3.73	1.15
PNI	3.95	0.93
EAS	3.91	1.02
APC	4.25	.93
MA	4.14	1.08
PIP	3.92	0.94
BP	3.78	1.00
RM	3.88	0.87
RTC	3.92	0.94
ES	3.90	0.95
VI	3.43	1.22
PVA	3.92	0.99
JUE	3.90	1.03
QA	4.15	0.69
SCO	3.89	1.11
TP	3.92	1.07
SCD	4.01	0.94
ENT	3.77	1.03

Correlation Analysis (CA) and Principle Component Analysis (PCA)

Correlation heat map in fig. 2 shows the selected variables are sufficiently correlated for variables to be reduced to a smaller number of components. The variables now can be reduced to few factors explaining much of the actual data, more economically.

The PCA have identified underlying four factors from an array of seemingly important variables. The PCA reduces the data complexity and identifies the actual underlying drivers/variable of the FPC performance. These factors are extracted by computation of Eigen value. Eigen value determines the amount of variation explained by the factor.

The factor rotation matrix depicted in table 6 gives the loading of each variable on each of the extracted factors. The matrix shows the factors associated with the original variable. The factor 1 can be said as the linear combination of variable APC, MA, PNI, JUE, PIP, EAS as they have the highest loading (close to 1). Similarly, the factor 2 is the ambulation of variables SCD, TP, RTC, SCO with loading of 0.856, 0.687, 0.672 and 0.668, respectively while factor 3 is the merger of variables 0.882 and 0.664. Moreover, the factor 4 is explained by only one variable *i.e.* RM.

As evident from table 7 it can be concluded that the four factors extracted account for 62.43% of the total variation (information contained in the original 18 variables). After PCA, significant variables with maximum loading were selected and data associated with variables is displayed through radar chart (fig.3) and (table 8). Radar chart illustrates the region-wise *i.e.* Northern Hills, Central Plains, Baster Plateau distribution of respondents for most significant variables. All the estimated variables in central plains are farther towards the end of the spike showing the largest value followed by baster plateau and northern hills. This explains the significance of the variables as most influential towards the performance of the group. As evident from the loading values of the Agricultural Productivity Changes, Market Access and Quality Assurance were the most influential

variables for FPCs in the central plains whereas Agricultural Productivity Changes, Quality Assurance, and Market Access were the most influential for the FPCs of the Bastar plateau. For the FPC of the northern hill zone, Special skill Development, Agricultural Productivity Changes and Trust and partnership were the most influential variables. It is evident from the research outcome that region alters the importance of the variables as the needs and priorities of the farmers and agriculture pattern changes from one place to another hence varied expectations in performance. The findings reveal that one should pay more attention to the performance variables indicated in the study to achieve desirable performance outcome. A strong sense of building these variables will help policy makers on the focus shift towards group performance variables. Capacity building programmes must be formulated in such a way that group performance and perceived performance variables responsible should be identified and efforts should be made to enhance them.

Table 6: Rotated Component Matrix

	Components			
	1	2	3	4
APC	.798	.073	.132	.095
MA	.789	.112	.240	-.154
PNI	.754	.262	.093	.140
JUE	.701	.250	.245	.009
PIP	.676	-.023	.089	.332
EAS	.626	.546	.015	-.043
INSA	.578	.317	.109	.042
BP	.577	.453	-.063	.355
SCD	.046	.856	.049	-.054
TP	.324	.687	.058	-.052
RTC	.029	.672	.068	.313
SCO	.526	.668	.044	-.015
ENT	.533	.557	.206	.128
PVA	.089	.090	.822	.020
QA	.155	-.043	.664	.151
VI	.391	.374	.543	.166
RM	.009	-.008	.151	.876
ES	.441	.210	.177	.482

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Table 7: Total Variance Explained

Table 7: Total Variance Explained			
Component	Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings
	Total	% of Variance	Cumulative %	Total
1	7.249	40.272	40.272	6.143
2	1.676	9.309	49.581	4.417
3	1.239	6.883	56.464	2.748
4	1.076	5.975	62.439	1.656

Extraction Method: Principal Component Analysis.

Table 8: Region wise values of significant variables

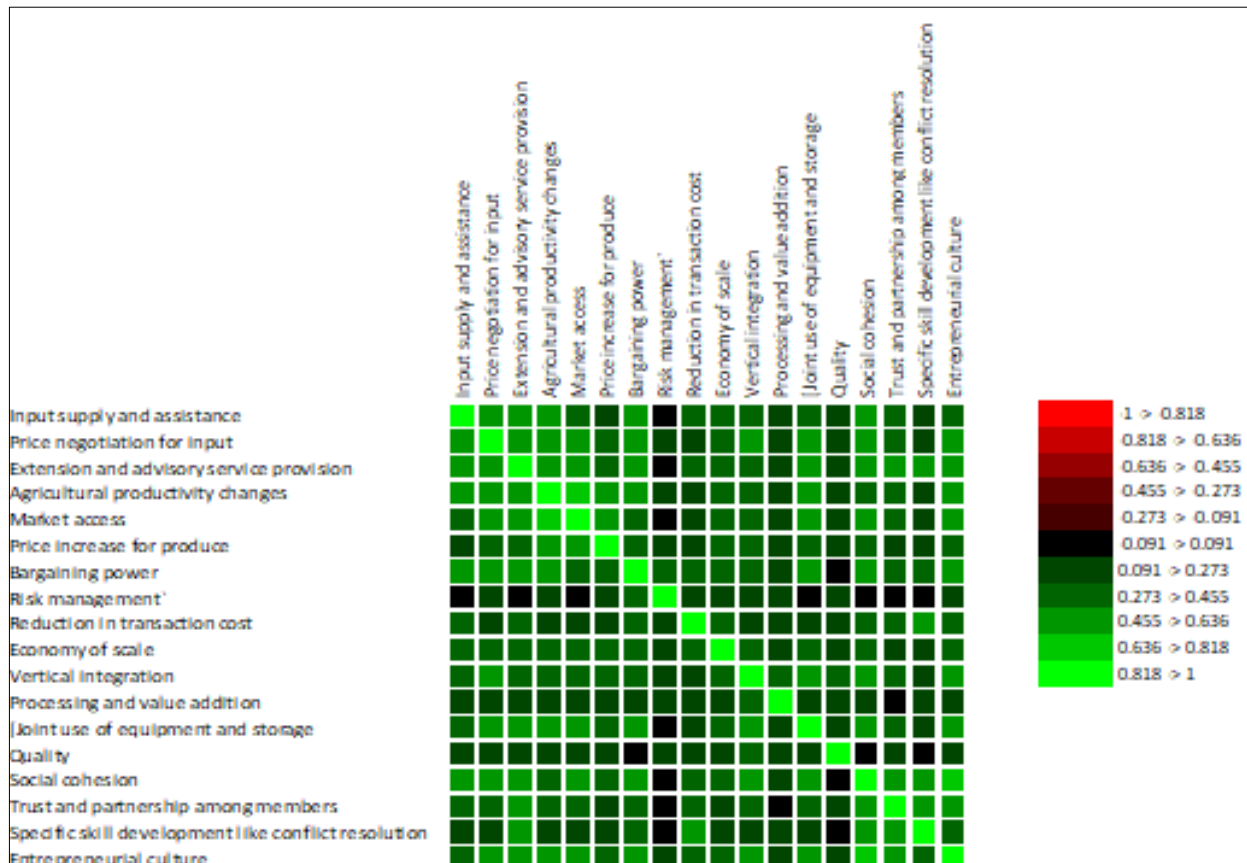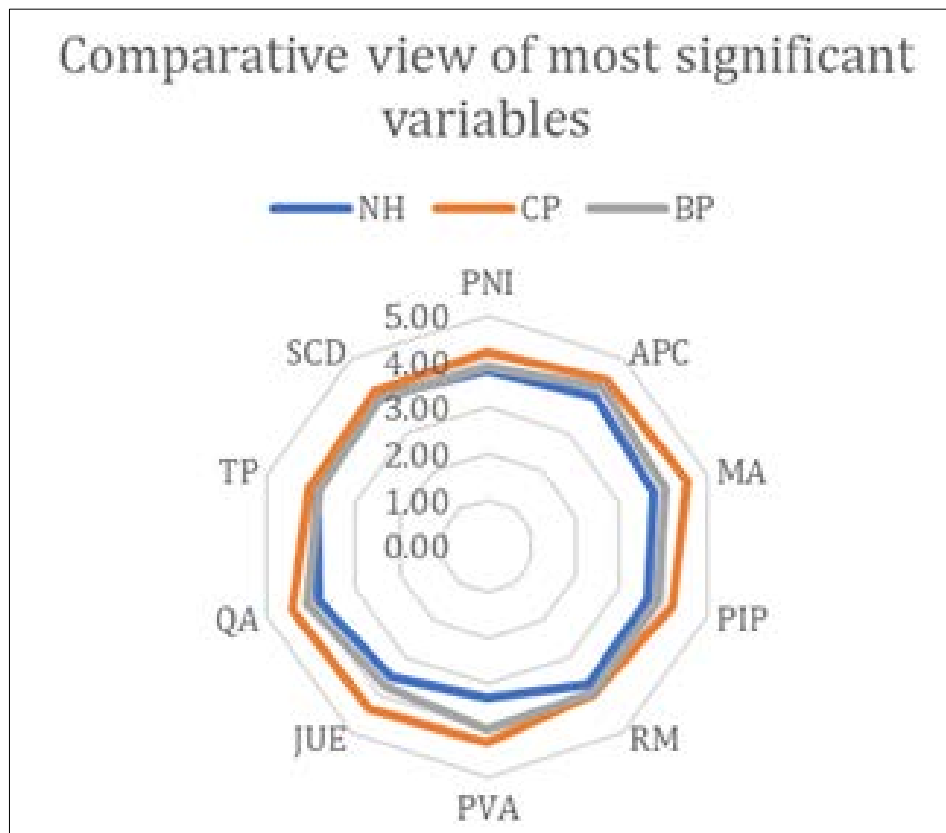|	PNI	APC	MA	PIP	RM	PVA	JUE	QA	TP	SCD
NH	3.79	3.99	3.80	3.67	3.73	3.31	3.52	3.84	3.86	4.00
CP	4.20	4.43	4.54	4.19	3.95	4.27	4.37	4.43	4.06	4.16
BP	3.86	4.26	4.02	3.87	3.91	3.96	3.75	4.10	3.85	3.93

Fig 1: Correlation heat map of estimated variables

Fig 2: Radar chart displaying region-wise distribution of Northern Hills (NH), Central Plains (CP), Batar Plateau (BP) of significant variables

Summary and Conclusions

The findings of present study revealed that Agricultural Productivity Changes, Market Access, Quality Assurance were the most influential variables for FPCs in the central plains whereas Agricultural Productivity Changes, Quality Assurance, and Market Access were the most influential for the FPCs of the Bastar plateau. For the FPC of the northern hill zone, special skill development, agricultural productivity

Changes and Trust and partnership were the most influential variables. It is evident from the research outcome that region alters the importance of the variables as the needs and priorities of the farmers and agriculture pattern changes from one place to another hence varied expectations in performance. Therefore, it is concluded that one should pay more attention to the performance variables indicated in the study to achieve desirable performance outcome. A strong sense of building these variables will help policy makers on the focus shift towards group performance variables. Capacity building programmes must be formulated in such a way that group performance and perceived performance variables responsible should be identified and efforts should be made to enhance them.

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