

Original Research Article

A comprehensive analysis of the impediments perceived by the members of FPOs in North Bihar

Comment [1]: If it is not a common terminology, please refrain from using abbreviations in the title.

ABSTRACT

The agriculture sector in India is currently facing several challenges, such as increasing landholding fragmentation, diminishing per-capita land availability, and rural youth's disinterest in farming. Farmer producer organizations help small and marginal farmers by lowering transaction costs, facilitating credit sources for farmers, providing technical guidance, producing support and capacity building, and creating long-term sustainability to improve the farming community. This study investigates the constraints perceived by members of FPOs. Data were collected from 240 members across 6 FPOs. An ex-post facto research design was used to study four broad constraints regarding Producer Organization Promoting Institutions (POPIs), as well as POPI's support and marketing: technical and operational and organizational constraints. The Friedman two-way ANOVA rank test was used to analyze thirty-five statements under four broad constraints. The findings revealed that marketing is the most severe constraint, followed by constraints regarding POPI's support as well as organizational, technical, and operational support. Under marketing constraints without guaranteed procurement systems, inadequate storage facilities are most severe. Under constraints perceived by FPO members regarding POPI's support, considering resource-affluent areas and exclusive attention to progressive farmers are significant. Competition of villages to get benefits and irregular procurement of the produce are most significant constraints under organizational and technical constraints. The research indicates that by overcoming these obstacles with better infrastructure, fair distribution of resources, and improved connections to markets, one can boost the sustainability and economic feasibility of Farmer Producer Organizations, thereby enhancing socio-economic benefits for farmers in North Bihar.

Comment [2]: FPO

Keywords: Farmer Producer Organizations, Constraints, Friedman test, North Bihar, Marketing.

1. INTRODUCTION

The agricultural sector in the rapidly changing Indian context faces several challenges, such as diminished per-capita agricultural land availability due to increased land holding fragmentation, a declining natural resource base (Lili & Strielkowski, 2019), the shift from joint to nuclear families and youth disenchantment with agriculture, with over 40% of rural youth wanting to quit farming. Furthermore, a vibrant model must be improved to organize farmers and link them with the market (NSSO, 2011; Verma et al., 2021).

Comment [3]: This introduction is too short. A good introduction for a research paper should have 4-5 paragraphs with 400 - 600 words. For suggestions, you could add why you chose North Bihar as the place of study.

A well-known cooperative group that unites primary producers voluntarily is the Farmers' Producer Organisation (FPO). The organization was established with the idea of free membership and is motivated by a common goal of creating economic and technological initiatives for the benefit of its members (NABARD, 2015; Tripathi, 2019). Farmers must band together to improve the farming community's long-term sustainability. This enables them to access marketing facilities, links to export and domestic markets

Comment [4]: This sentence is too long. Please divide it into 2 or 3 sentences, including the citation

through the FPOs, and reasonably priced inputs at the appropriate time, place, and amount (Mukherjee et al., 2018). Shepherd (2017) has brought up the idea of FPOs similarly. Lack of infrastructure, including secondary agriculture activities, credit facilities, transportation, custom hiring services (Lal et al., 2022), lack of access to inexpensive, high-quality inputs, technology, and extension services is the main barrier to the agriculture sector in rural areas (Lal et al., 2018). Other constraints include investment in natural resources and infrastructure. Due to their acute financial situation, most cooperative organizations rely primarily on state subsidies (Prabhakar et al., 2012). In light of this information, specific research questions have arisen, such as the major problems faced by members of Farmer Producer Organizations (FPOs). Likewise, farmers in FPOs may encounter many other related issues. In order to answer the above research question objectively, the study was designed and conducted to determine the constraints perceived by FPO members in North Bihar.

Comment [5]: Please put this citation in the last sentence

MATERIALS AND METHODS

The present study was investigated in the North Bihar region of Bihar. 6 FPOs were taken purposively from the Muzaffarpur and Samastipur districts of North Bihar. The FPOs, namely SKFCL, KKFCL, CRAFCL, KUFCL, PFPC, and MFPCL, were taken purposively because these FPOs cover major agricultural and horticultural crops. From each FPO, 40 farmers were selected; thus, the total number of respondents for the study was 240. An ex-post facto research design was used to study 4 broad constraints perceived by FPO farmers in the form of technical constraints, organizational constraints, marketing constraints, and constraints perceived by FPO members regarding POPs support. Thirty-five supporting and signifying statements were selected under four broad constraints. A three-point scale of "most severe, severe and least severe" with the respected weightage of "3, 2, 1" (Lal et al., 2016) was used to record the responses of the FPO farmers. Plausible constraints were selected based on the pilot study in the study locale and the available secondary literature. The Friedman two-way ANOVA by ranks test, as explained by Tripathi (2014), was used to determine the most significant constraints faced by dairy farmers (Lal et al., 2016). In a similar manner, Kendall's Coefficient of Concordance is an alternative be used to rank the broad categories (Mallick et al., 2023). In my study The Friedman two-way ANOVA by ranks test was done to measure the most severe constraint among 4 broad categories by comparing the differences between treatments or conditions using a specific formula.

Comment [6]: You suddenly state that FPO members in North Bihar have yet to be given a proper introduction to this group.

Comment [7]: six

Comment [8]: Please state the criteria if these 40 farmers were selected based on purposive sampling.

Comment [9]: Producer Organization Promoting Institutions

Comment [10]: Most severe (3), severe (2) least severe (1)

Comment [11]: In this study

$$\chi^2 = \frac{12 \div Nn(n+1)}{Nn(n+1)} \times 2R12 - 3N(n+1) \text{ at } df = n-1$$

Comment [12]: Please put the description of all notation in this equation

Where, N= number of subjects, respondents or groups

n= number of treatments or broad constraints

$\Sigma R1^2$ = row ranks summed up in each column, squared and then added.

2. RESULT AND DISCUSSIONS

3.1 Technical and operational Constraints perceived by FPO farmers

In Table 1, under technical and operational constraints, the major constraint is an irregularity in the procurement of the produce, with a mean score of 2.45. This is due to the need for more infrastructure of FPOs and insufficient credit facilities of FPOs. Most of the FPOs only provide transportation facilities to some of the farmers, which is the second most important technical and operational constraint. Inaccessible credit facilities is the 3rd most crucial constraint with a mean score 2.43. In the study area most of the FPOs are not providing credit facilities in terms of short loans to the farmers which is due to

lack of funding available from the government as well as resource institutions. Further, Table 1 depicts all other constraints perceived by members of FPOs in the study area. The results were in line with Witcombe *et al.* (2010) and Chopade *et al.* (2019) in their study.

Comment [13]: It would be better to put a table that directly supports the constraints you are discussing.

3.2 Organizational Constraints perceived by FPO farmers

The most severe organizational constraint perceived is villages are competing with one another to receive benefits with a mean score of 2.45. This is due to uneven importance by the FPOs to the villages in terms of progressiveness, resources available and distant location from the FPOs. The second most severe constraint is inequality in benefit sharing with a mean score of 2.30 followed by individual benefit takes precedence above the objectives of the group with a mean score of 2.16. Other organizational constraints perceived by farmers are also mentioned in Table 1. The findings were also reported by (Tiwari *et al.*, 2021).

Comment [14]: It would be better to put a table that directly supports the constraints you are discussing.

3.3 Constraints perceived by FPO members regarding POPI's support

The most severe constraint perceived by FPO farmers regarding POPI's support is considering only resource rich areas with a mean score of 2.75. This is because POPIs focus primarily on resource-rich areas due to better infrastructure and market accessibility, resulting in higher returns on investments. The second most important constraint regarding POPI's support is Exclusive attention to progressive farmers. Their profit-driven motive overshadows the development goals of FPOs and creates a disparity among the farmers. The 3rd severe constraint perceived by FPO farmers is imposing their corporate agenda on FPOs with a mean score of 2.14. Table 1 further portrays other constraints faced by FPO farmers regarding POPI's support. The results are in line with (Darshan *et al.*, 2019).

Comment [15]: It would be better to put a table that directly supports the constraints you are discussing.

3.4 Marketing constraints perceived by FPO farmers

The most severe constraint under this category is the absence of guaranteed procurement systems, with a mean score of 2.82. This is due to inadequate infrastructure, lack of financial stability of FPOs, highly volatile markets, perishability of the produce, and insufficient market linkage of FPOs. Another significant constraint perceived by members of FPOs is inadequate storage facilities. Many FPOs lack accessible goodowns or warehouses for members to store their produce. Private warehouses are expensive, making them unaffordable for small and marginal farmers. These limitations result in post-harvest losses and reduced produce quality, impacting the sustainability of agricultural activities undertaken by FPOs. Further, Table 1 depicts all other marketing constraints perceived by members of FPOs in the study area. The findings are in line with Torero (2011); (Darshan *et al.*, 2019).

Comment [16]: It would be better to put a table that directly supports the constraints you are discussing.

Table 2 indicates that the asymptotic significance obtained from the Friedman test was 0.000 ($p < 0.01$), with a chi-square value of 76.895 and 3 degrees of freedom. The significance value shows Monte Carlo Significance at a 99 percent Confidence Interval. Therefore, it can be interpreted that there was a significant difference between the four different sub-dimensions of constraints perceived by members of FPOs.

According to Table 1, the mean rank from the Friedman test indicates that marketing constraints are the most severe among the four broad constraints. This is due to the absence of local mandis in the study area, where farmers can directly sell their produce. Additionally, there is a pressing need for more reliable infrastructure by FPOs to collect and purchase produce from farmers. A significant sub-constraint within marketing is the lack of sufficient storage facilities, which compels farmers to sell their produce at lower prices to intermediaries. The second major issue faced by FPO farmers is the lack of support from POPI. These institutions mainly concentrate on areas with ample resources and overlook the less prosperous regions. This means that when small and marginal farmers need support the most, they are not receiving

it. Additionally, FPOs are contributing to inequalities among farmers by favouring only the more progressive ones. The third broad constraint is organizational constraint, followed by technical constraint, which is the least severe one. This might be due to under technical constraints, the issues were broad but not individual-centric in the study area.

Table 1. Response of FPO farmers based on the extent of severity of constraints faced in the study area (n=240)

Constraints	Response of FPO farmers				
	Most Severe	Severe	Least severe	Mean Score	Overall Rank
Technical and Operational Constraints(Friedman mean rank 2.09)					
Irregularity in procurement of the produce	140(58.3)	67(27.9)	33(13.8)	2.45	1 st
Unavailability of infrastructure facilities	93(38.8)	105(43.8)	42(17.5)	2.21	4 th
Insufficient personnel	43(17.9)	61(25.4)	136(56.7)	1.61	9 th
Inaccessible credit facilities	135(56.3)	74(30.8)	39(12.1)	2.43	3 rd
The remoteness of operational centre from the village	114(47.5)	102(42.5)	24(10.0)	2.38	5 th
Transportation facilities are not available	133(55.4)	80(33.3)	27(11.3)	2.44	2 nd
Procurement of produce from the non-members by FPOs.	43(17.9)	77(32.1)	120(50.0)	1.68	7 th
FPO is procuring only a portion of member's produce.	78(32.5)	88(36.7)	74(30.8)	2.02	6 th
Lack of decentralization in the administrative work of FPOs.	31(12.9)	100(41.7)	109(45.4)	1.67	8 th
Political Meddling	7(2.9)	59(24.6)	174(72.5)	1.30	10 th
Organizational Constraints(Friedman mean rank 2.32)					
Uneven rotation of the governing body	77(32.1)	69(28.8)	94(39.2)	1.93	7 th
Villages are competing with one another to receive benefits.	135(56.3)	82(34.2)	23(9.6)	2.47	1 st
Everyone strives to hold important roles inside the company	61(25.4)	119(49.6)	60(25.0)	2.00	5 th
Individual benefit takes precedence above the objectives of the group.	70(30.4)	133(55.4)	34(14.2)	2.16	3 rd
Inequality in benefit sharing	103(42.9)	107(44.6)	30(12.5)	2.30	2 nd
No informal relationship among members of FPOs	76(31.7)	109(45.4)	55(22.9)	2.09	4 th
There is a lack of teamwork	37(15.4)	115(47.9)	88(36.7)	1.79	8 th
In meetings, participants consistently oppose one another.	73(30.4)	94(39.2)	73(30.4)	2.00	5 th
Constraints perceived by FPO members regarding POPI's support.(Friedman mean rank 2.55)					
Only resource-rich areas are considered	194(80.8)	32(13.3)	14(5.8)	2.75	1 st
Intention to make only profit	69(28.8)	131(54.6)	40(16.7)	2.12	4 th
Imposing their corporate agenda on FPOs	80(33.3)	114(47.5)	46(19.2)	2.14	3 rd
Exclusive attention to progressive farmers.	162(67.5)	67(27.9)	11(4.6)	2.63	2 nd
Influencing in FPO's decision-making	75(31.3)	107(44.6)	58(24.2)	2.07	5 th

Comment [17]: This table should be shorter. You can divide it into four tables (based on every constraint) since you have discussed each constraint separately in the result and discussion section.

process					
Taking advantages of FIGs to fulfill their own organization goals.	88(36.7)	77(32.08)	75(31.25)	2.05	6 th
Coordinators and ABAs are unable to be guided.	2(0.8)	32(13.3)	206(85.8)	1.15	7 th
Marketing constraints(Friedman mean rank 3.04)					
Price volatility	106(44.2)	108(45.0)	26(10.8)	2.33	7 th
Availability of market information is lacking	110(45.8)	108(45.0)	22(9.2)	2.37	4 th
In a non-FPO-based supply chain, there are too many middlemen.	30(12.5)	59(24.6)	151(62.9)	1.50	9 th
The market is far away from the villages, and transportation costs are high	126(52.5)	91(37.9)	23(9.6)	2.43	3 rd
Exploited by middlemen and other intermediaries	126(52.5)	28(11.7)	7(2.9)	2.37	4 th
Late payment	61(25.4)	77(32.1)	37(15.4)	2.37	4 th
Members are illiterate	93(38.8)	96(40.0)	51(21.3)	2.18	8 th
Inadequate storage facilities	20(8.3)	62(25.8)	20(8.3)	2.57	2 nd
Inadequate processing facilities	94(39.2)	96(40.0)	50(20.8)	2.18	8 th
Absence of guaranteed procurement systems	205(85.4)	28(11.7)	7(2.9)	2.82	1 st

Table 2. Test Statistics of Friedman Test

N	240
Chi-Square	76.895
df	3
Asymp. Sig.	.000
Monte Carlo Sig.	.000
99% Confidence Interval	
Lower bound	.000
Upper bound	.000

Comment [18]: Please mention what analytical data software that you used to get this result in the material and method section

3. CONCLUSION

The study aimed to explore the constraints perceived by members of Farmer Producer Organizations (FPOs). It focused on four major categories, encompassing a total of 35 statements related to these constraints. The severity of these constraints was determined using the Friedman test, with the test's appropriateness verified through asymptomatic and Monte Carlo significance levels. The findings of the study highlighted that marketing constraints were the most significant challenge faced by farmers in FPOs. Key issues identified included the lack of guaranteed procurement systems, inadequate storage facilities, exploitation by middlemen and other intermediaries, and the unavailability of market information. These were ranked as the top independent constraints under 4 broad categories. To tackle these challenges, policymakers, POPIs, and FPOs need to work together closely, fostering an environment that

is fair and conducive to the success of farmers. By doing so, they can boost the sustainability and financial viability of farming practices in the area, which will lead to better socio-economic outcomes for the agricultural community in North Bihar.

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Comment [19]: This is the suggestion; you could put it in a different paragraph or subsection "suggestion" (not conclusion).

Comment [20]: References must be listed at the end of the manuscript and numbered in the order that they appear in the text. However, you are not using the numbering citation style in the body text. Please follow the journal citation style (for example, please use [1] instead of Chopade et al., 2019)

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