Supplementary Table 1 Constructs and items used in the present study

Items and constructs

Social Capital

Cognitive Social Capital

SC1: My fellows and I are always in agreement about what matter at work.

SC2: My fellows and I are keen to follow the common objectives and missions of the whole organization.

SC3: My fellows and I have the same vision and goals

Relational Social Capital

SC4: I feel like I am connected to my fellow members.

SC5: I know my fellows try and help me to overcome difficulties all the time.

SC6: I will trust my fellows when I need help.

SC7: I can rely on my fellows when in need

Structural Social Capital

SC8: I have a positive working relationship with my fellows in general.

SC9: I am aware what skill/knowledge/ competence could be useful to which fellow member.

SC10: My fellow members know what skill/ knowledge/ competence I have.

SC11: I am aware which person within my organization possesses the skill/competence/knowledge that is useful for me

Self-efficacy

SEF 1: I can always manage to solve difficult problems if I try hard enough.

SEF 2: If someone opposes me, I can find means and ways to get what I want.

SEF 3: It is easy for me to stick to my aims and accomplish my goals.

SEF 4: I am confident that I could deal efficiently with unexpected events.

SEF 5: Thanks to my resourcefulness, I know how to handle unforeseen situations.

SEF 6: I can solve most problems if I invest the necessary effort.

SEF 7: I can remain calm when facing difficulties because I can rely on my coping abilities.

SEF 8: When I am confronted with a problem, I can usually find several solutions.

SEF 9: If I am in trouble, I can usually think of something to do.

SEF 10: No matter what comes my way, I am usually able to handle it.

Perceived Performance (PFPO)

PFPO 1: Arrangements for farm equipment by FPC

PFPO 2: Facilitation in getting crop loans

PFPO 3: benefits in terms of developing infrastructure like irrigation, polyhouse, pipeline etc.

PFPO 4: Arrangements of agricultural inputs

PFPO 5: Providing storage facility for the produce

PFPO 6: Assistance in value addition of the produce

PFPO 7: Enabling direct marketing of produce

PFPO 8: Minimizing the transaction cost

PFPO 9: Minimizing the weighment loss

PFPO 10: Safeguard against distress sale

PFPO 11: Safeguard against price fluctuation

PFPO 12: Providing information on maintaining quality produce

PFPO 13: Getting crop insurance

PFPO 14: Promoting best practices of farming

PFPO 15: Providing market information

PFPO 16: Diversification of crop after engagement with FPC

PFPO 17: Benefits of post-harvest processing technology

PFPO 18: Facilitation of linkage with trader, govt etc.

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Supplementary Table 2 Brief profile 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 ₹ Lakhs) | Authorised Major commodities FPC deals with capital (in ₹ Lakhs) | Yearly board meeting conducted | Yearly annual general meetings conducted |
|----------------------|--|-------------------|--|------------------------|---------------------------------------|---|--------------------------------------|--|
| 9 | Korea Agro Producer Company Limited | KVK, NRLM | v | 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 | 9 |
| ω | Jai Kopeshwar Nath Krishak Utpadak Company Limited Bhendri | NABARD | Ю | 154 | 5.5 | Paddy seed | 12 | 01 |
| 9 | Ojasvee Krishak Utpadak Sansthan ,Kurud Dist- Dhaamtari (CG) | NRLM | v | 536 | 7 | Organic rice(black rice, Green rice zinc rice)and vegetables | ∞ | 12 |
| ∞ | Mahanadi Farmer Producer Company pvt Itd, Lakhanpuri, Kanker C.G. | Technoserve | | 767 | Ξ | Custard Apple Pulp, Blackberry Pulp, Mango Pulp. | ю | - |
| ٧. | 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 | - |

Supplementary Table 3 Business performance of selected FPCs

| Producer Company | Year/turnover | Turnover (in Rs.lakhs) | Profit (in ₹ 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 |

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.

Supplementary Table 4 Descriptive statistics of socio-economic characteristics for selected FPOs

| Statistic | Age | Gender | Education | Land-ownership | 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 |

Supplementary 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 |
| SC | 3.89 | 1.11 |
| TP | 3.92 | 1.07 |
| SCD | 4.01 | 0.94 |
| ENT | 3.77 | 1.03 |

INSA, Input supply and assistance; PNI, Price negotiation for input; EAS, Extension and advisory service provision; APC, Agricultural productivity changes; MA, Market access; PIP, Price increase for produce; BP, Bargaining power; RM, Risk management; RTC, Reduction in transaction cost; ES, Economy of scale; VI, Vertical integration; PVA, Processing and value addition; JUE, Joint use of equipment and storage; QA, Quality assurance; SC, Social cohesion; TP, Trust and partnership among members; SCD, Special skill development; and ENT, Entrepreneurship culture.

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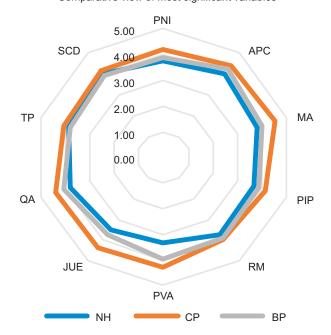
Supplementary Table 6 Rotated component matrix

| | Components | | | | | |
|------|------------|--------|--------|--------|--|--|
| | 1 | 2 | 3 | 4 | | |
| APC | 0.798 | 0.073 | 0.132 | 0.095 | | |
| MA | 0.789 | 0.112 | 0.240 | -0.154 | | |
| PNI | 0.754 | 0.262 | 0.093 | 0.140 | | |
| JUE | 0.701 | 0.250 | 0.245 | 0.009 | | |
| PIP | 0.676 | -0.023 | 0.089 | 0.332 | | |
| EAS | 0.626 | 0.546 | 0.015 | -0.043 | | |
| INSA | 0.578 | 0.317 | 0.109 | 0.042 | | |
| BP | 0.577 | 0.453 | -0.063 | 0.355 | | |
| SCD | 0.046 | 0.856 | 0.049 | -0.054 | | |
| TP | 0.324 | 0.687 | 0.058 | -0.052 | | |
| RTC | 0.029 | 0.672 | 0.068 | 0.313 | | |
| SC | 0.526 | 0.668 | 0.044 | -0.015 | | |
| ENT | 0.533 | 0.557 | 0.206 | 0.128 | | |
| PVA | 0.089 | 0.090 | 0.822 | 0.020 | | |
| QA | 0.155 | -0.043 | 0.664 | 0.151 | | |
| VI | 0.391 | 0.374 | 0.543 | 0.166 | | |
| RM | 0.009 | -0.008 | 0.151 | 0.876 | | |
| ES | 0.441 | 0.210 | 0.177 | 0.482 | | |

APC, Agricultural productivity changes; MA, Market Access; PNI, Price negotiation for input; JUE, Joint use of equipment and storage; PIP, Price increase for produce; EAS, Extension and advisory service provision; INSA, Input supply and assistance; BP, Bargaining power; SCD, Special skill development; TP, Trust and partnership among members; RTC, Reduction in transaction cost; SC, Social cohesion; ENT, Entrepreneurship culture; PVA, Processing and value addition; QA, Quality assurance; VI, Vertical integration; RM, Risk management; and ES, Economy of scale.

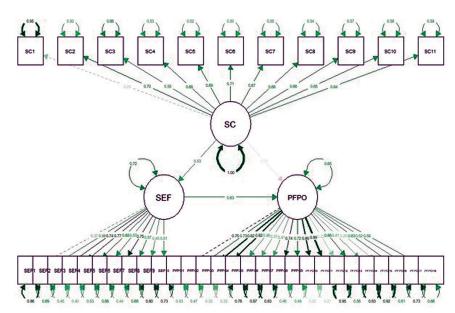
Extraction method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

Comparative view of most significant variables



Supplementary Fig. 1 Radar chart displaying region-wise distribution of Northern Hills (NH), Central Plains (CP), Batar Plateau (BP) of significant variables.

PNI, Price negotiation for input; APC, Agricultural productivity changes; MA, Market access; PIP, Price increase for produce; RM, Risk management; PVA, Processing and value addition; JUE, Joint use of equipment and storage; QA, Quality assurance; TP, Trust and partnership among members; SCD, Special skill development;



Supplementary Fig. 2 Structural equation modelling and mediation analysis.