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Information Receiving Behavior of Farmers: The Structural and Functional Analysis

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ABSTRACT

Farmers are the primary producers of food and other agricultural goods play a crucial part in the agricultural sector. Farmers need fast and accurate information on a variety of farming-related issues including weather, markets, pests and diseases, farming techniques, and agricultural inputs, to make informed decisions. Farmers' information-seeking behaviour, however, differs based on several conditions. The proficiency in information-receiving behavior and its interpretation merit humongous importance for the triumph of entrepreneurial success far beyond subsistence farming. The study was conducted in the Nayagarh district of Odisha by selecting one hundred FPO member farmers following multistage and snowballing sampling techniques. A structured interview schedule was prepared and data were collected using the personal interview method. The study envisages that variables viz. age, crop yield, no. of male workers, marketed surplus, and materials possessed and training exposure have significant contributions to the functional contribution of information receiving behaviour of the farmers. The study suggests that improvement of farmers' network and extension agent farmers' relationship may be helpful for quick technology dissemination and overall improvement of the farming community.

INTRODUCTION

The world's expanding population depends heavily on farmers for its food needs. Nonetheless, their access to information can dramatically alter their agricultural practices and yields (Fróna, 2019). In the current digital era, farmers have access to a wealth of information via a variety of media, including mobile phones, television, and the internet (Chowhan, 2020). The adoption of sustainable and climate-resilient agricultural practices can also be facilitated by good communication, assuring the long-term viability of agriculture and the wellbeing of the farming community (Rao et al., 2016). Several studies suggest that, the formation of group of farmers may act as the catalyst in increasing the information receiving abilities of the farming community (Munoz et al., 2015; Fleming et al., 2021). Farmer Producer Organization (FPO) is one of the greatest institutional innovations tailored to the much needed transformation of subsistence farming into entrepreneurial farming in India through reducing transactional costs (Parthiban et al., 2015). Producer organizations (POs) are formal rural organizations comprised of smallholder farmers who organize with the goal of increasing farm income through improved production, marketing, and local processing activities (Rondot & Collion, 2001). FPO leads to enhanced income for farmers by providing them with access to institutional credit, informed and better decisions, access to better and improved inputs, effectiveness & efficiency in farming operations, and better marketing facilities (Sharma et al., 2019). Smallholder farmers who form FPOs with the aim of raising farm revenue through enhanced production, marketing, and regional

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processing activities are its members (Ameer, 2021) when compared to respondents from non-functional FPOs, members (including management) of functional FPOs had higher risk bearing capacity, greater economic motivation, and more innovativeness (Singh, 2022). FPOs have better opportunities for direct marketing which is a need of the hour for the people of villages (Harikrishna et al., 2022; Kumari et al., 2022). The majority of farmers perceived that with respect to management and governance characteristics of FPO had fair group communication (Amitha et al., 2021). Younger respondents have recorded a significant effect on entrepreneurial information received from cosmopolite sources (Acharya et al., 2022) Within a high performing FPO, individuals' attitudes about their FPO and cooperation were discovered to be important contributors to improving group stability (Gorai et al., 2022). Members facilitating for profitable farming includes increase in knowledge of improved production technology and increase in adoption towards production technology (Venkatesan et al., 2020). The perceived effectiveness of producer members towards the social indicators such as knowledge on production technology was found to be fair (Venkattakumar et al., 2019). It is found that education, experience and annual income were determinant factors that influenced the performance of FPOs (Vedasri et al., 2019). In terms of entrepreneurial attributes, majority of the pineapple growers possessed indigenous knowledge, farm decision-making ability; self-confidence and economic motivation were found important (Jha, 2012).

METHODOLOGY

Considering the COVID-19 restrictions, the study was conducted in the purposively selected two farmer producer organizations (FPOs) from Ranpur block of Nayagarh district of Odisha. One hundred (100) respondents in total were selected from two FPOs, fifty (50) from each of FPOs to conduct the study following snowball sampling method. Data collection was carried out by administering personal interview schedules. Prior to actual fieldwork, a pilot study was conducted to understand the area, its people, communication and social system in order to establish an overall picture for conducting the study. Appropriate operationalization and measurement of the variables helped the researcher to land upon the accurate conclusions. Therefore, the selected variables for this study had been operational and measured in the following manner i.e., (i) Independent variables and (ii) Dependent variable. Independent variables selected for the study were age (x_1), education (x_2), no. of enterprise (x_3), year of enterprise (x_4), training exposure (x_5), family size (x_6), mean family education (x_7), material possessed (x_8), size of holding (x_9), size of homestead land (x_{10}), size of cultivated land (x_{11}), size of land under irrigation (x_{12}), no. of fragments (x_{13}), crop yield (x_{14}), livestock yield(x_{15}), cropping intensity (x_{16}), income (x_{17}), family expenditure (x_{18}), marketable surplus (x_{19}), marketed surplus (x_{20}), family labor (x_{21}), no. of male workers (x_{22}), no. of female workers (x_{23}) and dependency ratio (x_{24}). Dependent variable selected for the study was Entrepreneurial information received from cosmopolite sources (10 point scale) (y). Appropriate statistical tools had been used to carry out the study viz. correlation coefficient, multiple regression analysis, step wise regression analysis and path analysis with the help of IBM SPSS v26.0.

RESULTS AND DISCUSSION

The subjective information was measured utilizing explicit numerical methodology. Then data analysis i.e. coefficient of correlation, multiple regression analysis, stepwise regression analysis and path analysis have been done to understand the functionality of the selected variables for the study. Table 1 presents the coefficient of correlation between entrepreneurial information received from cosmopolite sources (y) and selected twenty four socio-ecological variables. It was found that the following variables viz. age (x_1), marketable surplus (x_{19}) and marketed surplus (x_{20}) of FPO members are having negative but significant correlation with the dependent variable. The variables number of enterprise (x_3), year of enterprise (x_4), training exposure (x_5), materials possessed (x_8), size of holding (x_9), size of cultivated land (x_{11}), size of land under irrigation (x_{12}), number of fragments (x_{13}) crop yield (x_{14}), income (x_{17}), family labour (x_{21}), no. of male workers (x_{22}) and no. of female workers (x_{23}) recorded positive significant correlation with the dependent variable.

The coefficients of correlation revealed that younger respondents had been accessing higher and cosmopolite information sources. Similar studies also suggested that new members in producer groups exhibit strong association with information received from cosmopolite sources (Acharya et al., 2022). At the same time respondents having more no. of enterprises (x_3), more years of enterprises (x_4), more training exposure (x_5), more no. of material possessed (x_8), larger size of holding (x_9), higher size of cultivable

Table 1. Relationship between entrepreneurial information received from cosmopolite sources (y) and selected socio-ecological variables (x_1-x_{24})

S.No.	Independent variables	'r' Value
1	Age (x_1)	-0.269**
2	Education (x_2)	0.176^{NS}
3	Number of enterprise (x_3)	0.352**
4	Year of enterprise (x_4)	0.377**
5	Training exposure (x_5)	0.381**
6	Family size (x_6)	0.160 ^{NS}
7	Mean family education (x_7)	0.081 ^{NS}
8	Materials possessed (x_8)	0.317**
9	Size of holding (x_9)	0.315**
10	Size of homestead land (x_{10})	0.106 ^{NS}
11	Size of cultivated land (x_{11})	0.337**
12	Size of land under irrigation (x_{12})	0.350**
13	Number of fragments (x_{13})	0.549**
14	Crop yield (x_{14})	0.379**
15	Livestock yield (x_{15})	0.137 ^{NS}
16	Cropping intensity (x_{16})	-0.184 ^{NS}
17	Income (x_{17})	0.227*
18	Family expenditure (x_{18})	0.121 ^{NS}
19	Marketable surplus (x_{19})	-0.294**
20	Marketed surplus (x_{20})	-0.333**
21	Family labour (x_{21})	0.231*
22	No of male workers (x_{22})	0.540**
23	No of female workers (x_{23})	0.381**
24	Dependency ratio (x_{24})	0.056 ^{NS}

**Correlation is significant at the 0.01 level, *Correlation is significant at the 0.05 level, ^{NS} Non Significant

land (x_{11}), more land under irrigation (x_{12}) and more number of fragments (x_{13}) have also been dove-tailed to higher access and utilization of information. Income (x_{17}), marketable surplus (x_{19}), marketed surplus (x_{20}) and family labor (x_{21}) for their obvious reasons; they have been intrigued with the consequent variable. Family labor (x_{21}), no. of male workers (x_{22}) and no. of female workers (x_{23}) have been found to be involved in the FPO Functioning. These have correlated with the access and use of cosmopolite sources of entrepreneurial communication (Panda et al, 2019; Acharya & Roy, 2021).

Table 2 presents the full model of regression analysis between criterion variables, Entrepreneurial information received from cosmopolite sources (y) vs. 24 causal variables. It was found that 24 causal variables together had contributed 72.60 per cent of variance in consequent variable entrepreneurial information received from cosmopolite sources (y). The Beta coefficient of the causal variable size of holding is negative but significant which implies that the possession of the respondent has got substantive effect on the access of entrepreneurial information from cosmopolite sources.

Table 3 presents the step down regression analysis. In stepwise regression analysis, it was found that the variables, number of fragments (x_{13}), crop yield (x_{14}), no. of male workers (x_{22}), marketed surplus (x_{20}), materials possessed (x_8) and training exposure (x_5) had been retained in the last step. It implies that fragmentation is not just physical disintegration of land masses. Beyond that it characterizes the behavior of communication pattern and behavior disposed off by the FPO members. The socio-ecological behavior due to fragmentation of land, has elicited more psychic effect due to the stress associated with utilization of more labor, resources and time. Fragmentation transformed land holding as cost and energy prodigal. In order to scale up entrepreneurial information received from cosmopolite sources by the FPO members, the prime concerns could have been to improve crop yield, give need based training and provide proper assistance to male workers of the FPO. The R square value being 68.70 per cent, these six variables had together contributed to 87.04 per cent of 71.00 per cent total variance of explicated variables to vindicate their distinctive contribution in characterizing entrepreneurial

Table 2. Multiple regression analysis of entrepreneurial information received from cosmopolite sources (y) vs. 24 causal variables (x_1-x_{24})

S.No.	Variables	Reg. Coef. B	S.E. B	Beta	t Value
1	Age (x_1)	0.082	0.121	0.082	0.677
2	Education (x_2)	-0.134	0.123	-0.134	-1.089
3	Number of enterprise (x_3)	0.008	0.130	0.008	0.064
4	Year of enterprise (x_4)	-0.010	0.092	-0.010	-0.108
5	Training exposure (x_5)	0.272	0.126	0.272	2.163
6	Family size (x_6)	0.034	0.103	0.034	0.327
7	Mean family education (x_7)	-0.034	0.085	-0.034	-0.402
8	Materials possessed (x_8)	0.300	0.097	0.300	3.109
9	Size of holding (x_9)	-0.693	0.531	-0.693	-1.303
10	Size of homestead land (x_{10})	0.088	0.068	0.088	1.300
11	Size of cultivated land (x_{11})	0.656	0.552	0.656	1.189
12	Size of land under irrigation (x_{12})	0.082	0.111	0.082	0.737
13	Number of fragments (x_{13})	0.287	0.095	0.287	3.023
14	Crop yield (x_{14})	0.233	0.085	0.233	2.735
15	Livestock yield (x_{15})	0.049	0.069	0.049	0.700
16	Cropping intensity (x_{16})	-0.009	0.077	-0.009	-0.117
17	Income (x_{17})	-0.033	0.075	-0.033	-0.442
18	Family expenditure (x_{18})	-0.036	0.076	-0.036	-0.472
19	Marketable surplus (x_{19})	-0.033	0.083	-0.033	-0.394
20	Marketed surplus (x_{20})	-0.191	0.092	-0.191	-2.080
21	Family labour (x_{21})	-0.022	0.088	-0.022	-0.251
22	No of male workers (x_{22})	0.396	0.095	0.396	4.189
23	No of female workers (x_{23})	0.030	0.083	0.030	0.358
24	Dependency ratio (x_{24})	-0.097	0.070	-0.097	-1.388

**R square: 72.60%; The standard error of the estimate: 0.602

Table 3. Stepwise regression analysis of entrepreneurial information received from cosmopolite sources (y) vs. 24 causal variables (x_1-x_{24})

S.No.	Variables	Reg. coef. B	S.E. B	Beta	t value
1	Number of fragments (x_{13})	0.253	0.070	0.253	3.609
2	Crop yield (x_{14})	0.234	0.062	0.234	3.756
3	No of male workers (x_{22})	0.453	0.071	0.453	6.419
4	Marketed surplus (x_{20})	-0.176	0.063	-0.176	-2.808
5	Materials possessed (x_8)	0.256	0.065	0.256	3.915
6	Training exposure (x_5)	0.197	0.063	0.197	3.120

**R square: 68.70 per cent; The standard error of the estimate: 0.577

Table 4. Decomposition of entrepreneurial information received from cosmopolite sources (y) into 24 exogenous variables (x_1-x_{24})

S.No.	Variables	TE	DE	IE	HIE
1	Age (x_1)	-0.269	0.084	-0.353	-0.168 (x_5)
2	Education (x_2)	0.176	-0.129	0.305	0.182 (x_5)
3	Number of enterprise (x_3)	0.352	0.012	0.340	0.178 (x_8)
4	Year of enterprise (x_4)	0.377	-0.013	0.390	-0.324 (x_9)
5	Training exposure (x_5)	0.381	0.267	0.114	-0.207 (x_9)
6	Family size (x_6)	0.160	0.031	0.129	0.154 (x_5)
7	Mean family education (x_7)	0.081	-0.037	0.118	-0.124 (x_5)
8	Materials possessed (x_8)	0.317	0.299	0.018	-0.084 (x_9)
9	Size of holding (x_9)	0.315	-0.744	1.059	0.709 (x_{11})
10	Size of homestead land (x_{10})	0.106	0.086	0.020	0.068 (x_5)
11	Size of cultivated land (x_{11})	0.337	0.715	-0.378	-0.739 (x_9)
12	Size of land under irrigation (x_{12})	0.350	0.078	0.272	-0.573 (x_9)
13	Number of fragments (x_{13})	0.549	0.286	0.263	-0.329 (x_9)
14	Crop yield (x_{14})	0.379	0.234	0.145	0.097 (x8)
15	Livestock yield (x_{15})	0.137	0.048	0.089	-0.131 (x_9)
16	Cropping intensity (x_{16})	-0.184	-0.007	-0.177	0.153 (x_9)
17	Income (x_{17})	0.227	-0.035	0.262	0.101 (x_{14})
18	Family expenditure (x_{18})	0.121	-0.034	0.155	-0.155 (x_9)
19	Marketable surplus (x_{19})	-0.294	-0.035	-0.259	-0.087 (x_9)
20	Marketed surplus (x_{20})	-0.333	-0.194	-0.139	-0.156 (x_9)
21	Family labour (x_{21})	0.231	-0.020	0.251	-0.125 (x_9)
22	No of male workers (x_{22})	0.540	0.395	0.145	0.203 (x_{11})
23	No of female workers (x_{23})	0.381	0.030	0.351	-0.266 (x_9)
24	Dependency ratio (x_{24})	0.056	-0.098	0.154	0.093 (x_{13})

**TE - Total effect; DE – Direct effect; IE – Indirect effect; HIE – Highest indirect effect; residual effect: 0.274, Highest indirect individual effect: x_9 (13)

information received from cosmopolite sources. Similar studies suggested that number of enterprises, materials possessed, livestock yield and training exposure have also found to have substantive contribution to entrepreneurial information received from cosmopolite sources (Acharya & Roy, 2021).

Table 4 evinced that the variable size of holding (x_9) exerted the highest indirect effect on entrepreneurial information received from cosmopolite sources (y). This is well discernible that size of holding had got a direct and sustainable effect on y and size of cultivated land (x_{11}) had also exerted substantive impact, i.e., direct effect on y. Land resources came out as the strongest determinant to characterize the consequent variable. It is also interesting to note that size of holding (x_9) had enrooted the highest indirect effect through as many as thirteen (13) variables to ultimately characterize the dependent variable, entrepreneurial information received from cosmopolite sources. (Acharya & Roy, 2021) No. of fragments (x_{13}) had exerted the highest total effect. Fragmentation of land emerging as the strongest determinant to characterize the process of modernization, else it could act as stronger barrier to modernization because it will make the fragmentation of land as cost and energy prodigal. The residual effect being 0.274, it is to conclude that even with the combination of 24 exogenous variables, 27.4 per cent variance in dependent variable could not be explained. This suggests the inclusion of more numbers of relevant and consistent variables for this framework of study.

CONCLUSION

Communication is the most crucial precursor for changing entrepreneurial behavior and reshaping business ecosystem to make it more compatible and resilient. The study reveals that the generation of marketable surplus and marketed surplus both unleashed stark and decisive impacts on information receiving behavior as well as entrepreneurial communication process. A plethora of multivariate analytical techniques have been applied to analyze an enterprise along with direction, impact, characteristics of information receiving behavior as well. This may in future go in contributing up scaling of the information management techniques and strategies to make enterprising agriculture a successful one. The other side of story is that this kind of research can be replicated in different socio-ecological situation so that a robust policy framework can be generated to support the national economy and growth through enterprising agriculture.

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