Agro Economist - An International Journal
Citation: AE: **10**(02): 127-131, June 2023
DOI: 10.30954/2394-8159.02.2023.4
Peer Reviewed Journal

AAEBM
ASSOCIATION OF AGRICULTURAL ECONOMICS & AGRI-BUSINESS MANAGEMENT

Determinants of Prices of Minor Forest Produce (MFP) in High Altitude and Tribal (HAT) Zone of Andhra Pradesh

Ch. Satish Kumar[1*], K. Nirmal Ravi Kumar[1], K. Solmon Raju Paul[1], P.V. Sathya Gopal[2] and V. Srinivasa Rao[3]

[1]*Department of Agricultural Economics, Agricultural College, Bapatla, Acharya N.G. Ranga Agricultural University, Lam, Andhra Pradesh, India*
[2]*Institute of Agribusiness Management, S.V. Agricultural College, Tirupati, Acharya N.G. Ranga Agricultural University, Lam, Andhra Pradesh, India*
[3]*Department of Statistics and Computer Applications, Agricultural College, Bapatla, Acharya N.G. Ranga Agricultural University, Lam, India*

*Corresponding author: satishchittapuli@gmail.com

Received: 21-02-2023 **Revised:** 29-05-2023 **Accepted:** 07-06-2023

ABSTRACT

Prices for any commodity are important because they create a path for a firm or industry to continue or discontinue a particular production activity in the future. The paper focuses on the variables affecting MFP prices in the HAT zone of Andhra Pradesh. The present study was conducted in tribal areas where there is extensive forest cover, spotty cell network coverage, and tribal farmers with low levels of knowledge. The market price information for MFP that was provided by Girijan Cooperative Corporation (GCC) officials and individual traders varied. Some of the important MPFs are lucrative for tribal farmers, but their geographical barriers make them unable to catch good prices for their produce. For this investigation, a probit model was used and the study's findings showed that the availability of storage facilities at Girijan Primary Cooperative Marketing Societies (GPCMS)/ Primary Procurement Centres (PPCs), access to timely market price information, and 'investment in MIS' are the determinants of market price in the study area.

Keywords: GCC, HAT zone, Market information, MFP and Prices

There are hilly terrain in the Andhra Pradesh HAT zone districts of Srikakulam, Vizianagaram, Visakhapatnam, and East Godavari. The presence of deep forest areas was a huge benefit for MFP availability. Hill broom (*Thysanolaena maxima*), honey, marking-nut (*Semecarpus anacardium*), myrobalan (*Terminalia chebula*), naramamidi bark (*Litsea deccanensis*), and seeded tamarind (*Tamarindus indica*) were chosen (Kumar *et al.* 2022) in the present study because it contributes 84 percent share value of income. Studies from the past have shown that MFP is significant to the biological variety, food security, and local, national, and international economy. MFP are essential sources of goods utilised in the chemical

How to cite this article: Kumar, Ch. S., Nirmal Ravi Kumar, K., Solmon Raju Paul, K., Sathya Gopal, P.V. and Srinivasa Rao, V. (2023). Determinants of Prices of Minor Forest Produce (MFP) in High Altitude and Tribal (HAT) Zone of Andhra Pradesh. *Agro Economist - An International Journal*, **10**(02): 127-131.

Source of Support: None; **Conflict of Interest:** None

industry, including food, drinks, flavourings, spices, perfumes, polishes, building supplies, medications, paints and extracts (Singh and Kumar 2021).

MFP is one of the sources of revenue for tribal farmers. Due to the vast forest and lack of adequate road infrastructure, tribal farmers in the area primarily struggle to obtain fair rates for the MFP they harvest (Chaudhary *et al.* 2016). Lack of storage facilities and insufficient timely reliable market data (Hatai, 2016), and tribal farmers' naivety. The lives and livelihoods of people across all segments, and in particular, the underprivileged tribals, have been seriously affected nationwide as a result of the unprecedented crisis brought on by the sharp drop in MFP prices (Hatai, 2022). At such a time, the 'Mechanism for Marketing of MFP through Minimum Support Price (MSP) & Development of Value Chain for MFP' scheme (2011) has come as a beacon of change. Conceptualized and implemented by Tribal Co-Operative Marketing Development Federation of India Limited (TRIFED) of Ministry of Tribal Affairs, Government of India in association with State Government agencies across 21 states of the country, this scheme has emerged as a source of great relief for tribal gatherers injecting more than Rs. 3000 crores directly in the tribal economy since April 2020.

GCC, since 1956, has assumed the responsibility of collection and marketing of MFP in the role of the State Corporation, with socio-economic upliftment of the tribes as the core objective. Procurement of MFP collected by the tribes, duly compensating them for their produce with remunerative prices and thereby safeguarding them from unfair trade practices by private traders and middlemen. Currently, GCC possesses a vast network comprising of 26 affiliated GPCMS, and serves as a funding agency to its societies for MFP procurement. GPCMS procure the MFP through PPCs at the door steps of the tribals, at constantly updated prices fixed and declared by GCC and deliver the produce to GCC periodically or occasionally. prices of MFP depends on various factors like valid information, government programs, competition for produce, demand, arrivals and infrastructural facilities etc, with this background present was carried out with help probit regression analysis.

METHODOLOGY

In the present study primary data was collected through multi-stage sampling design i.e. Division level, GPCMS level and shandies (local weekly markets). The tribal farmers of HAT zone transact their MFP in shandies. In shandies transact their produce either GPCMS or private traders or both depending upon the relative prices offered by these two market players. Present study covered six MFP based on total share value of the produce, two samples were drawn from six MFP transacted by the tribal farmer. Sample was collected from both GCC and shandies. Thus, 120 farmers from 10 GPCMS (across five Divisions), 240 farmers from 20 shandies, private traders and GCC staff were selected for depth investigation during 2020-21. Probit model was employed to analyze the determinants (Table 1) of prices realized by the farmers (relative to prices prevailing in shandies) in transacting the produce through GPCMS/PPCs. According (Egbetokun and Omonona, 2012), the Probit model can be computed from the standard normal cumulative distribution function. This model is a statistical probability model with two categories in the dependent variable. That is, the binary dependent variable, realizing remunerative prices takes on the values of zero and one. The Probit analysis provides statistically significant findings of which demographics increase or decrease the probability of realizing remunerative prices. In this binary Probit model, the preference of the farmer to realizing remunerative prices was taken as '1', and '0' otherwise. It is assumed that the i^{th} farmer obtains maximum utility, if he/she transact MFP through realizing remunerative prices offered by the GPCMS/PPCs rather than non- realizing remunerative prices.

The probability P_i of choosing any alternative over not choosing it can be expressed as in (1), where φ represents the cumulative distribution of a standard normal random variable:

$$P_i = prob[Y_i = | X] = \int_{-\infty}^{x'\beta_i} (2\pi)^{-1/2} \exp\left(-\frac{t^2}{2}\right) d = \Phi(x_i'\beta) \quad \ldots(1)$$

Considering the variables selected (Table 1), the Probit model formulated in this study is as given below:

Table 1: Determinants of prices for selected MFP in GPCMS/PPCs

Variables	Variable type	Prices
Dependent Variable	Dummy variable	Probability of getting remunerative prices for MFP in GPCMS/PPCs (relative to prices prevailing in shandies) (1 if realized remunerative prices, '0' otherwise)
Independent Variables		
X_1	Dummy variable	Access to information about market prices in time (1 if enjoy access to MIS, '0' otherwise)
X_2	Dummy variable	Availability of storage facilities in GPCMS/PPCs (1 if available, '0' otherwise)
X_3	Dummy variable	Availability of grading facilities in GPCMS/PPCs (1 if available, '0' otherwise)
X_4	Dummy variable	Availability of transportation facilities to GPCMS/PPCs in right time (1 if available, '0' otherwise)
X_5	Continuous	Investment on MIS in GPCMS/PPCs (₹)

$$P(0, 1) = MP = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon_i \quad \ldots(2)$$

Where, *MP* = Probability of getting remunerative prices for MFP in GPCMS/PPCs (relative to prices prevailing in shandies, which can take the value of '1' if the farmer realized remunerative price or '0' if he do not.

$P(0, 1) = MP = \beta_0 +$ β_1 Access to information about market prices + β_2 Availability of storage facilities in GPCMS/PPCs + β_3 Availability of grading facilities in GPCMS/PPCs + β_4 Availability of transportation facilities to GPCMS/PPCs + β_5 Investment on MIS in GPCMS/PPCs (₹) + ε_i

The relationship between a specific variable and the outcome of the probability is interpreted by means of the marginal effect, which accounts for the partial change in the probability. The marginal effect associated with continuous explanatory variables X_k on the probability $P(Y_i = 1 \mid X)$, holding the other variables constant, can be derived as follows:

$$\frac{\partial P_i}{\partial x_{ik}} = \Phi\left(x_i'\beta\right)\beta_k \quad \ldots(3)$$

Where, φ represents the probability density function of a standard normal variable.

The marginal effect on dummy variables should be estimated differently from continuous variables. Discrete changes in the predicted probabilities constitute an alternative to the marginal effect when evaluating the influence of a dummy variable. Such an effect can be derived from the following:

$$\Delta = \Phi\left(\bar{x}\beta, d = 1\right) - \Phi\left(\bar{x}\beta, d = 0\right) \quad \ldots(4)$$

The marginal effects provide insights into how the explanatory variables shift the probability of getting remunerative prices for transacting MFP. The marginal effects were calculated for each variable, while holding other variables constant at their sample mean values.

RESULTS AND DISCUSSION

In order to analyze the determinants for realization of remunerative prices of MFP in GPCMS/PPCs (relative to prices realized in shandies), Probit regression model was employed (Table 2). It can be noticed that the likelihood ratio statistics as indicated by chi-square are highly significant ($P < 0.000$), suggesting that all the model parameters were jointly significant in explaining the dependent variable. The McFadden's Pseudo R^2 was 0.31 suggesting that the model was well-specified in line with Hensher *et al.* 2005 criterion for best fit model.

The results indicated that explanatory variables ***viz.,*** access to price information from GPCMS/PPCs in right time, availability of storage facilities in GPCMS/PPCs and investment on MIS in GPCMS/PPCs have positively and significantly influenced the probability of realizing higher prices for MFP in GPCMS/PPCs. However, grading facilities

Table 2: Determinants of market prices of MFP in GPCMS/PPCs

Variables	Coefficient	SE	Marginal effect (dy/dx)	Z Cal	P > |Z|
Constant	1.999	1.941		1.030	0.416
Access to information about market prices in time	2.491	1.016	0.428**	2.452	0.004
Availability of storage facilities in GPCMS/PPCs	0.120	0.042	0.120**	2.855	0.003
Availability of grading facilities in GPCMS/PPCs	0.175	0.331	0.026^{NS}	0.528	0.381
Availability of transportation facilities to GPCMS/PPCs in right time	0.559	0.463	0.132^{NS}	1.207	0.337
Investment on MIS in GPCMS/PPCs (₹)	2.029	0.992	0.081*	2.045	0.015
LR χ^2 (5) = 31.29**					
Prob > χ^2 = 0.000					
Log likelihood = -24.831					
Pseudo R^2 = 0.31					

Note: **-Significant at 1% level; *-Significant at 5% level, NS – Non-Significant.

Raw Data Source: Field Survey.

and access to transportation facilities in right time are not significantly influencing the realization of remunerative prices. These two marketing functions should deserve special attention in the ensuing future, so as to enable the farmers realize higher prices and to increase market arrivals to the GPCMS/PPCs.

The marginal effects were used to interpret the change in probability of realization of remunerative prices among the selected farmers. The marginal effect of 'access to information about market prices in time' revealed that the shift from lack of access to market information would increase the probability of realization of remunerative prices for MFP by 42.8 per cent. This is because the increased accessibility to market information allows the farmers to transact the MFP at right time and quantity, which in turn increase the price realization for the produce this finding is in line with the findings of Sachan *et al.* (2019). Similarly, the shift from lack of storage facilities would increase the probability of realization of remunerative prices for MFP by 12 per cent. This is because the increased accessibility to storage facilities in GPCMS/PPCs will allow the farmers to retain the produce at times of glut and later de-storage the MFP at right time to realize higher prices this finding is in line with the findings of Mishra and Kumar (2012), and Singh *et al.* (2017). The marginal effect of 'investment on MIS' showed that the increase in investment by one rupee increases the probability of a farmer to utilize the market information and consequently, realize higher prices by 8.1 per cent. This means that the investment made on MIS in GPCMS/PPCs decreases the probability of being a subsistence farmer or transacting the MFP in local shandies (Mbitsemunda and Karangwa, 2017).

CONCLUSION

The study revealed that the main factors that influenced the prices of MFP are access to market information, availability of storage facilities, and investment in MIS. Some of constraints observed in the study area located in a hilly tract with deep forest coverage and poor network connections leading to the rare usage of modern Information and Communications Technology (ICT) devices hence, governments should focus on the installation of mobile met work coverage. Another issue is lack of storage facilities for agricultural and MFP in the study area makes it necessary for the construction of complex storage facilities suited to each type of product based on the nature and shelf life of each commodity. Investment in MIS depends on the source of income from arrivals and value addition of the MFP. Policy makers and officials need to be focus on above mentioned significant factors in the study area for further study.

REFERENCES

Chaudhary, R., Janjhua, Y., Mehta, P. and Verma, T. 2016. An analytical study of apple marketing channels in Himachal Pradesh, India. *Int. J. of Bio-resource and Stress Manage.,* **7**(2): 291-294.

Egbetokun, O.A. and Omonona, B.T. 2012. Determinants of farmers' participation in food market in Ogun State. *Global J. Sci. Frontier Res. Agric. and Vet. Sci.,* **12**(9): 24-30.

Hatai L.D. 2022. Profitability, Resource Use Efficiency and Marketing of Potato in East Siang Districts of Arunachal Pradesh, India. *Int. J. Bio-resource and Stress Manage.,* **13**(1): 702-708.

Hatai, L.D. 2016. Farmers response on agricultural marketing information system in Meghalaya. *Econ. Aff.,* **61**(1): 89-99.

Hensher, D.A., Rose, J.M., Rose, J.M. and Greene, W.H. 2005. *Applied choice analysis: a primer*. Cambridge university press.

Kumar, Ch. S., Kumar, K.N.R., Paul, K.S.R., Gopal, P.V.S. and Rao, V.S. 2022. Impact of Marketing Information System (MIS) on Prices Realization of Minor Forest Produce (MFP) in High Altitude and Tribal (HAT) Zone of Andhra Pradesh. *Asian J. Agril. Ext., Econ. & Socio.,* **40**(1): 48-55.

Mbitsemunda, J.P.K. and Karangwa, A. 2017. Analysis of factors influencing market participation of smallholder bean farmers in Nyanza district of southern province, Rwanda. *J. Agril. Sci.,* **9**(11): 99-111.

Mishra, R. and Kumar, D.A. 2012. Price behaviour of major vegetables in hill region of Nepal: An econometric analysis. *SAARC J. Agric.,* **10**(2): 107-120.

Sachan, S., Jawla, S.K. and Kumar, T. 2019. The scenario of agricultural marketing in India-A. *Plant Archives,* **19**(1): 125-130.

Singh S. and Kumar, S. 2021. Medicinal Plant Sector in India: Status and Sustainability. *Int. J. Econ. Plants,* **8**(1): 081-085.

Singh, D.K., Pynbianglang, K. and Pandey, N.K. 2017. Market arrival and price behaviour of potato in Agra district of Uttar Pradesh. *Econ. Aff.,* **62**(2): 341-345.