Factors Influencing Participation of Producers in Farmers' Market – An Analysis of Siddipet Rythu Bazaar (Telangana)

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ABSTRACT

Developing local food system by providing market access to farmers close to the production area has the potential to overcome various challenges faced by farmers in effective marketing of their produce mainly smallholder cultivating perishables. The Government has recognised the potential of local element in agriculture as suggested by the introduction of various reforms including farmers' market. The concept has been experimented in various states with different names like Rythu Bazaars in Telangana. The concept has so many dimensions to be analysed to understand its effective implementation. However, an attempt has been made in the present paper to understand the factors influencing the participation of producers in farmers' market by taking a case of Siddipet Rythu Bazaar. The analysis is based on the results of Probit Regression Model run on the primary information collected from 200 sample farmers. The analysis reveals that variables like gender, family size, production of vegetable and availability of transport facility have significant and positive influence on the participation of farmers in Rythu Bazaar. However, factors like market orientation and age had significant but negative influence suggesting that youth with better market orientation tends to explore market opportunities outside such models. Rythu Bazaars have the potential to serve as an effective market access tools for smallholders mainly cultivating perishables and acquiring certain characteristics in terms of family size and presence of women to contribute. Though, youth are observed to be inclined to participate in models other than Rythu Bazaars.

Keywords: Farmers' Market, Rythu Bazaar, Factors Influencing Participation, Probit Regression Model

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Article Received Date: 22.08.2024 Article Accepted Date: 18.11.2024

Introduction

Vocal for local has been the focus of the Government in recent past to promote local industries and local consumption, having its implications for agriculture production as well. Developing local food system by providing market access to farmers close to the production area has the potential to overcome various challenges faced by farmers in effective marketing of their produce mainly smallholder cultivating perishables. Local food systems offers various benefits like higher share in consumer price, local economic development, positive influence on health and nutrition, environmental benefits, food security and market opportunities for small and medium size farmers as compiled by USDA (2009) and Burnett (2011). Local food is the food that is locally produced, marketed and consumed (Hand and Martinez, 2010). The concept may also be influenced by other physical, psychological and cultural factors (Marry, 2018, Martinez et al., 2010, Darby et al., 2008 and Durham, et al., 2009). Higher per unit price than other channels is another benefit of direct interaction between farmers and consumers (Willis et al., 2016). The Government has recognised the potential of local element in agriculture as suggested by the introduction of various reform measures including farmers' market.

The concept of farmer-consumer market or farmers' market has been experimented in various states with different names like Apni, Raitha Santhe, Uzhavar Santhai and Krushak Bazzar (GoI, 2017). The concept has been implemented in Telangana with the name Rythu Bazaars. As the concept suggests, these markets facilitate direct contact of farmers with consumer without the involvement of any middlemen leading to better realisation of price. These markets in Telangana facilitate participation of farmers by providing various services like sheds for display of produce, safe water, electronic weighting machines, ATM, etc. The markets also ensure fixation of price by following a scientific and transparent system and also share the same through display boards installed in the markets. These markets also ensures prompt payment. These markets are operating with temporary / semi-permanent structures created by respective Agricultural Produce Market Committees (APMCs). Farmers and consumers are not expected to pay any service charges or market fee for participation in these markets. A total of 39 markets are operating successfully in Telangana. These markets have shown their effectiveness in encouraging local food system in terms of their ability to capture more than 20 percent of the total vegetables produced in the districts of Telangana State.

There are so many aspects to be analysed to understand the successful implementation of the concept related to location, structure, administration, facilities, flow of activities, price discovery mechanism and perception of different

stakeholders on benefits and challenges. Equally important is to understand the factors influencing the participation of farmers in Rythu Bazaars. With this background, an attempt has been made in this paper to analyse the factors responsible for participation of farmers in Rythu Bazars (farmers' market). Study has examined these factors by taking the case of Siddipet Rythu Bazaar operating successfully in Telangana.

Methodology

Probit regression model was used to analyse the factors determining the participation of farmers in a particular market type i.e. traditional marketing channels characterized by long chain of intermediaries viz-a-viz Rythu Bazaar facilitating direct contact of farmers with consumers. The decision to participate either in the farmers' market or traditional market was considered in Probit regression model as variable dependent on various independent variables, as explained in Table-1. The analysis is based on primary information collected from a sample of 200 farmers. As the paper is based on the Siddipet Rythu Bazaar as a case, 100 farmers visiting specifically the Siddipet Rythu Bazaar operating in Siddipet District of Telangana have been considered for collection of primary information. Another 100 farmers participating in market other than Rythu Bazaars identified randomly from the influence area of Siddipet Rythu Bazaar have also been considered under the study. Such a mix group of farmers was considered under the study to analyse the factors determining the participation of farmers in Rythu Bazaar viz-a-viz other markets.

Table 1: Description of the Variables of the Model Developed to Analyze Factors Responsible for Participation of Farmers in Rythu Bazaar

Variable	Variable Name	Variable type	Variable measurement
Dependent Variables			
MPD_{RB}	Market Participation Decision in Rythu Bazaar (RB)	Dummy	1 if farmer participated in Rythu Bazaar (RB), 0 otherwise
Quantitative Variables			
WKMEM	Working members	Continuous	Number of working members in the family of respondents
AGE	Age of the respondents	Continuous	Number of years
PRVG	Production of leading vegetables	Continuous	Quantity in Quintals

Qualitative Variables			
GEN	Gender of sample farmer	Dummy	1 if farmer is female, 0 otherwise
MKTOR	Market orientation of sample farmers as captured through their understanding of different marketing aspects	Dummy	1 if sample farmer is oriented, 0 otherwise
TRNS	Access to transport facilities	Dummy	1 if farmer enjoy good access to transportation means, 0 otherwise
DIS	Closeness measured in terms of distance	Dummy	1 if distance is less than 15 kms, 0 otherwise

Source: Author's definitions

Probit Regression Model

The Probit model to analyse the Market Participation Decision (MPDRB) of the farmer in Rythu Bazaar can be computed from the standard normal cumulative distribution function (Egbetokun and Omonona, 2012). This model is a statistical probability model with two categories in the dependent variables. That is, the binary dependent variable, MPDRB takes on the values of zero and one. The Probit analysis provides statistically significant findings of which variable increase or decrease the probability of participation of farmers in farmers' market. In this binary Probit model, the preference of the farmer to participate in Siddipet Rythu Bazaar was taken as '1', while preference to participate in other marketing channel was considered to be as '0'. It is assumed that the ith farmer obtains maximum utility, if transaction is completed by participating in Rythu Bazaar in comparison to other markets.

The probability (Pi) of choosing any alternative over not choosing it can be expressed as follows –

$$Pi = prob[Y_i = 1 \mid X] = \int_{\infty}^{xi'} (2\pi)^{-1/2} \exp(-t^2/2)dt$$

$$= \Phi(x_i'\beta)$$

Where φ represents the cumulative distribution of a standard normal random variable

Model used in the Paper

Considering the variables selected (Table-1), the Probit model formulated for this study is as given below –

$P(0,1) = MPDRB = \beta 0 + \beta 1MKTOR + \beta 2AGE + \beta 3GEN + \beta 4WKMEM + \beta 5TRNS + \beta 6DIS + \beta 7PRVG + \varepsilon i$

Where, MPDRB = Market Participation Decision of the farmer to participate in farmers' market, which will take the value of '1' if the farmer participated or '0' if not.

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 Xk on the probability P(Yi = 1 | X), holding the other variables constant, can be derived as follows:

$(\partial P\_i)/(\partial x\_ik) = \Phi(x\_i\hat{}' \beta)\ \beta\_k$

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 –

$\Delta = \Phi(\bar{x}\beta, d = 1) - \Phi(\bar{x}\beta, d = 0)$

The marginal effect provide insights into how the explanatory variables shift the probability of participation in Rythu Bazaar. The marginal effect were calculated for each variable, while holding other variables constant at their sample mean values.

In order to analyse the factors influencing MPDRB, Binary Probit Model was employed. This model has been estimated by the maximum likelihood method. The estimated coefficients and Standard Errors (SEs) reveal the major factors influencing the decision of the farmer to participating in Rythu Bazaar (MPDRB). A statistically significant coefficient suggests that the likelihood of farmer's participation in farmers' market will increase/ decrease as the response of the explanatory variable increases/ decreases. The likelihood ratio statistic as indicated by $\chi 2$ is significant ($P < 0.00$), suggesting that all the model parameters were jointly significant in explaining the dependent variable. The McFadden's Pseudo R2 was 0.30 which suggest a moderate fit as highlighted by various studies on evaluating Pseudo-R2's for Binary Probit Models (Veall, M and Zimmermann, K, 1990).

Results

The results of the Probit model analysis suggesting the influence of the selected explanatory variables on the decision of the farmers to participate in Rythu Bazaar is presented in Table-2. The table reveals that the influence of variables like gender (GEN), family size (WKMEM), production of vegetable (PRVG) and availability of transport facility (TRNS) have significant and positive influence on the participation of farmers in Rythu Bazaar (MPDRB). This suggests that women-farmers are more likely to participate in Rythu Bazaar. The participation in the market is not influenced by the distance but by the availability of transport facility. The number of working members in the family (WKMEM) also influences the decision to participate as a lot of time is required to clear-off the commodities brought to the market. The availability of vegetable surplus is also having positive impact suggesting smallholders with some minimum quantity of vegetable production (PRVG) are more likely to participate in such farmer oriented direct marketing models.

Factors like market orientation (MKTOR) and age (AGE) had significant but negative influence suggesting that youth with better market orientation tends to explore market opportunities outside such models. However, factors like distance from the market (DIS) had no significant effect on the decision of farmers to participate in the Rythu Bazaar.

Table 2: Probit Model Results for Factors Influencing MPDRB

Variables	Coefficient	SE	Marginal effect (dy/dx)	Z	P > |z|
MKTOR	- 1.0853	0.234	- 0.2680*	- 4.63	0.000
AGE	- 0.0337	0.011	- 0.0083*	- 3.00	0.003
GEN	1.3663	0.337	0.3373*	4.05	0.000
WKMEM	0.4360	0.100	0.1076*	4.36	0.000
TRNS	0.008	0.225	0.1015**	1.83	0.068
DIS	0.4113	0.221	0.0829	1.52	0.130
PRVG	0.3359	0.003	0.0020*	2.72	0.007
Constant	- 0.4585	0.599		- 0.76	0.444
LR χ^2 (10) = 102.75					
Prob > χ^2 = 0.0000					
Log likelihood = - 87.255696					
Pseudo R^2 = 0.37					

Note: (*) and (**) denote significance at the 1% and 10% levels, respectively

The presence of female-member (GEN) in the family influenced the decision (at 1% level). This may be an indication of better participation of female in such market as a lot of time is required to clear off the entire produce and male taking care of production aspects. The marginal effect (0.3373) revealed that presence of women in the family to participate would increase the probability of market participation by 33.73 percent. Participation is also influenced by availability of working members (WKMEM) in family (at 1% level) for requirement of working members to clear-off the produce in farmers' market. The marginal effect (0.1076) revealed that increase of one working member in the family to take care of post-production activities would increase the probability of market participation by 10.76 percent.

The decision to participate is also influenced significantly by the availability of vegetables surplus depicted through production (PRVG) at 1% level. The marginal effect (0.0020) imply that every increase of one quintal in production of vegetables will improve the possibility of the farmer to participate in the Rythu Bazaar by 0.20 percent. The decision to participate is also influenced by availability of transportation mean (TRNS) at 10 percent level but not by the distance of farm (DIS) from the market. The marginal effect suggest that availability of transportation means increases the probability to participate by 10.15 percent.

Orientation of the farmers on market (MKTOR) and age of the farmers (AGE) has also influenced the decision to participate in the market but negatively (both at 1% level). The negative association of farmers with age and market orientation to participate may be an indication that youth having better understanding of markets are keen in exploring other marketing options available in the region. Though, the farmers-market offers an important option to farmers mainly smallholders involved with cultivation of fresh vegetables but there are alternatives marketing models emerging in present time because of various reforms initiatives of the Government which are suitable for different kind of crops and stakeholders. The marginal effect of market orientation (0.2680) suggests that possibility of a farmer having better market orientation to participate in Rythu Bazaar would decrease by 26.80 percent. Whereas, in case of age, the marginal effect (0.0083) suggests a decrease of 0.83 percent in probability to participate with an increase of one year in age.

Conclusion

The analysis suggests that the decision to participate in the Rythu Bazaar is influenced by the gender and availability of working members in the family. The model provides direct contact with the consumers but a lot of time is required to clear-off the produce and therefore, the participation is influenced by the size of the family and gender. The decision is not influenced by the distance but transportation facilities available to farmers. The farmers having access to transport facilities are more likely to participate in Rythu Bazaar. Vegetable production is also an important factor influencing the participation in farmers' market. The farmers mainly the smallholders with surplus above a minimum level are more likely to participate in such marketing models. Age and market orientation of the farmers also influences the decision to participate in the market but negatively which may be an indication that such young farmers with a better understanding of marketing are keen in exploring other options available for marketing of their produce. The youth are observed to be inclined to participate in marketing models other than Rythu Bazaars. Capacity building of youth on the skills required to explore different marketing models can help them get linked effectively with various new marketing models emerging because of reforms and various other changes experienced in the system. The participation in the market is not influenced by the distance but by the availability of transport facility. There is need to provide transportation facilities to the farmers interested in visiting market by creating appropriate provisions in public transport so as to maintain the quality of the fresh produce. The Government may consider running exclusive buses/ other means mainly during morning hours to help farmers reach market on time with fresh produce. Rythu Bazaars have the potential to serve as an effective market access tools for smallholders mainly cultivating perishables and acquiring certain characteristics in terms of family size and presence of women to contribute. The production agencies can also take these factors into consideration while working with the farmers on market strategies for effectively integrating the higher production with the market.

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