

RESEARCH PAPER

Effect of socio-economic determinants on gross income of non-residential farm in Parbhani district of Maharashtra

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ABSTRACT

Investigation was carried out during the year 2014-15. In all 48 non-residential farms were randomly selected from sixteen villages of two tehsils in Parbhani district of Maharashtra. Data were related to cropping pattern and livestock pattern as well as socio-economic determinants. The results revealed that operational land holding showed highly significant on non-residential farm with regression co-efficient of 5880.0. It means that addition of one hectare could cause to increase gross income of Rs. 5880.0. Regression co-efficient of livestock was 2010.0. It means that addition of one livestock could cause to increase gross income of Rs. 5841.99. On the contrary, distance of farm from village showed negative regression co-efficient of -3535, it could adversely affect gross income of Rs. 3535. Thus, the farmers have to give more importance to land holding, livestock and distance of farm from village in order to increase gross income on non-residential farm. Co-efficient of multiple determination (R^2) was 0.622, it means that there was 62.20 per cent effect of all independent variables together to gross income on non-residential farm.

KEY WORDS : Non-residential farm, Regression co-efficient, Gross income, Linear function

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Non-residential farm means farmer and his family members are not residing on farm but they are residing in village in night time. In a day time, they are attaining the farm to run the farming business. Therefore, in this case dwelling house, livestock sheds,

implements and machinery shed are attached to the dwelling house in the village. Farmer with family member cannot residing the farm because of non-availability of dwelling house, approach roads, electricity and other facilities on the farm. Family members are avoiding to reside on the farm, but occasionally for few days at the time of harvesting and threshing some of the members may be living on farm in night time, such type of farm is considered as non-residential farm. Non-residential farmer is living in the village and attending farm operations by to and fro from village to farm. Hence, such farmer can not perform farm operations in proper time. In critical conditions ploughing, harrowing and clod crushing operations are not possible on non-residential

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farm on hired basis because of the farmer is absent in night time. Increasingly, household and farm business decisions are separate, even though interrelated.

In terms of priority, it is the welfare of the members of the household that usually takes precedence in decision making if there is a conflict between the household and the business. Following the same logic, decisions about off-farm and on-farm employment by family members is taken in the context of what is best for the farm household in total, not necessarily what is best for the farm business. Business decisions on residential farm are taken clearly and timely but business decision on non-residential farm are postponed due to some reasons. Similarly, welfare of household is quickly achieved on residential farm while it is trouble to the member of non-residential farm due to and fro (Stanton, 1991).

METHODOLOGY

Sampling design :

Multistage sampling design was adopted for selection of district, tehsils, villages and non-residential farms. In the first stage, the Parbhani district was purposively selected for non-residential farms. In the second stage, Parbhani and Purna tehsils were selected on the basis of higher area under non-residential farms. In the third stage, eight villages were selected from the each tehsils on the basis of higher area under non-residential farms. From Parbhani tehsil villages were namely Mirkhel, Pandhari, Paralgavan, Pingli, Porjawala, Raipur, Shirshi Bk., Tadlimbla were from Parbhani district and Aherwadi, Deolgaon, Dhanora, Khadala, Khujada, Makhani, Navki and Phulkalas were selected from Purna tahsil. In the fourth stage, from each village, the list of non-residential farmers along with their holding sizes was obtained. Three non-residential farmers were randomly selected from each of the villages. In this way, from sixteen villages, 48 farmers were selected for the present study.

Co-efficient of variation :

Co-efficient of variation (CV) used to measure the comparative variations of socio - economic characteristics. To know the dispersion the standard deviation and co-efficient of variation were estimated with following formulae.

$$SD = \sqrt{\frac{\sum (Y - \bar{Y})^2}{n-1}}$$

Standard deviation measures the dispersion between the observations

$$CV = \frac{SD}{Mean} \times 100$$

Linear multiple regression function :

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \dots + b_nX_n + e$$

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + \dots + b_nX_n + e$$

where,

Y = Gross income of farm (Rs./farm),

a = Intercept

b_i = Regression co-efficient,

X_i = Independent variables,

e = Error term,

The above function was used as follows:

$$\hat{Y} = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + b_8X_8 + b_9X_9 + b_{10}X_{10}$$

where, \hat{Y} Estimated gross income (Rs./farm), a = Intercept of production function, b_i = Partial regression co-efficients of the respective variables ($i=1,2,3,\dots,10$), X_1 = Age (year/ farmer), X_2 = Experience (year), X_3 = Educational level (score/farmer), X_4 = Family size (no/farmer), X_5 = Occupational level (score / farmer), X_6 = Operational land holding (ha/farmer), X_7 = Fragmentation of land (no/farmer), X_8 = Distance of residence from farm (km/farmer), X_9 = Bullock pairs (no/ farmer) and X_{10} = Livestock in standard animal unit (no/ farmer).

ANALYSIS AND DISCUSSION

The findings of the present study as well as relevant discussion have been summarized under the following heads :

Cropping pattern and livestock pattern :

Cropping pattern and livestock pattern on non-residential farm were estimated and are presented in Table 1. The results revealed that in cropping pattern, gross cropped area was 4.66 hectares on non-residential farm. On non-residential farm, proportionate area under *Kharif* was 68.47 per cent followed by that of *Rabi* 30.26 per cent, summer 0.84 per cent and perennial 0.43 per cent. Thus, cropping intensity was 131.63 per cent on non-residential farm. In relation to livestock it was observed from the Table 1 that, total livestock was 1.45 standard animal unit on non-residential farm. The major proportionate of local cow was 57.67 per cent and local

buffalo was 30.66 per cent on non-residential farm.

Mean, SD and CV of socio-economic characteristics of farmer :

Mean, SD and CV of socio-economic characteristics of non-residential farmer were estimated and are presented in Table 2. The results revealed that, age of farmer was 45.93 years on non-residential farm. Experience in farming was greater than 20 years on the farms. Standard deviation was 8.71 years on non-

residential farm. It was clear that co-efficient of variation 42.36 per cent on non-residential farm. Farmer had education upto 6.87 years on non-residential farm. Co-efficient of variation with respect to education was 54.58 per cent on on non-residential farm. The family size was 5.81 in numbers on non-residential farm. Co-efficient of variation was 35.62 per cent on non-residential farm.

Occupational level was 1.22 scores on non-residential farm. Operational land holding was 3.71 hectares on non-residential farm. Co-efficient of variation

Table 1: Cropping pattern and livestock pattern on non-residential farm

| Sr. No. | Particular | Non-residential farm | |
|---------|--|----------------------------------|----------|
| | | Area (ha) / livestock (st. unit) | Per cent |
| | Crops Kharif | | |
| 1. | Soybean | 1.85 | 39.70 |
| 2. | Cotton | 0.70 | 15.02 |
| 3. | Pigeonpea | 0.30 | 06.44 |
| 4. | Green gram | 0.18 | 03.87 |
| 5. | Turmeric | 0.16 | 03.44 |
| 6. | Sub total | 3.19 | 68.47 |
| | Rabi | | |
| 7. | Wheat | 0.24 | 05.15 |
| 8. | Sugarcane | 0.29 | 06.22 |
| 9. | Rabi Jawar | 0.84 | 18.03 |
| 10. | Chickpea | 0.04 | 0.86 |
| 11. | Sub total | 1.41 | 30.26 |
| | Summer | | |
| 12. | Brinjal | 0.01 | 0.21 |
| 13. | Tomato | 0.01 | 0.21 |
| 14. | Okra (Bhindi) | 0.01 | 0.21 |
| 15. | Fodder maize | 0.01 | 0.21 |
| 16. | Sub total | 0.04 | 0.84 |
| | Perennial | | |
| 17. | Mango | 0.02 | 0.43 |
| 18. | Sub total | 0.02 | 0.43 |
| 19. | Gross cropped area (Σ 6, 11, 16, 18) | 4.66 | 100.00 |
| 20. | Cropping intensity | --- | 131.63 |
| | Livestock | | |
| 1. | Local cow | 0.79 | 57.67 |
| 2. | Crossbreed cow | 0.06 | 4.38 |
| 3. | Local buffalo | 0.42 | 30.66 |
| 4. | Improved buffalo | 0.04 | 2.92 |
| 5. | Goat | 0.040 | 2.92 |
| 6. | Poultry | 0.020 | 1.45 |
| 7. | Total livestock (Σ 1 to 6) | 1.370 | 100.00 |

was 53.63 per cent on non-residential farm. Fragmentation of land 1.45 in number on non-residential farm. Distance of residence from farm was 1.62 km on non-residential farm. Co-efficient of variation on non-residential farm was 35.80 per cent. Bullock pair was 0.93 in numbers and co-efficient of variation was 39.78 per cent on non-residential farm. Livestock was 1.370 standard animal units on non-residential farm. Co-efficient of variation was 69.18 per cent on non-residential farm.

Effect of socio-economic determinants on gross income of non-residential farm :

Effect of socio-economic determinants on gross

income of non-residential farm was calculated and is presented in Table 3. The results revealed that, partial regression co-efficient of operational land holding were 0.688 that was highly significant at 1 per cent level. Partial regression co-efficients of occupational level and livestock were 0.309 and 0.201, respectively . Thus, there was scope to increase these variables to increase gross income on non-residential farm. The co-efficient of multiple determinations was 0.622, which indicated that there was 62.20 per cent effect of all variables on gross income of non-residential farm. Gross income was found to be Rs. 3.505 lakh / farm. Distance of residence from farm, age of farmer and fragmentation of land showed

Table 2: Mean, SD and CV of socio-economic characteristics of non-residential farmer

| Sr. No. | Particular | Non-residential farm | | |
|---------|--|----------------------|--------|-------|
| | | Mean | SD | CV % |
| 1. | Age of the farmer (year) | 45.93 | ±20.45 | 44.52 |
| 2. | Experience in farming (year) | 20.56 | ±8.71 | 42.36 |
| 3. | Education (year) | 6.87 | ±3.75 | 54.58 |
| 4. | Family size (no) | 5.81 | ±2.07 | 35.62 |
| 5. | Occupational level (three quantum score) | 1.22 | ±0.51 | 41.80 |
| 6. | Operational land holding (ha) | 3.71 | ±1.99 | 53.63 |
| 7. | Fragmentation of land (no) | 1.45 | ±0.57 | 39.31 |
| 8. | Distance of residence from farm (km) | 1.62 | ±0.58 | 35.80 |
| 9. | Bullock pair (no) | 0.93 | ±0.37 | 39.78 |
| 10. | Livestock (standard unit) | 1.370 | ±0.90 | 68.18 |

Table 3 : Effect of socio-economic determinants on gross income

| Sr. No. | Particular | Partial regression co-efficient | Standard error (SE) | 't' value |
|---------|--------------------------------------|---------------------------------|---------------------|-----------|
| 1. | Age of farmer (year) | -0.010 | 0.020 | -0.500 |
| 2. | Experience in farming (year) | 0.013 | 0.026 | 0.500 |
| 3. | Education (year) | 0.095 | 0.061 | 1.557 |
| 4. | Family size (no) | 0.091 | 0.104 | 0.875 |
| 5. | Occupational level (score) | 0.309 | 0.140 | 2.207* |
| 6. | Operational land holding (ha) | 0.688 | 0.117 | 5.880** |
| 7. | Fragmentation of land (no) | -0.209 | 0.334 | -0.625 |
| 8. | Distance of residence from farm (km) | -0.396 | 0.112 | -3.535** |
| 9. | Bullock pair (no) | 0.157 | 0.102 | 1.534 |
| 10. | Livestock (no) | 0.201 | 0.100 | 2.010* |
| | Intercept (a) ----- | 2.636 | | |
| | F-value ----- | 6.098** | | |
| | R ² ----- | 0.622 | | |
| | n ----- | 48.00 | | |

* and ** indicate significance of values at P=0.05 and 0.01, respectively

Note : Gross income (\bar{Y}) was

Rs. 3.505 lakh/farm

negative partial regression co-efficient and education level family size, bullock pair showed positive regression co-efficient. It is concluded that operational land holding, occupational level and livestock are positively affecting to the gross income on non-residential farm. On the contrary, distance of residence from farm, age of farmer, fragmentation of land are adversely negatively affecting by gross income on non-residential farm. Similar work related to the present investigation was also carried out by Malik *et al.* (2000); Pawar *et al.* (2002); Shrivastav *et al.* (1996); Stanton (1991); Toor *et al.* (2006) and Yadav (2001).

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