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Development Potential of Bamboo-Based Household Industry: Case study of Gajole Block of Malda District (WB)

Nuruzzaman Kasemi

Associate Professor, Department of Geography, Raiganj University(India)

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***Corresponding Author**
Email:nkasemi[at]gmail.com

ABSTRACT

Gajole CD Block of Malda district, West Bengal has an overwhelming majority of the bamboo-based industrial units. They provide employment to the artisan workers. The sector also offers job opportunities to non-artisans during slack seasons of agricultural employment. In the absence of any organized activity in this sector and the products not being adequately remunerative, artisan workers are taking up alternate livelihood options and migrating to urban areas. The recent trend of globalization has exacerbated the problems of rural areas as these household industries are further marginalised. In such a situation the decay of a particular sector of employment poses a serious problem and obviously the rational solution seems to develop and make viable the traditional household industries. The distinguishing features of household industry is that it suffers from lack of sufficient capital, low access to markets, low technical and educational training, low levels of productivity and wages, low access to formal credit. In the present paper attempts have been made to analyse the development potential of bamboo based household industry in the study area in terms of increase of productivity of the units through Cobb-Douglas and Transcendental productions with explanatory variables of Labour, capital, education of entrepreneur, experience of entrepreneurs, life of household industry, distance from market and working conditions of the units. Analyzing the household industry of the study area may give some policy proposals not only to enhance the productivity of the said sector in the area but also of other areas having household industrial activities along with advantages of providing employment opportunities and elimination of regional disparity.

1. Introduction

'Household industry' is defined as 'an industry conducted by the head of the household himself / herself and or by the members of the household at home or within the village in rural areas and only within the precincts of the house where household lives in urban areas. (Census of India, 1961).Gajole CD Block of Malda district, West Bengal has an overwhelming majority of the bamboo-based industrial units. They provide employment to the artisan workers.The sector also offers job opportunities to non-artisans during slack seasons of agricultural employment.They fill up the gap between low income and the minimum family requirements by providing subsidiary and off-seasonal employment to non-artisans also (Sao, 1991).The market of the products is mainly local and partly extended to urban areas. Middlemen play a powerful role in marketing these indigenous products. In the absence of any organized activity in this sector and the products not being adequately remunerative, artisan workers are taking up alternate livelihood options and migrating to urban areas. The recent trend of globalization has exacerbated the problems of rural areas as these household industries are further marginalised (Narasaiah and Naidu, 2006).In such conflicting situation the decay of a particular sector of employment poses a serious problem and obviously the rational solution seems to develop and make viable the traditional household industries.

Bamboo-based household industry requires very simple tools and meagre capital because the operations are run by family. Manual dexterity remains the focus of tiny units of household industry with little skilled. The school-aged children and housewives, elders participate in industrial activities. The distinguishing features of household industry is that it suffers from lack of sufficient capital, low access to markets, low technical and educational training, low levels of productivity and wages, low access to formal credit (Rubayat, 2009; Junejo, et. al. 2009). So the researcher used Cobb-Douglas and transcendental function to see the development potential of this industry in terms of productivity increase. Theoretically an increase in labor and capital may lead to raise the level of production. Similarly, education and experience of workers affects the production of the industry positively. As the workers is more educated and experienced, they can fully utilize the scarce resources. They can well manage the activities like processing of raw materials to the sale of finished products, etc. Conceptually age of the industrial unit may also positively affect the production as the unit has traced expansion path, attained the optimum combination of factors of production during the course of time and obtained experience in different jobs within the unit. Most of all, such units are more trusted by the customers as well as the middlemen.

Finance for household industry is an important ingredient for the increase of production. Generally, the sector does not have reach to formal credit which keeps the production lower and the household involved in the industry in lower-income group. Empirically the availability of credit positively affects the household industrial production (Ali, 2007; Bahar, 2001). It is assumed that distance of the Household Industrial Units (HIU)

from market negatively affects the production due to non-availability of proper transport, finance, inputs and skilled labour. The working conditions, also affects the productivity of HIU positively. In the good working conditions efficiency of the workers is increased which leads to increased production of household industrial units.

In the present paper attempts have been made to analyse the development potential of bamboo based household industry in the study area in terms of increase of productivity of the units (HIU) through Cobb-Douglas and Transcendental productions with explanatory variables of Labour, capital, education of entrepreneur, experience of entrepreneurs, life of household industry, distance from market and working conditions of the units. Analyzing the household industry of the study area may give some policy proposals not only to enhance the productivity of the said sector in the area but also of other areas having household industrial activities along with advantages of providing employment opportunities and elimination of regional disparity.

2. Objectives

- To examine the development potential of household industry in terms of increase of productivity
- To suggest some policy measures for the development of the industry

3. Study Area

The Gajole community Development Block is located between $88^0$4'13.5" E to $88^0$23'57.39" E longitude and between 25^0 09'10.46" N to 25°17' 18.50" N latitudes covering an area of 513.73 km^2. The Block is bounded by Itahar CD Block of Uttar Dinajpur district, Harirampur and Bansihari CD Blocks of Dakshin Dinajpur district on the north, Bamangola CD Block on the east, Habibpur and Old Malda CD Blocks on the south and Ratua II CD Block on the west. As per the Census 2011, the block had a population of 343,830 of which male and female accounted 174,536 (51 per cent) and 169,294 (49 per cent) respectively. Average literacy rate of the district is 63.07 per cent. Economy of the area is chiefly agrarian.

4. Database and Methodology

The present study is based on primary survey, designed to collect data on the general and economic performances of the bamboo based household industries. The researcher administered a questionnaire for 55 sample units of household industry producing bamboo based goods and thereafter interview of the head of unit make the data available. The sample units have been selected from 5 villages located in Gajole Community Development Block of the district of Malda, West Bengal. Simple random sampling method has been adopted for the present investigation. The sampling has been done with the help of random number table (Random Sampling Number arranged by Tippet). Development potential in terms of productivity increase has been estimated through Cobb-Douglas and Transcendental productions.

4.1 Model Specifications

The empirical analysis is done by using cross sectional data collected from bamboo household industrial units of the study area through random sampling.

In the present study Cobb-Douglas production function and transcendental functions has been used to see development potential of HIU in terms of productivity increase.

The general form of Cobb-Douglas production function is given as:

$Q = a X_1^b X_2^c$

Where a, b and c are parameters while the general form of transcendental production function is given as

$Q = a X_1^b X_2^c e^{dX_1 + fX_2}$

Where e is a natural logarithm base, b and c are partial coefficients of X_1 and X_2, respectively while d and f are trans-parameters measuring the variability of b and c in response to changes in production scale and input substitution. If d and f are zero, equation becomes Cobb-Douglass production function.

The Cobb-Douglas and Transcendental model of production of household industry is shown in equation 1 and 2 respectively.

$$EPC = a\, LAB^{\beta 1}\, CAP^{\beta 2}\, EDU^{\beta 3}\, ACI^{\beta 4}\, CRD^{\beta 5}\, DIS^{\beta 6}\, EXP^{\beta 7}\, WRK^{\beta 8}\, u \quad [1]$$

$$EPC = a\, LAB\beta 1\, CAP\beta 2\, EDU\beta 3\, ACI\beta 4\, CRD\beta 5\, DIS\beta 6\, EXP\beta 7\, WRK\beta 8\, e\alpha 1 LAB + \alpha 2 CAP + \alpha 3 EDU + \alpha\, 4 ACI + \alpha\, 5 CRD + \alpha\, 6 DIS + \alpha\, 7 EXP + \alpha\, 8 WRK u \quad [2]$$

Where,

EPC = Productivity of Household Industrial Unit (Rs.)
LAB = Labour (Hours supplied by total labour force of a unit in a month)
CAP = Value of total capital per unit in Rs.
EDU = Educational level of the workers (in code taking a 5 point scale (0-4)
ACI = Age of the workers in years (in code taking a 5 point scale (1-5)
CRD = Credit (Rs.)
DIS = Distance from Market (Kilometers)
EXP = Experience level of the workers (in code taking a 3-point scale)
WRK = Working Conditions (Index of Working Conditions like, good workshed, safe drinking water, etc)
U = Error Term

For statistical estimation model is in natural logarithm form as shown in equation 3 and 4 for Cobb-Douglas and Transcendental Production respectively.

$$\ln EPC = a + \beta 1 \ln LAB + \beta 2 \ln CAP + \beta 3 \ln EDU + \beta 4 \ln ACI + \beta 5 \ln CRD + \beta 6 \ln DIS + \beta 7 \ln EXP + \beta 8 \ln WRK + u \quad [3]$$

$$\ln EPC = a + \beta 1 \ln LAB + \beta 2 \ln CAP + \beta 3 \ln EDU + \beta 4 \ln ACI + \beta 5 \ln CRD + \beta 6 \ln DIS + \beta 7 \ln EXP + \beta 8 WRK + \alpha 1 \ln LAB + \alpha 2 \ln CAP + \alpha 3 \ln EDU + \alpha 4 \ln ACI + \alpha 5 \ln CRD + \alpha 6 \ln DIS + \alpha 7 \ln EXP + \alpha 8 \ln WRK + U \quad [4]$$

Where in both the equation a is the constant, term β1, β2, β3, β4, β5, β6, β7 and β8 are slope coefficients of respective variables in equation 3 and 4 and term α1, α2, α3, α4, α5, α6, α7 and α8 shows the variability in β1, β2, β3, β4, β5, β6, β7 and β8 respectively to a change in production scale or input substitution.

4.2Estimation Methods

The OLS (Ordinary Least Square) has been used to estimate the equation 3 and 4. Because both the equations are log linear in parameters and also fulfil the other assumptions of CLRM.

5. Empirical Results

5.1Results of Cobb-Douglas Production Function

The results of Cobb-Douglas production function are given in equation 5.

$$LnEPC = 8.674236^{*} + 0.755108^{*}LnLAB + 0.194760^{*}LnCAP + 0.163159^{*}LnEDU + 0.063410^{**}LnDIS + 0.302605^{*}LnWRK + 0.201499^{*}LnEXP - 0.104201LnCRD - 0.102514LnACI \quad [5]$$

The parameters shows that the labour, capital, education of entrepreneur, distance of market from CIU, working conditions of household industry and experience of entrepreneur positively affect the production of household industry. The credit availed and age of CIU negatively but insignificant affects the production of household industry.

Results of Transcendental production function are given in equation 6.

$$LnEPC = 6.809678^{*} + 0.901654^{*}LnLAB + 0.189326LnCAP + 0.018379LnEDU - 0.102433LnDIS + 0.687124^{***}LnWRK + 0.018305LnEXP - 0.00983LnCRD - 0.075461LnACI + 5.62E\text{-}05LAB - 1.24E\text{-}07^{**}CAP + 0.036451EDU + 0.012799^{**}DIS - 0.125387WRK + 0.009126EXP \quad [6]$$

The parameters of transcendental production function shows that only log of labour, log of working conditions of CIU, capital and distance of CIU from market significantly affects the production of household industry. Remaining parameters are insignificant so we will consider only Cobb-Douglas production function.

5.2 Measurement of Productivity

The productivity of household industry (from Cobb-Douglas production function) is measured as

$$EPCI = [EPC/LAB]^{\beta 1} [EPC/CAP]^{\beta 2} \quad [7]$$

OR

$$\ln EPCI = \ln EPC - \beta 1 \ln LAB - \beta 2 \ln CAP \quad [8]$$

The model for productivity of household industry is given in equation 9.

$$\ln EPCI = \alpha + \beta 1 \ln EXP + \beta 2 \ln WRK + \beta 3 \ln EDU + \beta 4 \ln DIS + \beta 5 \ln CRD + \beta 6 \ln ACI \quad [9]$$

The empirical results explaining the productivity of household industry are given in equation 10.

$$\ln EPCI = 8.674236^{*} + 0.181352^{*} \ln EXP + 0.198876^{*} \ln WRK + 0.160956^{*} \ln EDU + 0.055678^{*} \ln DIS - 0.004146 \ln CRD - 0.014469 \ln ACI \quad [10]$$

[and ** represent 1 percent and 5 percent level of significance*

** , ** and *** represent 1 percent, 5 percent and 10 percent level of significance]*

The parameters indicate that the experience of entrepreneur, working conditions of HIU, education of entrepreneur and distance from market positively affect the productivity of household industry. The credit and age of household industry negatively but insignificant affects the productivity of household industry. The insignificant effect of the loan on productivity explains the misutilization of loan.

6. Conclusion and Policy Recommendations

The study attempted to identify the factors affecting the productivity of bamboo-based household industry of the study area. The important findings are that the experience of entrepreneur, working conditions in CIU, education of entrepreneur and distance from market positively affects the production of the sector. Labor (working hours) and capital also positively affects the productivity of household industrial unit.

The explanation may be that the industrial units heavily depend on workers that is why the elasticity of production with respect to labour is very high. It may be concluded that production in HIUs is labor intensive and an increase in working hours leads to increase the productivity increase of units. Amount of capital also positively affects the production of unit. The increase in capital in these units directly leads to increase the production of units.

The increase in experience and education of entrepreneur leads to increase in production and productivity of unit (Remi, 2010). The explanation is based on the fact that the educated and experienced entrepreneur can use the human as well as the capital resources more efficiently through division of labour, provision of better working conditions, etc. The educated entrepreneur can handle problems more professionally and competently. Similarly, working conditions in unit also raise the productivity of units. It explains the fact that in the presence of light and fan (particularly in summer season), workers can work longer hours in a day. The availability of safe drinking water, first aid box and satisfactory working conditions helps the workers to stay physically healthy and strong which leads to increase in productivity of units.

Conceptually the distance from market to unit should affect the production of the unit negatively based on a number of factors like the availability of inputs in the market, marketability of output, availability of technical hands, etc. In the present study there is a unique result showing that the distance of the unit from market positively affects the productivity of the units.

The empirical findings have important implications for increase in productivity of HIUs. First of all, government should make a comprehensive policy plan for household industry for technical support and education. Training and education of the workers should be increased through workshops and training programmes. It may be done through block level industrial office. Working conditions of the unit should be developed. Loans should be provided to the unit in order to improve the working conditions of unit. But these loans should be tied to proper utilization. Besides the state governments, nationalized commercial banks and other financial organizations should come forward to finance the entrepreneurs providing short, medium and long term loans. There is immediate need to set up co-operative societies which may take up the issue of supply of raw materials, purchase of finished goods from artisans and provisions of credits. The sector has vast potentials for development in the study area. It goes without saying that realization of policies will need very efficient and committed functionaries. If policies are properly planned and implemented, these will ensure the growth and development of the sector.

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