

Economics of Cotton Carding Enterprise in Punjab -A Study of an Agro Based Industry

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ABSTRACT

The present study was carried out with the objective to analyze the economics of cotton carding (Penja) an agro based industry in Punjab. The primary data were collected from 40 villages of Fatehgarh Sahib. A total number of 12 enterprises were found running cotton carding units. The proportion of landless, marginal, small, semi medium, medium entrepreneurs were 58.33 percent, 16.66 percent, 8.33 percent, 16.60 percent, and 16.66 percent respectively and none of the entrepreneur had large farms. The entrepreneurs were adding value to the cotton and filling it in a stitched cloth for making of quilts used in winters and were found charging for their value addition. The net returns were to the tune of Rs 21378 per annum. The payback period was 6.71 years. The major problem as reported by the entrepreneurs was of seasonality of the work and availability of raw material. Uninterrupted power supply and all time availability of raw material may help in promoting the agro based village industry in the state.

Keywords: Agro based, Enterprises, Cotton carding, Payback Period, Gross Returns, Net Returns

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INTRODUCTION

The rapid growth of agriculture has significant impact on the entire economy, especially the agro-industries by supplying the inputs for processing agricultural produce. The agricultural sector can contribute to industrial growth in many ways such as by providing food grains, releasing surplus labour for non-agricultural activities, and providing raw-material for agro-processing industries as well as creating demand for agro-input industries. In the modern times, industrialization is the most important tool by which developing countries aspire to achieve higher level of per capita income and find a solution to their problems of poverty, unemployment, inequality, overpopulation and socio-economic backwardness in the modern world. Rapid industrialization especially in the green-revolution state of Punjab can be achieved through greater emphasis on agro based industries[7,8].

Due to supreme reliance on small-scale and medium industries, Punjab's industrial economy stands out distinctly among other states of India. Industrial structure of Punjab is constituted mainly by the private sector. Most of the industrial units are family enterprises. During 80s resource based industries such as edible and non-edible oil, food processing, sugarcane and cotton came up. Though food processing specially vegetables and fruits has a great potential for employment generation, but only less than 2% of the vegetables and fruits produced is processed. At current, by using low grade technology agro processing industry is primarily depends on processing of agricultural raw materials such, atta chakies, rice shelling, cotton carding and cotton ginning [1]. Traditional processing methods which are more labour intensive with limited use of capital are

accepted as the Indian way. Thus, the agro industry policy could be said to have employment orientation [6]. The planned development of agro-industries on the one hand, restricts the flow of people from village to industrial cities and on the other hand integrates rural and urban economies by eliminating imbalances [10]. The agro-based industries open opportunities to farmers and create additional revenue [7]. Agro based village industries reduce pressure on land. The concept of agro industry based upon the symbiotic relationship between agriculture and industry not only helps in the development of both the sectors but also augments income and employment in rural areas, ensures regional dispersal of industries and contributes to the foreign exchange earnings [2]. Village agro industries offer value addition and have much wider scope to convert farm produce into consumer commodities. These industries increase shelf- life and reduce wastage which results in value addition and higher contribution in farmers' income [3]. Raw material is seasonally available to the agro based industries while the processing operations and the demand for the products continue throughout the year [9]. Various studies [4, 5, 8] have been conducted about employment generated and significance of agro-based industries but no specific study in the recent past has been conducted to analyze the economics of agro-based village industries specially cotton carding in Punjab. Keeping in view the present study, was conducted with the objective to analyze economics of cotton carding in Punjab.

MATERIAL AND METHODS

For the purpose of the study, the Punjab state has been divided into three agro-climatic zones, namely sub-mountainous zone, central plain zone, and south west zone. The multistage random sampling technique was adopted for collection of data. The central zone having the highest number of small scale units was selected for the study in the first stage. One district i.e. Fatehgarh Sahib falling in the central zone, was randomly taken, in the second stage. A complete list of all the 444 villages falling under the district was prepared. From that list, 40 villages were randomly taken for the study in the third stage. A personal visit to each village was made and in each village, the sarpanch or chowkidar of the village was contacted for guidance. A total number of 12 cotton carding units were there in these 40 such villages. The information was collected from the entrepreneurs-landless (4), marginal (2), small (1), semi- medium (2) and medium (2). A self designed pre-tested schedule was prepared and primary data by personal interview method about capital investment, cost of fixed as well as variable inputs, price and quantity of the produce were collected from the entrepreneurs. The respondents were asked to rank various problems and thus the main problems faced by the entrepreneurs were examined.

To examine the economic viability of different enterprises, net return, break even quantity (BEQ), break-even quantity as percentage of actual quantity, profitability index (benefit-cost ratio) and payback period were calculated.

Break -even quantity (BEQ)

$$BEQ = \frac{\text{Total fixed cost}}{\text{Sale (Price per unit) - Average variable cost}}$$

$$\text{Break even quantity as percentage of actual quantity} = \frac{BEQ}{\text{Actual quantity}} \times 100$$

$$\text{Payback period} = \frac{\text{Initial investment}}{\text{Annual net returns}}$$

To work out the input-output of different farm enterprises, the capital output ration, share of fixed and variable cost in the capital output ratio, benefit cost ratio, benefit cost ratio at variable and total cost were calculated.

$$\text{Output-capital ratio} = \frac{\text{Gross returns}}{\text{Total cost}}$$

$$\text{Share of variable cost in capital output ratio} = \frac{\text{Output-capital Ratio}}{\text{Total cost}} \times \text{Variable cost}$$

$$\text{Share of fixed cost in capital output ratio} = \frac{\text{Output-capital Ratio}}{\text{Total cost}} \times \text{Fixed cost}$$

$$\text{Benefit cost ratio (at variable cost)} = \frac{\text{Returns over variable cost}}{\text{Variable cost}}$$

$$\text{Benefit cost ratio (at total cost)} = \frac{\text{Returns over total cost}}{\text{Total cost}}$$

RESULTS AND DISCUSSION

Economics of cotton carding enterprise

The study highlighted that the cost of raw material for the entire entrepreneur running cotton carding with all farm categories was nil because none of the entrepreneur had purchased his own raw material. The entrepreneurs were only adding value to the customer's raw material and were found charging customer the cost of value addition. Table 1 gives the information about economics of the industry among different categories of farms. The various components of capital investment, fixed cost and total variable cost had been computed and presented in the table. The total capital investment in terms of working land i.e. (Rs. 36250), building (Rs. 26200) and equipment and machinery (Rs. 35700) of landless farmers was estimated at Rs.98150. The total fixed cost of landless farmers had been worked out as Rs. 14967. This included interest on fixed capital (Rs. 10797) and depreciation on building (Rs. 715) and machines (Rs. 3456). The total variable cost was Rs. 40391 which included the cost of raw material which was nil, charges of labour, cost of electricity and interest on variable cost amount Rs .2000, Rs. 19470 and Rs. 921 respectively per annum. The gross returns included the market price of making rajai, talai, pillow and mattresses. The gross returns of landless farmers for per annum were Rs.73780. The net returns of landless farmers were Rs. 18422 per annum per unit.

Total fixed cost of cotton carding industry per annum was Rs.16653 as against the total capital investment of Rs.106000 for the entrepreneurs with marginal farms. The items of fixed cost in the descending order of importance were interest on capital investment i.e. Rs. 12430, depreciation on building i.e. Rs. 870 and machines i.e. Rs. 3352. Out of the total variable cost, the total cost of labour (Rs. 20000) was the most important which were as high as Rs.20000. Cost of electricity/diesel/kerosene and interest on variable cost were the other items of variable cost. The variable cost for the entrepreneurs with marginal farms was Rs.49146 per annum which was highest among all other farm categories. The gross returns and net returns per annum were Rs.82275 and Rs. 16477 respectively. The total fixed cost of cotton carding industries for entrepreneurs with small farms was Rs.13714. The order of various items of fixed cost was similar to those with no land and marginal farms. Total variable cost per annum per industry was Rs.47176. The cost of raw material was the most important item of variable cost but it was nil. Human labour was Rs. 20000. The next important item after raw material was electricity charges which were Rs. 23600 and interest on variable cost was Rs. 1076. The gross return per industry per annum was Rs. 80625.

The table portrayed that entrepreneurs with semi medium farms had fixed cost of Rs.17803 per cotton carding industry per annum. The component of total fixed cost in the descending order of their magnitude was interest on capital investment, depreciation on working building and working land. Total variable cost per industry per annum was Rs.45666. The labour charges were as high as Rs 22500. Electricity charges (Rs. 22152) and interest on variable cost (Rs. 1041.25) were some of the other items of variable cost in the descending order of importance. For entrepreneurs with semi medium farms, the gross returns and net returns were Rs. 83625 and 20156 respectively.

For entrepreneurs with medium farms, the fixed cost was Rs.18251 which was highest than other five farm categories. The two components i.e. depreciation on building (Rs. 1021) and machines (Rs. 3420) were found to have highest value as compared to the other farm categories. Total variable cost per annum per industry was recorded highest for entrepreneurs with medium farms than other farm categories and was Rs.39334. The important items of variable cost were charges of labour (Rs. 20000), electricity (Rs. 18437) and interest on variable cost (Rs. 897). The gross returns were accounted to the tune of Rs.

89687 and were highest in the categories of entrepreneurs.

Table 1 Economics of cotton carding enterprises in Punjab (Rs.)

Particulars	Landless	Marginal	Small	Semi medium	Medium	Overall
A. Capital Investment						
1. Land	36250	44250	52500	48750	57750	47900
2. Building	26200	36500	35000	37500	36800	34400
3. Various machines	35700	25250	24000	23250	28250	27290
Total	98150	106000	111500	109500	122800	109590
B. Fixed Cost						
1. Interest on capital investment @ 11% P.A.	10797	12430	9058	13393	13811	11898
2. Depreciation on building @2% P.A.	715	870	1350	1103	1020	1012
3. Depreciation on machinery @ 10% P.A	3456	3353	3306	3308	3420	3368
Total Fixed Cost	14967	16653	13714	17803	18258	16277
C. Variable Cost						
1. Labour Charges	20000	20000	22500	22500	20000	21000
2. Electricity/Diesel/Cost	19470	28025	23600	22125	18438	22332
3. Interest on variable cost @7% P.A	921	1121	1076	1041	897	1011
Total Variable Cost	40391	49146	47176	45666	39334	44343
Total Cost (B+C)	55358	65798	60890	63469	57585	60620
D. Gross Return (price*qty.)	73780	82275	80625	83625	89687	81998
E. Net Return (D-B-C)	18422	16477	19735	20156	32102	21378

Returns and costs incurred on all the farm categories of entrepreneurs

Table 2 reveals that the average variable cost was higher than the average fixed cost. The returns over variable cost and returns over total cost were highest i.e. Rs.50353 and Rs. 32102 for entrepreneurs with medium farms per annum per industry respectively. For entrepreneurs with semi medium farm, the gross returns was as high as Rs. 83625 per annum per industry, yet net returns were found Rs. 20156 which were lowest as compared entrepreneurs in to medium farm categories. This was because higher total cost later resulted in lower returns. Again, returns over variable cost and returns over total cost were found lowest in case of marginal entrepreneur with size of farm as compared to others. It was Rs.33389, 33130, 3344, 37959 and 50352 per annum per industry for entrepreneurs in landless, marginal, small, semi medium and medium farm categories respectively.

Table 2 : Returns and costs incurred on all the farm categories of cotton carding entrepreneurs (Rs.)

Particulars	Landless	Marginal	Small	Semi medium	Medium	Overall
Gross Return	73780	82275	80625	83625	89687	81998
Fixed cost	14967	16653	13714	17803	18258	16277
Variable cost	40391	49146	47176	45666	39334	44343
Total Cost	55358	65798	60890	63469	57585	60620
Return over variable cost	33389	33130	33449	37959	50353	37656
Return over Total cost	18422	16477	19735	20156	32102	21378

Economic Evaluation

To test the worthiness of the investment on cotton carding industries enterprise, Break-Even quantity (BEQ) and Payback period was studied. It can be seen from the table 3 that BEQ was found highest in case of entrepreneurs in medium farm category i.e. 37.10 per piece like *rjai*, *tlai*, mattresses etc per annum per industry and was found lowest in case of

entrepreneurs in small farm category which was 26.85 commodity per annum per industry. On an average, BEQ as percentage of actual yield crushed was 33.33 per cent. It was concluded that the present value of was more than the quantity which was required for the survival if cotton carding industries among different farm categories.

The initial capital investment in cotton carding enterprise was Rs. 98150, Rs. 106000, Rs. 111500, Rs. 109500 and Rs. 122800 for entrepreneurs in landless, marginal, small, semi medium and medium farm categories respectively. It was observed that payback period on an average was 6.17 for the investment of this enterprise. However, it was 5.48 years for entrepreneurs in landless, 6.91 years for marginal, 5.82 years for small, 6.04 years for semi medium and 6.64 years and 6.17 years for medium farm sizes to cover their investment. Increase in investment with increase in the size of fiber enterprise might be responsible for the longer payback period of the enterprise.

Table 3: Economic Evaluation of cotton carding enterprises in Punjab (qtls.)

Particulars	Landless	Marginal	Small	Semi medium	Medium	Overall
Actual quantity	688.80	690.00	780.00	750.00	747.00	731.16
Break even Quantity	30.79	35.15	26.85	36.77	37.10	33.33
BEQ as % of actual quantity	4.47	5.09	3.44	4.90	4.96	4.57
Quantity above BEQ	658.01	654.85	753.15	713.23	709.9	697.82
Payback period (years)	5.48	6.91	5.82	6.04	6.64	6.17

Input-Output Relationship

An attempt had been made to find out rate of income in related to investment Table 4 presents the different rates of output /benefit in relation to different types of cost concepts. It was clear from the table that by investing one rupee on fixed and variable resources, an amount of Rs. 1.34 on an average in Punjab as is indicated by output-capital ratio. This showed that there was net earnings of rupee 0.32 which came to be 24.47 per cent of total earning and remaining 75.53 per cent was the total cost on an average in Punjab. The output-capital ratio was worked out to be 1.34, 1.25, 1.34, 1.32 and 1.37 of cotton carding enterprise for entrepreneurs in different farm categories in Punjab. Out of their gross return per rupee invested, 25.37, 20, 25.37, 24.24 and 27 per cent were the net return per rupee while the remaining 74.63, 80, 74.63, 75.76 and 73 per cent came to be total cost (fixed + variable cost) for cotton carding enterprise in the different farm categories in Punjab. In Punjab on an average, the share of fixed cost in capital output ratio was lower i.e. 27.03 per cent as compared to the share of variable cost i.e. 73.41 per cent in cotton carding enterprise.

Table 4: Input Output relationship of cotton carding enterprises in Punjab

Particulars	Landless	Marginal	Small	Semi medium	Medium	Overall
Output-capital ratio	1.34	1.25	1.34	1.32	1.37	1.34
Benefit cost ratio (at variable cost)	0.84	0.68	0.71	0.83	1.01	0.81
Benefit cost ratio(at total cost)	0.34 (25.37)	0.25 (20.00)	0.34 (25.37)	0.32 (24.24)	0.37 (27.00)	0.32 (24.47)
share of fixed cost on capital output ratio	0.37 (27.62)	0.32 (25.60)	0.29 (21.64)	0.37 (28.03)	0.44 (32.11)	0.35 (27.03)
Share of Variable Cost in capital output Ratio	0.97 (72.38)	0.93 (74.40)	1.05 (78.35)	0.95 (71.96)	0.96 (70.07)	0.97 (73.41)

CONCLUSION

The study found that there was less cotton carding units in the villages. As a small unit or agro based industry it can help people to earn their livelihood therefore, the government may take some relief measures for setting up of agro-based industries in the villages to promote employment and income. There was a strong need to encourage investment in village areas. Suitable marketing strategies were required to improve sales. For the growth of village economy, there was a need to ensure that production of goods those actually took place on sustainable basis so that the main objective of generating employment opportunities for the rural poor was achieved.

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