

## Economics of Jamdani Handloom Product of Phulia in Nadia District of West Bengal

Chittaranjan Das\*

Assistant Professor of Commerce, V.S. Mahavidyalaya, Manikpara, Paschim Medinipur, West Bengal

### Abstract

*Jamdani sharee manufacturing has a long tradition of repute and excellence as a handicraft. Being a labour intensive handloom product it is produced with small amount of capital with substantial value addition. The present study seeks to examine the economics of Jamdani handloom product and labour process of production of jamdani cotton handloom product. Both gross profitability and net profitability in this industry are substantial for the independent units while gross income generated for the artisans working under different production organization is significant for livelihood. Variation in profitability across independent units and tied units is significantly explained by both labour productivity and capital productivity while that in units under cooperatives by capital productivity alone. For the industrial units taken together (60 units) across the three production organizations the profitability variation is explained by labour productivity, capital productivity and type of production organization. Production organization emerges as more significant than either labour productivity and capital productivity to explain the variation in profitability across the industrial units working under different production organizations.*

**Keywords:** employment, handloom, gross profitability, labour productivity, production organization.

### 1. Introduction

Handloom is one of the oldest cottage industries in West Bengal and from the past it is a key element of state's economy. The Handloom Census of 1987-88 indicated West Bengal population of handloom weavers at 1246005, with 3,38,499 looms. Of this, almost 23% were members of the poorer and relatively disadvantaged Scheduled Castes (SC). Amongst the population of weavers almost 80% worked on a full-time basis as weavers, and the industry provided direct employment to 304845 persons.

As per census conducted by the Ministry of Textiles, Govt of India in 1995-96, in West Bengal there are 3,50,994 handlooms providing direct and indirect employment to about 6,66,514 persons. By the end of 2001-2002, 1, 83,628 handlooms were registered under 2203 working co-operative societies.

'Jamdani' – may be considered as a *textile of excellence* for its super fine qualities in the fifteenth & sixteenth centuries. Excellence in weaving lies in the virtuosity of forms drawn from the social, religious and natural environment and translated through a particular technique and the weaver's sensitivity to create a new art form. The motion of layout of *Jamdani* fabrics are directly woven on loom by traditional weavers from their hereditary skill, experience and talent. Traditional *Jamdani* motive are of geometric in concept, adopted from local flowers, birds, leaves, zig-zag lines, and so on by the weavers who improved and evolved a directory of design of "Dacca Gharana" These designs have its nomenclature *Hazar-buti*, *Chand*, *Tara-buti*, *Dora-*

\* Research Scholar, Dept. of Economics with Rural Development, Vidyasagar University, Midnapore, West Bengal.

*kata' Dabutar- khop, Rose-leaf* etc. Traditional *jamdani* sharees with geometrical designs are very popular and continue to be woven by weavers originally migrated from Bangladesh. Being light they are excellent for everyday wear in a tropical country like India.

Phulia is one of the place in Santipur Block of Nadia district. Area of Phulia is 142.29 square kilometer. As per Census 2001, population of Phulia was 51,162. It is popular for good quality handloom production particularly in *Jamdani* sharees. It has a good cultural and social tradition as a centre of handloom production that's why government of India selected this area for handloom cluster. Estimated number of looms at Phulia and its adjoining area was 12000<sup>3</sup>.

Against this brief historical backdrop the present note sets the following objectives for itself.

## 2. Objectives of the Study

The objectives of the study are as follows:

- i) To examine the labour process of production of *jamdani* cotton handloom product, and
- ii) To examine the economics of *jamdani* handloom units under different production organizations of the industry, namely independent, tied to mahajan and cooperative, and

## 3. Methodology

We selected randomly twenty *jamdani* handloom household units from each organization of production namely independent (Ind), cooperative (Copt.) and tied to mahajan . The relevant data on employment, capital, production, and profit were collected from the sample units. The reference period of the study is 2009. Simple statistical tools like mean, standard deviation and coefficient of variation have been used to analyse the data.

## 4. Labour Process of Cotton *Jamdani* sharee

Marx discussed the labour process, the activity of production, in general terms as a process of producing use values (Brewer, 1984) and analyzed the labour process "independently of the particular form it assumes under given social conditions" (Marx, 1867: 173). He defines labour process as "human action with a view to the production of use-values, appropriation of natural substances to human requirements; it is the necessary condition for effecting exchange of matter between man and nature" (Marx, 1867). To him, the labour process is not a peculiarity of capitalism; it is a basic inevitable condition for human existence. Human beings, having imagination, interact with material world in a purposive way so that their imagination is reflected in an object at the end of every labour process. The labour process is composed of three elements<sup>2</sup>: (a) personal activity of man, that is work itself, (b) the subject of that work (raw materials), and (c) the instruments of labour (Marx, 1878). This is abstract of the labour process. The labour process should here be rightly called the social labour process because the knowledge of the processes is part of social tradition (Childe, 1964).

Sau, (2005), distinguished three stages or modes in the organization of the labour process (i) putting-out system, (ii) manufacture, and (iii) modern industry. Labour process in handloom under a putting –out system where the instruments of production are owned / processed by the artisan, and the merchant capitalist advances the circulating capital (the wage fund and raw materials). The artisan, working with his/her instruments, effects an alteration, designed from the commencement, in the materials worked upon. The core of the artisan's instruments is the tool, which directly

---

<sup>3</sup> Source:- Focused Group Discussion with WSC, HDO & Cluster Actors

<sup>2</sup> See Singh (1990), The Political Economy of Unorganised Industry, P.20.

interacts the material to change its shape. Although there is alienation from the product of one's labour, it is the artisan who decides when to work and how much to work.

The labour process of cotton *jamdani* sharee can be divided into following stages:

- i) **Bleaching & Dyeing:** At first, the cotton yarns are bleached with Bleaching Powder. There after various types of dyes are used for colouring the yarns. Types of dyes depending on nature of the colour and dyeing cost paid by master weavers and Mahajans. The bleached and dyed yarns are dried in sun light putting on bamboo bars.
- ii) **Sizing:** In this stage sago or Boiled Rice or *khoi* is coated on the warp yarns that reduces the yarn breakage and improves quality and efficiency of weaving.
- iii) **Warping and Beaming:** The warping is the next stage of making desired length and width of warp sheet by combining many bobbins. After that transferring of warp sheet to a weavers beam to mount on loom is called beaming. The length of the warping generally varies from 20 to 40 sharees.
- iv) **Pirn Winding:** In this process weft yarns are transferring from hanks into bobbin/pirn of the shuttles by use of hand Charkha and the pirn is used for weaving.
- v) **Designing:** Designing through jacquard is the most important activity that creates attractiveness and beauty of sharee. Innovative designs are collected from various sources by the cooperative societies / mahajans and converts into jacquard designs.
- vi) **Weaving:** The weaving is performed by the skilled weavers of the family or hired weavers. The looms being used are mainly traditional fly shuttle pit looms with jacquards.

Apart from the, above mentioned major steps are involved along with the use of both skilled and unskilled labourers in the production process, viz. bleaching & dyeing, sizing, warping and beaming, pirn winding, designing, weaving and packing. Most of the units do the jobs of all steps except designing & first two steps either by household or hired workers. The larger independent units or mahajan and co-operatives generally perform the jobs of first two steps (i.e., dubbing and drying) by a set of regular hired workers at their own workshop. After dubbing and drying the fibre these entrepreneurs finish the products at their own workshops at piece rate basis as well as supply this processed raw materials to the units or artisans who are in contractual agreement with them. Similarly these units also perform some parts of the manufacturing process taking raw materials from a group of merchants or traders while these units (termed as tide units). Traders, wholesalers, middlemen and master artisans supply raw materials only at a fixed contractual payment to these units. Cooperative societies maintain managerial, supervision and marketing jobs and offer the work order to their registered artisans to perform the production at their own workshop. In contrasts of merchants, traders and master enterprises, the management of cooperatives controls the production of registered artisans. The tied and cooperatives units / artisans compete the remaining task of spinning, designing, weaving and packing on a fixed contractual rate is known as *bani*.

Artisans under cooperative have sufficient skills in the production process and also possess fixed assets (tools, looms etc.), which are treated as capital of the society. Society mainly takes the work order from the big traders at the regional, national or even at the overseas level or from government or non-government agencies and acts as marketing agency for the products. Total volume of works is distributed among the members according to their work ability. Society supplies bulk of raw materials and receives the finished products at the fixed contractual service charge (i.e., *bani rate*). In this regard, cooperative units appear akin to tied units, but there are some distinctive features of cooperative units. Artisans under cooperative enjoy a few democratic

rights to some extent regarding the product designs, product prices, service charge etc. and also earn certain amount of dividend at the end of the year. Moreover, cooperative society organizes different kinds of training and workshop to improve skill of the artisans and the quality of the products. Some benefits like bonus, festival allowances, provident fund etc. accrues to artisans, unlike tied artisans. Generally cooperative artisans produce the products at the household level with the family labour taking raw materials from the society, but a few units are also found to use the hired labourers. More than one persons of a family may be the registered members of the society and they maintained additional loom and sometimes maintain separate arrangement of looms, tools for the production under *mahajan*. Weaving time of a piece of *sharee* and unit metre depend on the quality of productions, types of fibre, design of the products and also depends on the skill of labour and accordingly *bani* rates varies across the products and labourers.

### 5. Economics of Cotton Jamdani Sharee Manufacturing

The *jamdani* is an unorganized craft product and the discussion on its economics starts with that of employment in the industry.

#### Employment

*Jamdani* constitutes petty commodity production which involves small number of workers. The number of workers engaged in this industry is classified into two categories – (i) 1-3 workers, and (ii) workers above 3. Distribution of *jamdan* sharee units by number of persons engaged shows that 62 percent of the *jamdani* sharee producing handloom very tiny units belong to the first category employing number of workers ranging from 1 to 3 and rest 38 percent tiny units belong to the second category employing number of workers above 3 at Phulia in the district of Nadia. Distribution of *jamdan* sharee units by both number of persons employed and type of production organization shows that 55 percent independent units belong to the second category employing more than 3 workers while most of the units under cooperative (65 percent) belong to the first very tiny category engaging 1 to 3 workers. 75 percent of the tied units belong to this category in respect of workers engaged (Table 1).

**Table 1 Distribution of Handloom Units by Number of Workers and by Type of Production Organization**

Organization	Number of units by number of persons employed		Total number of units
	1 to 3	Above 3	
Independent	9(45.00)	11(55.00)	20(100)
Cooperative	13(65.00)	7(35.00)	20(100)
Tied to <i>Mahajan</i>	15(75.00)	5(25.00)	20(100)
Total	<b>37(61.67)</b>	<b>23(38.33)</b>	<b>60(100)</b>

Source: Field Survey Note: Parentheses represent percentage share

Most of the very tiny units producing *jamdani* sharee work with family labour and hence number of hired workers is very low or even zero. Distribution of *jamdani* sharee units by number of hired workers and by type of production organization shows that 60 percent of the total sample units does not employ hired worker and the rest 40 percent units employ number of hired workers ranging from 1 to 2. Distribution of *jamdani* sharee units by number of hired workers and by type of production organization shows that most of the independent units (65 percent) belong to the

second category employing 1 to 2 hired workers while most of the units under cooperative (70 percent) and tied (75 percent) belong to the first very tiny category does not employ hired worker (Table 2).

**Table 2 Distribution of Handloom Units by Number of Hired workers Employed and by Type of Production Organization**

Organization	Number of units by number of hired workers employed		Total number of Units
	0	1 to 2	
Independent	7(35.00)	13(65.00)	20(100)
Cooperative	14(70.00)	6(36.00)	20(100)
Tied to <i>Mahajan</i>	15(75.00)	5(25.00)	20(100)
Total	<b>36(60.00)</b>	<b>24(40.00)</b>	<b>60(100)</b>

Source: Field Survey Note: Parentheses represent percentage share

The artisans are mostly engaged in this industry throughout the year. The number of working days in the year is classified into two categories – (i) upto 300 working days, and (ii) above 300 working days. Distribution of *jamdani* sharee units by number of working days in the year shows that 60 percent of the *jamdani* sharee producing handloom units belong to the first category having number of working days upto 300 days, and rest 40 percent units belong to the second category having number of working days more than 300 at Phulia in the district of Nadia. Distribution of *jamdani* sharee units by both number of working days in the year and type of production organization shows that most of the independent units (75 percent) belong to the first category having working days upto 300 days while most of the tied units belong to the second category having number of working days more than 300. Sixty percent of the units under cooperative belong to the first category having number of working days upto 300 days (Table 3).

**Table 3 Distribution of Handloom Units by Average Working Day in the Year and by Type of Production Organization**

Organization	Number of units by number of working days in the year		Total number of units	Average working day	CV (%)
	Upto 300 days	Above 300 days			
Independent	15(75.00)	5(25.00)	20(100)	293.7	2.90
Cooperative	12(60.00)	8(40.00)	20(100)	297.67	3.32
Tied to <i>Mahajan</i>	9(45.00)	11(55.00)	20(100)	300.75	4.32
Total	<b>36(60.00)</b>	<b>24(40.00)</b>	60(100)	293.7	2.91

Source: Field Survey Note: Parentheses represent percentage share

### **Capital**

Small amount of fixed capital is invested in *jamdani* units. The amount of fixed capital invested in this industry is classified into three categories – (i) upto Rs 15,000, (ii) above 15,000 but below Rs

25,000 and (iii) fixed capital above Rs. 25,000. Distribution of *jamdani* sharee units by amount of fixed capital investment shows that 43 percent of the *jamdani* sharee producing handloom very tiny units belong to the first category invested amount of fixed capital upto Rs 15,000 whereas 12 percent tiny units belong to the second category invested amount of fixed capital more than Rs 15,000 to Rs. 25,000 and the rest 45 percent small units belong to the third category invested amount of fixed capital more than Rs. 25,000 in Nadia district. Distribution of *jamdani* sharee units by both amount of fixed capital used per unit and type of production organization shows that most of the units under cooperative (55 percent) and units tied to mahajan (60 percent) belong to the first category invested amount of fixed capital upto Rs 15,000 while most of the independent units (75 percent) belong to the third category invested amount of fixed capital more than Rs 25,000 (Table 4).

**Table 4 Distribution of Handloom Units by Amount of Fixed Capital Used Per unit and by Type of Production Organization** (Rs.000)

Organization	Number of units by amount of fixed capital used per unit			Total number of units	Average Fixed Capital (Rs.)	CV (%)
	Upto 15	15.1 to 25	Above 25			
Independent	3(15.00)	2(10.00)	15(75.00)	20(100)	30.33	35.41
Cooperative	11(55.00)	0(0.00)	9(45.00)	20(100)	20.14	43.57
Tied to Mahajan	12(60.00)	5(25.00)	3(15.00)	20(100)	16.97	34.20
Total	26(43.33)	7(11.67)	27(45.00)	60(100)	22.48	45.76

Source: Field Survey Note: Parentheses represent percentage share

#### **Capital intensity**

Fixed capital intensity is measured by the ratio of fixed capital to the number of labourers employed in the manufacturing units.<sup>4</sup> Capital intensity in handloom industry is very low as in other traditional industries<sup>5</sup>. The amount of capital intensity in this industry is classified into two categories – (i) Upto Rs 8, 000 and (ii) Above Rs 8,000. Distribution of *jamdani* sharee units by amount of fixed capital investment per worker shows that 75 percent of the total sample units belong to the first category having amount of fixed capital investment per worker of Rs 8,000 or below, and the rest 25 percent units belong to the second category having more than Rs. 8,000 in Phulia of Nadia district. Distribution of *jamdani* sharee units by both amount of fixed capital investment per worker and type of production organization shows that most of the independent units (55 percent) belong to the second category having amount of fixed capital investment per worker more than Rs. 8,000 while most of the units under cooperative (85 percent) belong to the first category having amount of fixed capital per worker of Rs.8,000 or below. Ninety five percent of the tied units belong to this category in respect of amount of fixed capital investment per worker. Amount of average fixed capital invested per worker registers highest (Rs. 8,289) in case independent organization followed by cooperative and tied organizations (Table 5).

<sup>4</sup> See also Q.K. Ahmad & M.U.Ahmad (1985), “ A review of Rural Non-Farm Economic Activities in Bangladesh” in Mukherjee & Lim (ed), *Development and Diversification of Rural Industries in Asia*. APDC, pp. 86-87.

<sup>5</sup> R. Islam (1987) *Rural Industrialization and employment in Asia*, ILO-ARTEP, pp.10-11

**Table 5 Distribution of Handloom Units by Amount of Fixed Capital used per worker and by Types of Production Organization**

Organization	Number of Units by amount of fixed capital used per worker		Total number of units	Average Fixed Capital (Rs.)	CV (%)
	Upto Rs 8,000	Above Rs 8,000			
Independent	9(45.00)	11(55.00)	20(100)	8289.17	15.36
Cooperative	17(85.00)	3(15.00)	20(100)	6920.83	12.30
Tied to Mahajan	19(95.00)	1(5.00)	20(100)	6475.83	16.09
Total	<b>45(75.00)</b>	<b>15(25.00)</b>	60(100)	7228.61	18.09

Source: Field Survey Note: Parentheses represent percentage share

Total capital intensity is also small in the units as fixed capital is a major part of total capital. It is measured by the ratio of total capital to the number of labourers employed in the manufacturing units. The amount of capital intensity in this industry is classified into two categories – (i) Upto Rs 12, 000 and (ii) Above Rs 12,000. Distribution of *jamdani* sharee units by amount of total capital investment per worker shows that 73 percent of the total sample units belong to the first category having amount of total capital investment per worker of Rs.8,000 or below and the rest 27 percent units belong to the second category having more than Rs.8,000 in Nadia district. Distribution of *jamdani* sharee units by both amount of total capital investment per worker and type of production organization shows that most of the independent units (60 percent) belong to the second category having amount of total capital investment per worker more than Rs. 8,000 while most of the units under cooperative (85 percent) belong to the first category having amount of total capital per worker of Rs. 8,000 or below. Ninety five percent of the tied units belong to this category in respect of amount of total capital investment per worker. Amount of average total capital investment per worker registers highest (Rs. 12570) in case independent organization followed by cooperative and tied organizations (Table 6).

**Table 6 Distribution of Handloom Units by Value of Total Capital (K) per Worker and by types of Production Organization (Rs.000)**

Organization	Number of Units by amount of total capital used per worker		Total number of units	Average Total Capital	CV (%)
	Upto.12	Above 12			
Independent	8(40)	12(60)	20(100)	12.57	13.18
Cooperative	17(85)	3(15)	20(100)	10.27	10.57
Tied to Mahajan	19(95)	1(5)	20(100)	9.62	14.45
Total	<b>44(73.33)</b>	<b>16(26.67)</b>	60(100)	10.82	17.33

Source: Field Survey Note: Parentheses represent percentage share

### Output

Most of the *jamdani* sharee units produce small annual value of output. The annual value of output is classified into three categories – (i) up to Rs 1.5 lakh, (ii) Rs 1.51 lakh to Rs 3.0 lakh and (iii) above Rs. 3.0 lakh. Distribution of *jamdani* sharee units by amount of annual value of output

shows that 48 percent units of the total sample units (60) belong to the first category having annual value of output amounting to Rs. 1.5 lakhs or less, whereas 35 percent units belong to the second category having annual value of output amounting more than Rs 1.5 lakhs to Rs 3 lakhs and rest 17 percent belong to the last category having annual value of output amounting more than Rs 3 lakhs in the district of Nadia. Distribution of *jamdani* sharee units by both annual value of output and type of production organization shows that 80 percent independent units belong to second category and third category having annual value of output amounting more than Rs 1.5 lakhs while most of the units under cooperative (55 percent) belong to the first category having annual value of output amounting to Rs 1.5 lakhs and less. 70 percent of the tied units belong to this category having annual value of output amounting to Rs 1.5 lakhs and less. Estimated average annual value of output (Vo) per unit is highest Rs. 2.85 lakhs in case of independent units followed by cooperative units and tied units (Table 7).

**Table 7 Distribution of Handloom Units by Value of Output per Unit and by types Production Organization** (Rs. in lakh)

Organization	Number of units by value of output per unit			Total number of units	Average Vo	CV (%)
	Upto 1.5	1.51 to 3.0	Above 3.0			
Independent	4(20.00)	7(35.00)	9(45.00)	20(100)	2.85	<b>37.24</b>
Cooperative	11(55.00)	8(40.00)	1(5.00)	20(100)	1.63	<b>38.84</b>
Tied to Mahajan	14(70.00)	6(30.00)	0(0.00)	20(100)	1.40	<b>35.31</b>
Total	29(48.33)	21(35.00)	10(16.67)	60(100)	1.96	<b>50.67</b>

Source: Field Survey Note: Parentheses represent percentage share

**Value Addition**

Most of the *jamdani* sharee units produce also small annual value added. The annual value value addition is classified into three categories – (i) upto Rs 1 lakh, (ii) more than Rs 1 lakh to Rs 1.5 lakh and (iii) above Rs 1.5 lakh. Distribution of *jamdani* sharee units by amount of annual value added shows that 48 percent units of the total sample units (60) belong to the first category having annual value added amounting to Rs. 1 lakh or less, whereas 25 percent units belong to the second category having annual value added amounting more than Rs 1 lakh to Rs 1.5 lakhs and rest 27 percent belong to the last category having annual value added amounting more than Rs 1.5 lakhs in the district of Nadia. Distribution of *jamdani* sharee units by both annual value added and type of production organization shows that 70 percent independent units belong to third category having annual value added amounting more than Rs 1.5 lakhs while most of the units under cooperative (55 percent) belong to the first category having annual value added amounting to Rs 1 lakh and less. 70 percent of the tied units belong to this category having annual value added amounting to Rs 1 lakh and less. Estimated average annual value added (Va) per unit is highest Rs. 1.84 lakhs in case of independent units followed by cooperative units and tied units (Table 8).



**Table 8 Distribution of Handloom Units by Annual Value Added (Va) Per Unit and by Type of Production Organization**  
(Rs. in lakh)

Organization	Number of units by value added			Total number of units	Average (Va)	CV (%)
	Upto 1.0	Above 1.0 to 1.5	Above 1.5			
Independent	4(20.00)	2(10.00)	14(70.00)	20(100)	1.84	<b>37.42</b>
Cooperative	11(55.00)	7(35.00)	2(10.00)	20(100)	1.01	<b>40.16</b>
Tied to Mahajan	14(70.00)	6(30.00)	0(0.00)	20(100)	0.86	<b>35.66</b>
Total	<b>29(48.33)</b>	<b>15(25.00)</b>	<b>16(26.67)</b>	60(100)	1.24	<b>52.43</b>

Source: Field Survey Note: Parentheses represent percentage share

**Income:**

Most of the artisans' monthly income is low from this industry. The artisans' monthly income in this industry is classified into three categories – (i) upto Rs 3000, (ii) Rs 3001 to Rs 4000 and (iii) above Rs 4000. Distribution of *jamdani* sharee units by amount of monthly income from this industry shows that 18 percent units of the total sample units (60) belong to the first category having monthly income per artisan amounting to Rs. 4,000 and less, whereas 45 percent units belong to the second category having monthly income amounting more than Rs 3,000 to Rs 4,000 artisan and rest 37 percent units belong to the last category having monthly income amounting more than Rs 4,000 per artisan in Nadia district. Distribution of *jamdani* sharee units by both monthly income per artisan and type of production organization shows that most of the independent (75 percent) units belong to the third category having monthly income per artisan amounting more than Rs 4,000 while most of the units under cooperative (70 percent) belong to the first category and second category having monthly income per artisan amounting to Rs 4,000 and less. Ninety five percent of the tied units belong to the first two categories having monthly income per artisan amounting to Rs 4,000 and less in respect of monthly income per artisan. Estimated average monthly income generated per artisan from this industry is highest Rs. 4776 in case of independent units followed by cooperative units and tied units (Table 9).

**Table 9 Distribution of Handloom Units by Average Monthly Income per Weaver (30days of 8 hrs) from Handloom Weaving and by Type of Production Organizations** (Rs)

Organization	Number of units by monthly income per weaver			Total number of units	Average (Rs.)	CV (%)
	Upto 3000	3001 to 4000	Above 4000			
Independent	0(0.00)	5(25.00)	15(75.00)	20(100)	4776.17	20.09
Cooperative	5(25.00)	9(45.00)	6(30.00)	20(100)	3667.52	17.53
Tied to Mahajan	6(30.00)	13(65.00)	1(5.00)	20(100)	3308.70	18.47
Total	11(18.33)	27(45.00)	22(36.67)	60(100)	3917.46	24.84

Source: Field Survey Note: Parentheses represent percentage share

**Labour productivity:**

Labour productivity is measured in terms of (i) value of output (Vo) per man-day (md) and (ii) value added (Va) per man-day (md), i.e., Vo / md and Va / md. Most of the independent units

produce higher value of output. The amount of annual value of output per man-day (Vo/md) in this industry is classified into two categories – (i) upto Rs. 225 and (ii) above Rs 225. Distribution of *jamdani* sharee units by amount of annual value of output per man-day (Vo/md) shows that 53 percent units of the total sample units (60) belong to the first category having annual value of output per man-day (Vo/md) amounting to Rs. 225 and less, whereas rest 47 percent units belong to the second category having annual value of output per man-day (Vo/md) amounting more than Rs 225 in Nadia district. Distribution of *jamdani* sharee units by both annual value of output per man-day (Vo/md) and type of production organization shows that most of the independent (95 percent) units belong to the second category having annual value of output per man-day (Vo/md) amounting more than Rs 225 while most of the units under cooperative (65 percent) belong to the first category having annual value of output per man-day (Vo/md) amounting to Rs 225 and less. Ninety percent of the tied units belong to the first category in respect of amount of annual value of output per man-day (Vo/md) amounting to Rs 225 and less. Estimated average annual value of output per man-day (Vo/md) is highest (Rs. 251) in case of independent units followed by cooperative units and tied units (Table 10).

**Table 10 Distribution of Handloom units by Value of Output per Man-day (Vo/md) and by Type of Production Organizations**

Organization	Number of units by value of output per manday		Total number of units	Average (Rs)	CV (%)
	Upto Rs. 225	Above Rs 225			
Independent	1(5.00)	19(95.00)	20(100)	251	3.66
Cooperative	13(65.00)	7(35.00)	20(100)	227	3.22
Tied to <i>Mahajan</i>	18(90.00)	2(10.00)	20(100)	214	3.24
Total	32(53.33)	28(46.67)	60(100)	231	7.53

Source: Field Survey Note: Parentheses represent percentage share

Most of the independent units produce higher value added than tied or cooperative units. The annual value added per man-day (Va/md) in this industry is classified into two categories – (i) upto Rs.145 and (ii) above Rs 145. Distribution of *jamdani* sharee units by amount of annual value added per man-day (Va/md) shows that 57 percent units of the total sample units (60) belong to the first category having annual value added per man-day (Va/md) amounting to Rs. 145 and less, whereas rest 43 percent units belong to the second category having annual value added per man-day (Va/md) amounting to more than Rs 145 in Nadia district. Distribution of *jamdani* sharee units by both annual value added per man-day (Va/md) and type of production organization shows that most of the independent (95 percent) units belong to the second category having annual value added per man-day (Va/md) amounting more than Rs 145 while most of the units under cooperative (75 percent) belong to the first category having annual value added per man-day (Va/md) amounting to Rs 145 and less. Ninety percent of the tied units belong to this category in respect of annual value added per man-day. Estimated average annual value added per man-day (Va/md) is highest (Rs. 162) in case of independent units followed by cooperative units and tied units (Table 11).

**Table 11 Distribution of Handloom units by Value added per man-day (Va/md) and by Type of Production Organizations**

Organization	Number of units by value added per manday		Total number of units	Average (Rs)	CV (%)
	Upto Rs.145	Above Rs 145			
Independent	1(5.00)	19(95.00)	20(100)	162	5.18
Cooperative	15(75.00)	5(25.00)	20(100)	141	5.56
Tied to <i>Mahajan</i>	18(90.00)	2(10.00)	20(100)	132	4.99
Total	34(56.67)	26(43.33)	60(100)	145	10.00

Source: Field Survey Note: Parentheses represent percentage share

**Capital Productivity:**

Capital productivity measured in terms of value of output (Vo) or value added (Va) per unit of fixed capital (Fk) has been shown in table 12 and 13. The amount of annual value of output per unit of fixed capital (Vo/Fk) in this industry is classified into three categories – (i) upto Rs. 6, (ii) Rs 6.1 to 7 and (iii) above Rs 7. Distribution of *jamdani* sharee units by annual value of output per unit of fixed capital (Vo/Fk) shows that 31 percent units of the total sample units (60) belong to the first category having annual value of output per unit of fixed capital (Vo/Fk) amounting to Rs. 6 and less, whereas 31 percent units belong to the second category having annual value of output per unit of fixed capital (Vo/Fk) amounting more than Rs 6 to Rs 7 and rest 37 percent units belong to the third category having annual value of output per unit of fixed capital (Vo/Fk) amounting to more than Rs 7 in Nadia district. Distribution of *jamdani* sharee units by both annual value of output per unit of fixed capital (Vo/Fk) and type of production organization shows that most of the independent (60 percent) units belong to the third category having annual value of output per unit of fixed capital (Vo/Fk) amounting to more than Rs 7 while most of the units under cooperative (75 percent) belong to the first category and second category having annual value of output per unit of fixed capital (Vo/Fk) amounting less than Rs 7. Fifty percent of the tied units belong to the first category in respect of annual value of output per unit of fixed capital. Estimated average annual value of output per unit of fixed capital (Vo/Fk) is highest (Rs. 7.19) in case of independent units followed by cooperative units and tied units (Table 12).

**Table 12 Distribution of Handloom units by Value of Output per Unit of Fixed Capital (Vo/Fc) and by Type of Production Organizations**

Organization	Number of units by Vo/Fc		Total number of units	Average (Rs)	CV (%)
	Upto Rs.9	Above Rs. 9			
Independent	7(35.00)	13(65.00)	20(100)	9.41	11.73
Cooperative	13(65.00)	7(35.00)	20(100)	8.31	11.15
Tied to <i>Mahajan</i>	14(70.00)	6(30.00)	20(100)	8.28	13.27
Total	34(56.67)	26(43.33)	60(100)	8.67	13.33

Source: Field Survey Note: Parentheses represent percentage share

The annual value added per unit of fixed capital (Va/Fk) in this industry is classified into three categories – (i) upto Rs.5, (ii) Rs 5.1 to 6 and (iii) above Rs 6. Distribution of *jamdani*

sharee units by amount of annual value added per unit of fixed capital (Va/Fk) shows that 35 percent units of the total sample units (60) belong to the first category having annual value added per unit of fixed capital (Va/Fk) amounting to Rs. 5 and less, whereas 42 percent units belong to the second category having annual value added per unit of fixed capital (Va/Fk) amounting more than Rs 5 to Rs 6 and rest 23 percent units belong to the third category having annual value added per unit of fixed capital (Va/Fk) amounting more than Rs 6 in Nadia district. Distribution of *jamdani* sharee units by both annual value added per unit of fixed capital (Va/Fk) and type of production organization shows that 50 percent of independent units belong to the third category having annual value added per unit of fixed capital (Va/Fk) amounting more than Rs 6 while most of the units under cooperative (90 percent) belong to the first category and second category having annual value added per unit of fixed capital (Va/Fk) amounting less than Rs 6. Ninety percent of the tied units belong to the first and second category in respect of annual value added per unit of fixed capital (Va/Fk). Estimated annual value added per unit of fixed capital (Va/Fk) is highest (Rs. 6.05) in case of independent units followed by cooperative units and tied units (Table 13).

Now we explain the variation in labour and capital productivity across production organizations. Capital intensity of independent units is higher than that of the cooperative units and tied units. So, there is a positive relationship between productivity and capital intensity<sup>6</sup>. Higher the capital intensity better the technology and hence higher productivity<sup>7</sup>. Besides, larger independent units employ hired worker on piece rate basis so that they can avoid supervision cost. Hired workers generally want to maximize wage income through the minimization of idle working hours in the form of contractual agreements. Hired workers are ready / bound to accept even lower than the subsistence wage rate due to their low opportunity cost, especially in agricultural slack season. So, hired workers are getting wage rate below their contribution to the total product. Petty independent, cooperative and tied units mainly depend on the household labourers and these household labourers work simultaneously with other household activities and it takes normally longer hour. Among the household workers, there is considerable participation of female and child labourers who have much lower opportunity cost even in the agricultural peak season. Both cooperative and tied weavers have very little scope to produce the types of product and design of the product in accordance their own choice which has growing demand in the market. Cooperative units are akin to tied weavers artisan.

**Table 13 Distribution of Handloom units by Value added per Unit of Fixed Capital Used (Va/Fc) and by Type of Production Organizations**

Organization	Number of units by Va / Fc (Rs)			Total number of units	Average (Rs)	CV (%)
	Upto 5	5.1 to 6	Above 6			
Independent	3(15.00)	7(35.00)	10(50.00)	20(100)	6.05	11.62
Cooperative	8(40.00)	10(50.00)	2(10.00)	20(100)	5.16	11.42
Tied to <i>Mahajan</i>	10(50.00)	8(40.00)	2(10.00)	20(100)	5.12	13.66
Total	21(35.00)	25(41.67)	14(23.33)	60(100)	5.44	14.40

Source: Field Survey Note: Parentheses represent percentage share

<sup>6</sup> See M. Hossain (1987), "Employment Generation through Cottage Industries: Bangladesh" in R. Islam (ed) *Rural Industrialisation and Employment in Asia*, ILO-ARTEP, pp.33-34.

<sup>7</sup> "..... size and capital intensity, and hence labour productivity, are positively related. There is no ground for this assumption in the theory of production or of the firm. It is an empirical matter." I. M. D. Little, D. Mazumdar & J. M. Page (1987), *Small Manufacturing Enterprises: A Comparative Analysis of Indian and Other Economics*, OUP, pp. 106

**Profitability:**

Profitability of sample *jamdani* units is measured in two ways – (i) gross profit per 100 rupee of sales and (ii) net profit per 100 rupee sales. Gross profit = (total sales value - total paid out cost) and Net profit = {total sales value – (total paid out cost + total imputed cost for use of own factors of production)}. Of all the three production organizations independent units represent the highest values in terms of both the indices, followed in most cases by the tied units (Table 14 and 15).

The gross profit ratio {GP/Sales (%)} in this industry is classified into three categories – (i) upto 35 percent, (ii) more than 35 to 45 percent and (iii) above 45 percent. Distribution of *jamdani* sharee units by gross profit ratio {GP/Sales (%)} shows that 20 percent units of the total sample units (60) belong to the first category having gross profit ratio amounting to 35 percent and less, whereas 63 percent units belong to the second category having gross profit ratio amounting more than 35 to 45 percent and rest 17 percent units belong to the last category having gross profit ratio amounting more than 45 percent in Nadia district. Distribution of *jamdani* sharee units by both gross profit ratio and type of production organization shows that 50 percent of independent units belong to the third category having gross profit ratio amounting more than 45 percent while all tied units and cooperative units belong to the first category and second category having gross profit ratio amounting to 45 percent and less. Estimated gross profit ratio of this industry is highest (47.34 percent) in case of independent units followed by cooperative units and tied units (Table 14).

**Table 14 Distribution Handloom Units by Gross Profit per unit of Sales (Gross Profit/sales) and by Type of Production Organizations**

Organization	Number of units by gross profit/sales (%)			Total number of units	Average (%)	CV (%)
	Upto 35	above 35 to 45	Above .45			
Independent	1(5.00)	9(45.00)	10(50.00)	20(100)	47.34	18.89
Cooperative	6(30.00)	14(70.00)	0(0.00)	20(100)	40.27	17.61
Tied to <i>Mahajan</i>	5(25.00)	15(75.00)	0(0.00)	20(100)	38.55	18.34
Total	12(20)	38(63.33)	10(16.67)	60(100)	42.05	20.28

Source: Field Survey Note: Parentheses represent percentage share

The net profit ratio {NP/Sales (%)} in this industry is classified into three categories – (i) Negative, (ii) 1-15 percent and (iii) above 15 percent. Distribution of *jamdani* sharee units by net profit ratio {NP/Sales (%)} shows that 57 percent units of the total sample units (60) belong to the first category having negative net profit ratio, whereas 28 percent units belong to the second category having net profit ratio more than 0 to 15 percent and rest 15 percent units belong to the last category having net profit ratio more than 15 percent in Nadia district. Distribution of *jamdani* sharee units by both net profit ratio and type of production organization shows that 45 percent of independent units belong to the last category having net profit ratio amounting more than 15 percent while most of the units under cooperative (70 percent) belong to the first category having negative net profit ratio. All the tied units belong to the first category having negative net profit ratio. Estimated net profit ratio of this industry is highest (13.96 percent) in case of independent units followed by cooperative units and tied units (Table 15).

**Table 15 Distribution Handloom Units by Net Profit per unit of Sales (Net Profit/sales) and by Type of Production Organizations**

Organization	Number of units by net profit/ sales (%)			Total number of units	Average (%)	CV (%)
	Negative	0 to 15	Above 15			
Independent	0(0.00)	11(55.00)	9(45.00)	20(100)	13.96	15.20
Cooperative	14(70.00)	6(30.00)	0(0.00)	20(100)	-0.87	-156.47
Tied to <i>Mahajan</i>	20(100.00)	0(0.00)	0(0.00)	20(100)	-3.18	46.10
Total	34(56.67)	17(28.33)	9(15.00)	60(100)	3.30	237.28

Source: Field Survey Note: Parentheses represent percentage share

**Table 16 F-statistic for testing the Difference of Average values in Cotton Jamdani Sharee Handloom Units in between Different Production Organizations**

	Variables	Production organization			F- statistic
		Independent	Cooperative	Tied	
1	Size of workers (number) per unit	3.65(33.58)	2.85(36.49)	2.65(33.02)	5.01 {0.010}
2	Hired workers (number) per unit	0.90(87.56)	0.30(156.72)	0.25(156.72)	7.55 {0.001}
3	Amount of fixed capital (Rs. 000) used per unit	30.33(35.41)	20.14(43.57)	16.97(34.20)	12.93 {0.000}
4	Amount of fixed capital (Rs. 000) used per weaver	8.29(15.36)	6.92(12.30)	6.48(16.09)	15.62 {0.000}
5	Amount of working capital (Rs. 000) used per unit	15.81(36.87)	9.52(36.87)	8.26(34.76)	17.99(0.000)
6	Amount of working capital (Rs. 000) used per weaver	4.28(12.52)	3.35(11.42)	3.14(14.82)	33.97(0.000)
7	Value of output per unit(Rs in lakh)	2.85 (37.24)	1.63 (38.84)	1.40(35.31)	20.73 {0.000}
8	Value added per unit (Rs in lakh)	1.84(37.42)	1.02(40.16)	0.86(35.66)	22.40 {0.000}
9	Labour productivity(Value of output per man-day)(Rs)	251.08(3.66)	227.10(3.22)	213.83(3.24)	114.95 {0.000}
10	Labour productivity(Value added per man-day)(Rs)	161.55(5.18)	141.08(5.56)	132.20(4.99)	77.57 {0.000}
11	Capital productivity (Value of output per unit of fixed capital) (Rs)	8.66(7.41)	8.25(6.72)	7.85(8.61)	8.30 {0.001}
12	Gross profit per unit (Rs. 000)	77.49(26.98)	43.56(12.20)	38.76(11.90)	54.96 {0.000}
13	Profitability (Gross profit / sales)	0.47(18.89)	0.40(17.61)	0.39(18.34)	7.21 {0.00}
14	Monthly income per weaver (Rs)	4776(20.09)	3668(17.53)	3309(18.47)	20.56 {0.000}

Source: Field Survey; Note: Figures in () represent coefficient of variation and figures in {} represent level of significance.

Average and CV (%) of different variables across production organizations are shown in Table 16. The average figures of each variable vary significantly across different types of production organizations at 1 percent level (as shown by the F statistics) except the number of workers, which varies significantly across different types of production organizations at 5 percent level. Average figures of each variable in independent units are higher than that of cooperative and tied units. In most cases Coefficients of variations in independent units are generally higher than those of tied and cooperative units.

#### Explanations for Profitability Variation

Variation in profitability across independent units and tied units is significantly explained by both labour productivity and capital productivity while that in units under cooperatives by capital productivity alone. The respective models are significant at 1 percent level (Table 17 A & B).

For the industrial units taken together (60 units) across the three production organizations the profitability variation is explained by labour productivity, capital productivity and type of production organization which has been taken as dummy variable (D) [ D = 1 for independent organization and D = 0 for otherwise]. The dummy variable, i.e., production organization emerges as more significant than either labour productivity and or capital productivity to explain the variation in profitability across the industrial units working under different production organization. All the models are significant at 1 percent level (Table 17).

**Table 17 Estimated Linear Regression Equations in case of Jamdani product**

Dependent variable	constant	Explanatory variables						R <sup>2</sup>	R <sup>-2</sup>	F	P
		M	K	D	Fk	K/M	Fk/M				
1	2	3	4	5	6	7	8	9	10	11	12
Vo	-5394.32 (-0.55)	86.885 (0.41)	5.856 (33.06)	25085.25 (4.30)	--	--	--	0.970	0.970	634.71	0.000
Vo	- 17581.81 (-0.191)	44.33 (0.146)		35562.25 (4.392)	8.389 (22.677)	--	--	0.942	0.939	305.67	0.000
Va	-571.98 (-0.141)	0.607 (.045)	0.331 (29.87)	1726.76 (4.74)	--	--	--	0.967	0.965	539.03	0.000
Va	430.55 (0.079)	3.005 (0.166)	--	2317.42 (4.814)	0.474 (21.55)	--	--	0.939	0.936	287.42	0.000
Vo/M	203.667 (23.19)	--	--	26.201 (7.631)	--	1.6E-03 (1.935)	--	0.720	0.710	73.34	0.000
Vo/M	203.06 (26.41)	--	--	26.50 (8.547)	--	--	2.5E-03 (2.30)	0.727	0.717	75.92	0.000
Va/M	123.199 (15.817)	--	--	21.36 (7.013)	--	1.3E-03 (1.745)	--	0.684	0.672	61.55	0.000
Va/m	122.025 (17.912)	--	--	21.439 (7.805)	--	--	2.1E-03 (2.179)	0.692	0.681	64.105	0.000

**Note:** Vo = Value of output (Rs 000); Va = Value added (Rs 000); M = Mandays of employment; K Total capital (Rs 000); Fk = Fixed capital (Rs 000); D = Dummy variable (1 for independent units and 0 for cooperative and tied units), GP = Gross profit.

**B**

		R <sup>2</sup>	R <sup>-2</sup>	F	P
1	GP/K = 0.784 + 6.387E-03Vo/M + 0.533D (0.508) (0.913) (2.084)	0.330	0.306	14.017	0.000
2	GP/K = 1.218 + 7.132E-03Va/M + 0.551D (1.121) (0.899) (2.277)	0.329	0.306	13.999	0.000
3	GP/K = 0.177 + 0.243Vo/Fk + 0.459D (0.373) (4.297) (3.342)	0.486	0.468	26.978	0.000
4	GP/K = 0.197 + 0.388Va/Fk + 0.376D (0.428) (4.398) (2.583)	0.492	0.474	27.625	0.000
5	GP/K = -0.711 + 0.523Vo/K + 0.413D (-1.014) (4.161) (2.851)	0.478	0.460	26.130	0.000
6	GP/K = -0.455 + 0.769Va/K + 0.329D (-0.692) (4.047) (2.074)	0.472	0.453	25.447	0.000
7	GP/K = -1.855 + 1.860E-02 Vo/M (-2.041) (4.733)	0.279	0.266	22.403	0.000
8	GP/K = -0.736 + 2.188E-02Va/M (-1.065) (4.613)	0.268	0.256	21.278	0.000
9	GP/K = -0.416 + 0.329Vo/Fk (-0.874) (6.033)	0.386	0.375	36.403	0.000
10	GP/K = -0.361 + 0.514Va/Fk (-.850) (6.652)	0.433	0.423	44.254	0.000
11	GP/K = -1.655 + 0.711Vo/K (-2.526) (6.269)	0.404	0.394	39.301	0.000
12	GP/K = -1.233 + 1.015Va/K (-2.219) (6.640)	0.432	0.422	44.084	0.000

Source: Field Survey

**3. Conclusion**

*Jamdani* sharee manufacturing has a long tradition of repute and excellence as a handicraft. Being a labour intensive art product it is produced with small amount of capital with substantial value addition. Both gross profitability and net profitability in this industry are substantial for the independent units while gross income generated for the artisans working under different production organization is significant for livelihood.

Variation in profitability across independent units and tied units is significantly explained by both labour productivity and capital productivity while that in units under cooperatives by capital productivity alone. For the industrial units taken together (60 units) across the three production organizations the profitability variation is explained by labour productivity, capital productivity and type of production organization. Production organization emerges as more significant than either labour productivity and or capital productivity to explain the variation in profitability across the industrial units working under different production organizations.

From the foregoing discussion the following policy conclusions emerge.

First, independent organization is the best form of production organization in respect of productivity, value addition and profitability and hence it should be encouraged through institutional measures like provision of credit and training for improvement of skill of workers,



Second, units under cooperative are not performing well in terms of economic indicators. Cooperative as a production organization needs to be revamped and rejuvenated so that economic benefits accrue to production units and artisans working under it.

Third, Tied units should be encouraged to be converted into independent units through provision of institutional credit and marketing facilities.

### References

- Bottomely, A. (1965), "The fate of the artisans in Developing Economics." *Social and economic Studies*, Vol.14, No. 2. Pp.194-203.
- Angadi, V.B.( 1976), *Economics of Handloom and Powerloom Industries in Karnataka State with Special reference to Bijapur Town*, Karnataka University .
- Anjaneyula (1990), *Financial Management in the Cooperative Handloom Industry*, Classical Publishing company. P.7.
- Sau. S.N.(2005), *Rural Industrialisation*, Firma KLM Private Ltd. Kolkata
- Syamasundari, B., Niranjana, S., (2006) "Valuing the Non-market" *Economic and Political Weekly*, August 5, pp.3394-3398.
- Das. C.R. (2007), 'Pattern of Growth of Handloom Industry in Districts of West Bengal', *Vidyasagar University Journal of Economics*, Vol. XII, 2007.
- Das. C.R. (2008), 'Economics of Baluchari Handloom Products in Bishnupur Town of Bankura District, West Bengal', *Vidyasagar University Journal of Economics*, Vol. XIII, 2008.

[www.Bankura.org](http://www.Bankura.org)

[www.Nadia.org](http://www.Nadia.org)