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Economics of Conch Shell Industry-
A Study in West Bengal

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ABSTRACT

West Bengal is well known all over the world for its expertise in arts and craft. Its artisans have skill in architectural splendours to its excellent works on crafts of conch shell. Not only are conch shell crafts beautiful and delicate, they are also considered to be extremely auspicious, as per Hindu mythology. The beauty and uniqueness of these crafts is very difficult to be described in words. Conch shell is used as an ornament, as a trumpet, as a musical instrument, a wind instrument that is made from a seashell. *Shankha* is a finished product of conch shell. This research paper is based on primary survey of 240 households conducted on conch shell units in the four districts of West Bengal namely North 24-Paraganas, Purba Medinipur, Paschim Medinipur and Bankura. The paper tries to estimate the cost and profit of the sample the sample conchshell units. The study finds that conch shell industry still plays an important role in generating livelihood through creation of income.

Keywords: *Production, Cost, Capital, Productivity, Pricing*

JEL Classification: D24, J24, L11

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1. Introduction

Conch[1] is common name for certain marine gastropod mollusks. Conch shell[2] is used as an ornament, in making cameos, or as a horn, as a trumpet. The conch shell[3] has survived as the original horn trumpet since time immemorial. Conch[4] is a musical instrument, a wind instrument that is made from a seashell. These instruments are sometimes referred to as "shell trumpets". *Shankha*[5] is a finished product of conch shell. The craft of Conch Shell decorating can be traced back to the Indus Valley Civilization[6]. A conch shell, with intricate carvings and believed to be at least 1500 years old[7], has captivated historians across the state. The conch shell industry now flourishes solely in West Bengal, Assam, Odisha, Uttar Pradesh and Bangladesh, though in the past it existed in the

[1]http://encyclopedia2.thefreedictionary.com/Conch-shell
[2]http://www.thefreedictionary.com/Conch-shell
[3]http://www.religionfacts.com/buddhism/symbols/conch.htmViewed as Conch Shell in Buddhism
[4]http://en.wikipedia.org/wiki/Conch_(musical_instrument) viewed as Conch (instrument)
[5]*http://chandrakantha.com/articles/indian_music/shankh.html viewed as Shankh*
[6]http://www.india9.com/i9show/Conch-Shell-Craft-41314.htmviewed as Conch Shell Craft
[7]http://www.indianexpress.com/news/1500yearold-conch-shell-intrigues-historians/1086692/ viewed as 1500-year-old conch shell intrigues historians RohanSwamy : Tue Mar 12 2013, 02:24 hrs

Ramnad coast near Pamban and in Kathiawar in Gujarat. The craftsmen of conch shell products (Shankhari or Sankhakar) belong to the ancient 'Nabasakha' communities. The carvings on the conch shell reflect the social, mythological and historical expressions, rendered with the help of the traditional folk knowledge and technology.

The state of Bengal had been the principal seat of couch shell industry in India. From time immemorial, the 'Shankharies' or 'Shankhabaniks' have been engaged in the trade and had been supplying conch bangles to adorn the hands of married Hindu ladies, which they used to wear as a mark of good fortune. The wearing of chank bangles (*shankha*) by married Hindu women is confined to Bengal (West Bengal and Bangladesh) and Bengali women living in the adjacent parts of Bihar, Odissa and Assam. Conch Shell also has a lot of religious significance. There are different type of conch shell product but among them main product is 'Sankha'. The extent of conch shell industry has starts from Southern Coast region of India, because different species of conch shell have been available in this region from the initial period. Mysore, Belari, Hydrabad, Anandapur, Kathiyawar, Gujarat were the main region for conch shell production in early period and then Dakha of Bangladesh,Chittagong, Rangpur, Khulna region were famous for conch shell industry. In West Bengal the conch shell industrial area comprise important *Sankhakar*centres or manufacturing centre (where raw materials has been cut up and worked into bangles for sale to the people of the districts) are the Baghbazar, Amherst Street and Jorasanko areas of Kolkata, Domkal and Jitpur in Murshidabad district, Sankhanagar, Baliadanga, Nabadwip and Ranaghat in Nadia district, Bhadreswar and Chandannagar in Hooghly district, Katwa and Patuli in Burdwan district, Barrakpur in North 24 Parganas district, Bishnupur, Bankura and Hatgram in Bankura district and Kalmijore and Medinipur in PaschimMedinipur district and Panchrol in PurbaMidnapur district. Their largest concentrations are in Bankura district. In the district of Bankura, as in other districts, the Sankhakar are found in certain pockets like Bishnupur, Saaspur, Hatgram and Rampuretc where they live as a dominant group and these areas are named as *Sankharipara*, Sankhari bazar, Sankhanagar.

The majority of the people who work in the conch shell industry in India are also women and those people who belong to the weaker sections of the society. A large number of people earn their income and pursue daily living by producing these products, thus establishing the Sankhakar as a major occupation in some parts of rural Bengal. It is relevant to mention that, very few studies and documentation efforts have been made in the field of conch-shell craft. Even then the socio-economic and socio-cultural aspects of the craft have not been adequately dealt. Against this brief backdrop the present study done in respect of analysis cost benefit and examines economics of conch shell industry.

2. Review of Literature

There is paucity of studies on the economics of conch shell industry. We mention below some relevant studies.

Abraham (1964) highlighted the aesthetic and cultural importance of handicrafts. Man's association with art and craft dates back to the period when human civilization first started. He created stone weapons for safeguarding himself against furious animals in forests. Ahmed (1980) express that the satisfactory performance in marketing of handicrafts could be possible due to the special interest taken by central as well as State Government to boost up the export of handicraft article and the qualitative performance of the artisans. Aiyar discussed that the *Sankha* or the conch occupies an important place in the Hindu thought. Banerjee (2012) attempts to explore the problems and prospects of conch shell industry in recent times in Bishnupur of Bankura District in West Bengal. She concludes that although this traditional 'conch industry' is facing a lot of problems; still its popularity is worth noticing. According to Basu (1953) the nature of an industry has a great deal to do with the relative proportion between block and working capital required. The more round-about and complex the processes production grow, the greater must be the proportion of fixed to working capital. Biswas (2003) analyses the pattern and basis of rural industrialisation in West Bengal. He discussed about technological change and the forms of production organization in conch shell product industry.

Dutta (2011) noted that Conch shell craft is neither unique, nor a new practice in India for creating marvels in decorative yet artistic pieces of utility items. Ghosh (1953) pointed out that financial soundness is inevitably linked up with managerial efficiency. If the management is faulty even the best financial structure may collapse like a house of cards. Ghosh (1999) highlighted the scenario of conch shell industry in Bankura district of West Bengal. Haque (1984) pointed out about designs of Sankha products

like chain of fish, dove or series of conch shells boldly carved on the surface of the bracelets. *Heppell* (2001) discussed about the chank shell industry in modern India. Hornel (1982) pointed out that there is existence of the important Chank cutting industry in the ancient Pandyan Kingdom in the early centuries of the christian era. Hornel (1914) wrote about the chank in Hindu life, on Indian fisheries, and marine zoology and on various aspects of folklore and ethnology. Hunter (1875) discussed about production procedure of finished product Sankha from conch shell.

The objective of the paper by Marjit and Maiti (2004) is to understand the transforming relationship between the formal and informal sector in a liberalizing open developing economy. They conclude with a discussion of a field based survey on the changing relationship between formal and informal entrepreneurs in a range of rural industry in India, as these industries gear up for expanded markets and export. Mandal (1997), assess the problems and prospects of folk craft tradition in West Bengal and existing level of socio-economic condition of Shankhari community. Religion cultural aspects and environmental effects of this craft is also the important area of interest. Mudur (2005) suggests that a collection of some 3,000 shells, strewn across a south eastern tip of Bet Dwarka Island, hosted a big shell industry during the late Harappa period. Phadke (2011) mentioned that there are about 3, 00,000 conch shell artists and traders in West Bengal and Orissa. Indian Sacred Conch of the species Turbinellapyrum (Sinistral) is a rare Pooja item used for different rituals in the Hindu Religion. It is also one of the eight auspicious symbols in the religion Buddism. Export and import of this species is not banned under the Wild Life Protection Act 1972, Govt. of India due its religious importance. Rao (1994) has elaborated about marketing of handicrafts in which he has also highlighted about activities of artisans. Sen and Sinha (1961) discussed economic behaviour of craftsman and production process of conch shell industry of West Bengal and Sikkim. Sonali (2012) highlights about conch shell craft of West Bengal and noted that the tradition of conch shell preparing and working is an ancient one. They have been used in India since Vedic times. Priests use them to drive away evil spirits, at the beginning of weddings, sacrifices, or at other Hindu rites. Buddhists also blow conch shells as a sound offering. Sujauddin (2013) discussed about the condition of *Sankhasilpa* in West Bengal due to price increase of intact conch shell because of devaluation of Indian currency value compare to Dollar value. Tulsyan (2013) pointed out that while not many Bengali women in urban settings can be seen wearing *sankha* (conch bangles), it is easier to find women-generally from lower class-from Bihar, Odisha and Uttar Pradesh sporting it. From the brief review of the existing literature it appears that problems and future of conch shell industry in West Bengal have not been adequately addressed. The present study aims at remedying some of the gaps in the existing literature. Upadhyaya (1973) in the book "Economics of handicraft industry" feels that without design development, technology advancement and quality improvement, we cannot think of healthy growth of such industry. It has been agreed in responsible quarters that even in the field of handicrafts a certain amount of mechanization ought to be introduced in order to obtain the two-fold objective of better finish and rationalization. From the brief review of the existing literature it appears that the economics of conch shell industry, present condition of this type of folk art industry, have not been adequately discussed. The present study aims at removing some of the gaps in the existing literature.

3. Research Objectives, Data Sources and Methodology of Study

The specific objective of the study is to assess the costs and profits of conch shell units in West Benal. Because of non-availability of secondary data relating to conch shell industry, the present study was conducted by a detailed primary survey. Four Districts of West Bengal namely North 24-Paraganas, Purba Medinipur, Paschim Medinipur and Bankura were selected on the basis of concentration of conch shell handicraft units. The sample comprises of 240 household units selected from 4 districts (8 blocks) with 60 household units selected randomly from each district. The field survey of this research study completed on 2011-2013. The basis of selection of the sample was multistage stratified random sampling method. To analyse the cost and profits of units, we have used mean, percentage method and bar diagram. The largest village of Sankhari in our study area of West Bengal is the village of Hatgram in the Bankura district; where near about 350 families are actively involved in manufacturing these products. The other large concentration of Sankhakar can be found in Bishnupur of Bankura district. There are 200-250 Sankhakar families in Bishnupur town are engaged in traditional occupation of conch-shell craft.

4. Results and Discussion

4.1 Number of Conch Worker, Work Hours, Working Day, Person days in Sample Districts

Mean value of number of conch worker, work hours, working day, person days per unit across sample districts is shown in Table 1. Average number of male family conch workers per unit is 2 in all sample districts. Average number of female family conch workers per unit is highest (2) in Bankura district followed by Purba Medinipur district (1), Paschim Medinipur (1) and zero participation in North 24-Paraganas. Per day mean value of work hours by per male workers is 11 and by per female workers is between 6 to 7 hours. Average working day per month per household unit is varies 26 to 28.Conventionally eight hour working is treated one person day in the rural industrial work. Normally, in peak season labourers work more than 8 hours and in slack season it becomes lower. To balance it, 8 hour labour has been treated as a person day. Average numbers of per day person days per unit is higher in North 24-Paraganas districts (5) followed by Purba Medinipur (4), Paschim Medinipur (4) and Bankura (4) district.

4.2Cost analysis of conch shell industry

Cost of raw materials includes the cost of various types of intact conch shells. Labour charges constitute an important item of cost of conch shell products. A sizeable number of skilled and unskilled workers have to be employed by each conch shell units in the different process of conch shell manufacture for cutting, grinding, polishing, joining, finishing, designing etc., and have to be paid wages/salaries. Price of cutting machine being high each unit cannot purchase it. This particular machine is generally purchased by limited big units; other small medium units use this machine by rent. The cost of machine charge for cutting the intact conch shell is determined by piece basis. There are own workshops in the industry. As the conch shell units own workshop themselves, they do not have to pay any rent but for purpose of correct estimating the cost of specific conch shell products, a definite amount is assumed to have been paid as rent. Rent of workshop/premises in this study area has been apportioned/distribute on an average of Rs 400 per month. Depreciation is calculated on i) tools, equipment and machinery iii) buildings. Miscellaneous expenses comprise all indirect costs such as light, water, sanitation, electricity charges, postage, local taxes, mobile bill etc., which are not covered under any of the heads of expenditure enumerated above.

There are different types, sizes and quality of sankha. So price of sankha also varies. Number of sankha obtained per an intact conch shell varies according to quality and size. It varies between 2 to 6 *cop*/pieces. Average number of pair of sankha obtained from per piece intact conch shell is 2.92 (Table 2). Average number of pair of sankha obtained from per piece Lejpata is 1.41 (Table 3). Our sample districts like Paschim Medinipur, Purba Medinipur, and North 24 Paragana use intact conch shell. There is some difference in production procedure of Bankura district compared to other sample districts. In Bankura district most *Sankha* is produced from *Lejpata* which is a part of intact conch shell. Side by side the units of Bankura district also prepare Sankha from intact conch shell. The owners of conch shell units of Bankura district collect this Lejpata from those districts. Due to differences in production procedure the cost, profit, value of output structure of Bankura districts units are also different from other sample districts.

Conch shell is collected through different level of mediator like sea sore level to village level. The price of intact conch shell is also varies at different level which is explained in Table 4.

The cost of production of *Sankha* varies according to the type, quality of an intact conch shell. Different types of intact conch shells are brought from different places at different rates. They are mixed in different proportions for preparing different types of Sankha. Small conch shell producers usually produce goods in small quantities which is just sufficient to fill a gunny bag of intact conch shell of 50 pieces of low or medium quality. The cost of production in this case is higher than in case of a big gunny bag of intact conch shell of 100 pieces. This is because of the fact that the small gunny bag accommodates proportionately a much less number of articles as compared to a big gunny bag. Moreover, loading, unloading charges do not increase in proportion to the increase in the size of big gunny bag. Therefore in a big unit a large number of big gunny bags of conch shell can be available at a comparatively less cost per unit. If one artisan of a units continue his work 10 hours duty per day, then requirement of intact conch shell is approximately 360 pieces per month. These 360 piece intact conch shell include High quality, Medium Quality, Low Quality intact conch shell. Due to high price of intact conch shell a gunny bag

contains 25/30/50/60/100 pieces of different quality intact conch shell. The price rate of mixed quality intact conch shell in a gunny bag varies between Rs 150/ Rs 250/ Rs/ Rs 400/ Rs 500/ Rs 700 / Rs 1000. But artisan or owners of conch shell units purchase more gunny bag of *Gouri* species conch shell whose price varies between Rs 250/ Rs 500/ Rs 700.

As rates and charges for different cost components differ from centre to centre, though not very materially, average rates and charges, mean value of cost for per pair *sankha*production of sample districts have been taken for calculating cost in the industry. As the production procedure for making a sankha in Bankura district is different from other sample districts, therefore cost analysis is explained respectively in Table 5& Table 6.

4.3 Capital in Conch shell industry

Capital structure of conch shell industry in West Bengal

For an industrial undertaking there needs two types of investment: a) fixed or Block capital b) working or circulating or floating capital. The levels of investment in fixed and working capital, differ according to the type of conch shell unit exists. Nature of an industry, size of business unit, manufacturing process, risk of business and other factors affecting fixed and working capital needs.

Requirement of Amount of Fixed Capital Used Per Unit

The fixed or block capital is required for purchase of fixed assets e.g., for purchase of land and buildings, plant and machinery, equipment, furniture and fittings, tools and implements etc. The amount of investment over fixed assets may change from time to time. The assets themselves may diminish in value due to depreciation.

In the conch shell industry those units which are run on fully mechanized units, the proportion of fixed capital is still greater. Amount of fixed capital used per unit varies across the sample units. The cutting machine facilities are available for use on nominal rent. The plant and machinery used in almost all the conch shell units is of a similar nature. If a conch shell unit wishes to start his work at his home on *bani* basis without setting his own machines and as a dependent unit, the fixed capital requirement will be much less in comparison to an independent small scale unit. Dependent units have not to invest on the purchase of costly tools and appliances like cutting machine etc. The dependent units require less fixed capital as they have to invest only in some tools like hammer, 220 Volt 1/2 H.P. Single Phase Motor, 220 Volt 1/4 H.P. Single Phase Motor etc. and some other less costly and simple processing equipment like gum, cotton, and hydrochloric acid etc which constitute the minimum necessary investment. It is impossible to carry on with the conch shell manufacturing business without these items. The independent units, on the other hand, are self-sufficient and have to invest in land and buildings, cutting machine, generator and other accessories and, thus require more fixed capital. Now an attempt is made to estimate the fixed capital investment necessary for the establishment of a conch shell unit at current price in Table 7.

Requirement of working capital

The floating or working capital is required for the purchase of raw materials and stores; for expenses incidental to the marketing of products; for financing outstanding in respect of goods supplied and for providing the necessary funds for paying wages and meetings the day to day requirements, rent of premises and expenditure on stationary etc. The actual need for working capital may vary from industry to industry and from one enterprise to another. In general, it depends mainly upon the value of the output and the average length of time in the productive process.

The requirements of working capital of the three types of units are different depends on number of artisans involved, work time, availability of intact conch shell, electricity, marketing capability, capital adequacy and also upon the size of the business and the articles produced etc. It may be pointed out that the amount of working capital is more than that of fixed capital. Some independent units use higher amount of working capital. Tied or partial tied units take raw materials for the production on credit and supply the final product receiving contractual rate. In this mode of production, they use very small amount of working capital compared to independent units.

Relatively small working capital in tied and partial tied units is explained by the fact that here working capital generally does not consist of wage bill, because mostly they run the production by unpaid family labour. A few partial tied units in conch shell industry use hired labour and so their working capital requirement is higher than that of tied units. Besides, mostly the production cycles of the independent, tied

and partial tied units are weekly, half-monthly or monthly so that the factors are paid just after the sale of the final product or receipts of bani from the mahajan. Estimated total capital for per pair *sankha* production is given in Table 8 & Table 9.

4.4 Production and Productivity in Conch shell Industry

There are different types of by-product of conch shell, whose price, number of piece obtained are discussed in Table 10. Due to different taste and preference of customers, the artisans are producing different design sankha product from intact conch shell, whose percentage of variety at preparation time from 360 piece intact conch shell is discussed in **11.**

Value added equals to total revenue minus raw material costs. Productivity of labour is measured by value added (Va) per person day[8](md). Capital productivity measured in terms of ratio of value added per fixed capital. Mean value of output, Value of Added, Productivity for per pair *Sankha Production* per unit across districts is shown in Table 12

4.5 Profitability and Income of Sample Conch-shell Industry Units

The margin of profit is expressed as a certain percentage on the total cost of production. Profit is measured in terms of gross profit, i.e., total revenue minus the all types of paid out cost (e.g., raw materials cost, hired labour wage[α] bill, paid out rent, interest on borrowed capital etc.) during the year.Net profit is measured by total revenue minus the total cost (including all types of paid out cost and imputed cost for unpaid family labour& imputed interest on own capital). Estimated Mean value of different profits ratio for per pair Sankha Production is explained in Table 13.The average amount of gross profit varies significantly across sample districts.

[8] Conventionally eight hour working is treated one person day in the rural industrial work. Normally, in peak season labourers work more than 8 hours and in slack season it becomes lower. To balance it, 8 hour labour has been treated as a person day.

[α] The term 'wage' is equivalent to the value of labour power, that is, the value of a worker's means of subsistence (Marx, 1986).

5. Conclusions and Recommendations

Unlike the costing of other industrial products, the economic calculation of conch shell products presents certain peculiar problems which make the ascertainment of accurate, reliable and uniform cost of production of different products in the industry very difficult. Most of the conch shell unit owners in the industry are illiterate and ignorant of maintaining their accounts properly and correctly. As they do not maintain proper records of their expenses on various heads, the ascertainment of correct cost of production remains only a conjecture.

The margin of profit in respect of certain important conch shell articles is expressed as a certain percentage on the total cost of production. The margin of profit is subject to the quality of the end product which is greatly determined by quality and species of intact conch. Low or sub-standard quality products are sold at prices ranging between 35 to 50 per cent less of the prices of the high quality or commercial quality products. The paper reveals that there is much potential for this industry in generating livelihood of the rural people.

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Tables Used

Table 1: Estimated Average Conch Worker, Work Hours, Working Day, Person day of Per Unit across Sample Districts

Category per unit	Paschim Medinipur	Purba Medinipur	North 24-Paragnas	Bankura
Male family member	3	4	4	3
Female family member	2	3	2	3
Total family member	6	6	6	6
Male Family conch worker	2	2	2	2
Female Family conch worker	1	1	0	2
Total No. of family workers per household unit	2	3	2	3
Male hired conch worker per household unit	3	1	3	2
Total number of (family+hired) workers per household unit	3	3	4	3
Per day work hours by per male workers	11	11	11	11
Per day work hours by per female workers	7	6	0	7
Per day work hours by per male hired workers	11	11	11	11
Working day per month per household unit	27	26	27	28
Per day person days by hired & family workers	4	4	5	4

Source: Estimation Based on Primary Survey

Table 2 Estimation of the Number of *Sankha* Obtained From 60 Piece Intact Conch Shell in Paschim Medinipur, Purba Medinipur & South 24 Paragana Districts

Number of intact conch shell	Sorting according to variety of sankha (piece)		Total piece/cop	Total pair of sankha
60 piece	40 piece	30 piece for MantasaSankha (6 cop)	=30 x 6= 180	90
		10 piece for ChurSankha (4 cop)	=10 x 4= 40	20
	20 piece	10 piece for BraseletSankha (7 cop)	=10 x 7= 70	35
		5 piece for MinichurSankha (3 cop)	=5 x 3 = 15	7.5
		5 piece for SaruSankha (9 cop)	=5 x 9 = 45	22.5
Total	60 piece		350	175
Average number of pair of sankha obtained from per piece intact conch shell				=175/60 =2.92

Source: Estimation Based on Primary Survey

Table 3 Estimation of the Number of *Sankha* Obtained From 200 Piece Lejpata of Conch Shell in Bankura Districts

Estimation of the number of *Sankha*		**Piece**
Number of Lejpata		200
Number of conch part obtained from one Lejpata		6
Total Number of conch part obtained from 200 piece Lejpata		1200
Variety of product	Number of conch part use for Gurudakshnia (83%)	996
	Number of conch part use for Other product like Trinayane, Hebak, Lalsankha (17%)	204
	For one round figure Gurudakshnia sankha, requirement of conch part	4
	For one round figure Other product like Trinayane, Hebak, Lalsankha, requirement of conch part	6
	Number of pair prepared for Gurudakshnia sankha	249
	Number of pair prepared for Other product like Trinayane, Hebak, Lalsankha	34
Total number of pair of round sankha from 200 piece Lejpata		283
Average number of pair of sankha obtained from per piece Lejpata		=283/200 =1.41

Source: Estimation Based on Primary Survey

Table 4 Cost Price of Intact Conch Shell at Different Level of Mediator

Level of Mediator	Average Price of intact Conch shell /piece (Rs)
Collection of intact conch shell from conch fisherman of sea sore level by conch agent and sale it to the state level purchaser	0
Price at sea sore level / national level like Tamilnadu(1st mediator)	190
Price at state level, kolkata (2nd mediator)	250
Price at Block /Cluster level (3rd mediator)	300
Price at production unit level (village level)	350

Source: Estimation Based on Primary Survey

Table 5 Estimated Cost for per pair *Sankha Production* in Paschim Medinipur, Purba Medinipur and North 24 Paraganas Districts

Cost items		Rs Per pair
a. Total paid out cost	i) Main material cost	116.05
	ii) Other material cost	12.55
	Total material cost (i+ii)	128.60
	iii) Wage of hired workers	1.43
	iv) Interest pay on loan	0.08
	Total (i+ii+iii+iv)	**130.11**
b. Total Imputed cost	i) Wage of household artisan	6.16
	ii) House rent	0.16
	iii) Interest on own fixed capital	0.11
	iv) Interest on own working capital	12.97
	Total (i+ii+iii+iv)	**19.39**
c. Depreciation cost	i) On consumption of fixed capital	0.07
	ii) For breakage, deformation of sankha	0.32
	Total (i+ii)	**0.39**
Total cost(a+b+c)		149.89

Source: Estimation Based on Primary Survey

Table 6 Estimated Cost for per pair *Sankha Production* in Bankura District

Cost items		Rs Per pair
a. Total paid out cost	Main material cost	32.20
	Other material cost	16.15
	Total material cost	48.35
	Wage of hired workers	1.57
	Interest pay on loan	0.30
	Total	**50.22**
b. Total Imputed cost	Imputed wage of household artisan	15.17
	House rent	0.73
	Interest on own fixed capital	0.48
	Interest on own working capital	2.56
	Total	**18.95**
c. Depreciation cost	On consumption of fixed capital	0.07
	For breakage, deformation of sankha from raw material cost	0.19
	Total	**0.26**
Total cost(a+b+c)		69.43

Source: Estimation Based on Primary Survey

Table 7 Components of Estimated Annual Fixed Capital in Sample Districts

Items		Imputed Estimated Cost (Rs)
Different components of Fixed capital(F_k)	Land	30000.00
	Building	30000.00
	220 Volt 1/2 H.P. Single Phase Motor	7000.00
	220 Volt 1/4 H.P. Single Phase Motor	5000.00
	Design machine for *SonabandhanoSankha*	6000.00
Grand total		78000.00

Source: Estimation Based on Primary Survey

Table 8 Components of Estimated Total Capital Used Per Unit for Per Pair *Sankha Production* in Paschim Medinipur, Purba Medinipur and North 24 Paraganas Sample Districts

Total Capital Items For Per Pair *Sankha Production*		Rs/Pair Sankha
1. Main Material cost (on conch shell)	Per pair Sankha	**120.28**
2. Other material cost	Cutting cost	1.20
	Breaking the conch	0.58
	Design Charge	8.00
	Transport cost	1.75
	Electric cost	0.23
	Zinc oxide cost	0.20
	HCL cost	0.08
	Mom/Paraffin cost	0.01
	Spin cost	0.06
	Polythene Packet cost	0.02
	Araleit cost/Gum	0.20
	San cost	0.60
	Travel cost	0.30
	Others cost	0.20
	Total	**13.43**
a. Total material cost (1+2)		**133.71**
b. Physical Working Capital**(i+ii+iii)**	i) Value of stock of main raw materials	20.05
	ii) value of semi-finished products	44.11
	iii) Value of finished products remain as a stock for sale in feature	45.81
	Total (i+ii+iii)	**109.97**
c. Cash deposit in hand		44.57
d. Cash deposit from bank as loan		0.56
e. Interest of bank loan@12% per annum		0.07
f. *Bani* wage cost for hired worker		6.00
A. Total working capital for per pair *Sankha*Production (a+b+c+d+e+f)		294.88
Own working capital (b+c)		154.54
Borrowed working capital (d+e)		0.63
B. Total Fixed capital for per pair *Sankha* Production		2.61
Invested capital (b+B)		112.58
Total capital (A+B)		297.49

Source: Estimation Based on Primary Survey

Table 9 Components of Estimated Total Capital Used Per Unit for Per Pair *Sankha Production* in Bankura District

Total Capital Items For Per Pair *Sankha Production*		Rs/Pair Sankha
1. Main Material cost (on Lejpata, a part of conch shell)	Per pair Sankha	34.89
2. Other material cost	Lejpata Cutting cost	2.12
	Round formation cost	2.50
	Outside & inside polish	3.00
	Design cost	3.50
	Uha cost	0.02
	Acid cost	0.20
	Siris paper cost	0.04
	Pital cost	0.12
	Fiver cost	0.05
	Kerosine cost	0.08
	Spin cost	0.04
	Transport cost	1.41
	Electric cost	0.49
	Araleit cost/Gum	2.50
	Travel cost	0.02
	Others cost	0.02
	Total	16.10
a. Total material cost (1+2)		50.99
b. Physical Working Capital**(i+ii+iii)**	i) Value of stock of main raw materials	5.82
	ii) value of semi-finished products	19.16
	iii) Value of finished products remain as a stock for sale in feature	19.22
	Total (i+ii+iii)	44.20
c. Cash deposit in hand		16.99
d. Cash deposit from bank as loan		1.22
e. Interest of bank loan@12% per annum		0.15
f. *Bani* wage cost for hired worker		7.87
C. Total working capital for per pair *Sankha*Production (a+b+c+d+e+f)		121.42
Own working capital (b+c)		61.19
Borrowed working capital(d+e)		1.37
D. Total Fixed capital for per pair *Sankha* Production		11.91
Invested capital (b+B)		56.11
Total capital (A+B)		133.33

Source: Estimation Based on Primary Survey

Table 10 By Product of Conch Shell at Preparation Time of Sankha

Items	Number of Piece obtained	Average Price of intact conch shell /piece
Netha	= total number of intact conch/2	38
Lejpata	= total number of intact conch	8
Mukchali	= total number of intact conch	0.6
Break sankha	2.5 kg from 360 piece intact conch shell	Rs 65 / kg
Latha making	= 30 Piece from 360 piece intact conch shell	20

Source: Estimation Based on Primary Survey

Table 11: Percentage of Different Design *Sankha* Product on 360 Pieces Intact Conch Shell

Variety of main product	Percentage	No. of Pair	Average sale value of per pair sankha
Sonabandhanosankha	(11%)	116	430
Hangurmukhsankha	(6 %)	63	410
Mantasasankha	(23 %)	242	380
Chursankha	(10 %)	105	230
Braseletsankha	(17 %)	179	220
Minichursankha	(5 %)	53	230
SuruSankha	(9 %)	95	140
Low quality sankha	(19 %)	200	120
Total no. of sankha		1051	

Source: Estimation Based on Primary Survey

Table 12: Estimated Value of Output, Value Added, Productivity For Per Pair *Sankha Production* in Sample District

District	Paschim Medinipur (a)	PurbaMedinipur (b)	North 24-Paragnas (c)	Combination of District (a, b, c)	Bankura
Total sale value from other by product of sankha	9.16	8.42	8.89	8.82	0.97
Total sale value of sankha	261.39	261.93	260.92	261.41	114.28
Total value of output / total revenue	270.55	270.35	269.81	270.24	115.25
Value added	141.87	141.66	141.37	141.64	66.90
Labour Productivity	0.16	0.13	0.13	0.14	0.07
Capital Productivity	61.39	64.09	76.27	67.25	7.02
Working capital/ value of output	0.97	0.96	1.00	0.98	1.01
Value of output/fixed capital	116.60	121.96	144.89	127.82	12.08

Source: Estimation Based on Primary Survey

Table 13 Estimated Value of Different Profits Ratio for Per Pair *Sankha Production* in Sample Districts

District	Paschim Medinipur (a)	PurbaMedinipur (b)	North 24-Paragnas (c)	Combination of District (a, b, c)	Bankura
Gross profit or earnings	140.27	141.19	138.93	140.13	65.03
Gross profit/ fixed capital	60.45	63.84	74.55	66.28	6.69
Gross profit/ working capital	0.50	0.50	0.52	0.51	0.56
Gross profit/ Value of output	0.52	0.52	0.51	0.52	0.56
Gross profit/ value added	0.99	1.00	0.98	0.99	0.97
NET Profit	118.18	118.63	118.31	118.37	36.65
Net profit /fixed capital	51.42	53.71	63.93	56.35	4.04
Net profit /working capital	0.42	0.42	0.44	0.43	0.31
Net profit /capital	0.42	0.42	0.44	0.42	0.29
NET Profit /Value of output or Per sale	0.44	0.44	0.44	0.44	0.32
Net profit/person days	3546.27	3559.88	3550.03	3552.06	239.56
Net profit /value added	0.83	0.84	0.84	0.84	0.55

Source: Estimation Based on Primary Survey