

Livelihood Dynamics and Economic Significance of the Sea Shell Handicraft Industry in Coastal Villages of Purba Medinipur District, West Bengal, India

Debabrata Chanda*

Assistant Professor, Department of Geography, Asutosh College, University of Calcutta

*Corresponding Author

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ABSTRACT

The seashell handicraft industry is a major sector of the rural non-farm economy in Purba Medinipur district, West Bengal, intertwined with coastal tourism, fisheries, and traditional artisanal knowledge. It provides livelihood opportunities to economically vulnerable households, women workers, artisanal communities, and seasonal labourers. This study analyzes various aspects of the industry, including its socio-economic features, production organization, and potential for employment generation, based on extensive literature and regional socio-economic studies. Primarily, the sector relies on household and cottage production with informal market networks and the intergenerational transfer of skills. The involvement of women in various processes, from cleaning to selling shell goods, contributes to both household incomes and gender inclusivity. Increased tourism has led to greater demand for ornamental and souvenir products, bolstering commercialization. However, the industry faces significant challenges, including inconsistent raw material supplies, coastal erosion, marine pollution, rising production costs, and competition from machine-made items, which undermine profitability and sustainability. This research emphasises the need for coordinated policy interventions to enhance coastal resource management, skill development, design innovation, market integration, financial access, and infrastructure improvement, aiming to strengthen the economic viability, resilience, and cultural sustainability of the seashell handicraft sector in Purba Medinipur.

Keywords: Sea shell handicraft; livelihood diversification; coastal economy; artisanal industry; molluscan resources; coastal tourism.

INTRODUCTION

Handicrafts constitute an important component of India's traditional economy and cultural heritage. In the past, rural artisanal enterprises have been a major source for employment generation, the preservation of traditional knowledge, and the diversification of incomes among economically weaker groups. Among the numerous classes of handicrafts, marine-based shell handicrafts occupy a special position for their intimate link with coastal ecology, fishing, tourism, religion and folk culture. Seashell handicrafts are aesthetic and cultural manifestations, as well as vital livelihood support activities for coastal inhabitants. India has a lengthy coastline with significant marine biodiversity, including a wide range of molluscan species providing raw materials for shell craft enterprises. Molluscs are one of the most varied groups of invertebrates and are ecologically and economically important members of coastal environments. Chapman (2009) stated that the total number of molluscan species in the world is about 0.2 million. Among them, there are nearly 85,000 marine, freshwater and terrestrial molluscs. Molluscan resources are ecologically significant as herbivores, filter feeders, detritivores, and predators in aquatic food webs. There are over 3,271 species of molluscs documented from India (Appukuttan, 2008). Many species have high economic importance because of their use as food, ornaments, fisheries, lime industries, decorative crafts and religious items. The coastal region of the Purba Medinipur district of West Bengal has a diverse marine ecology of sandy beaches, estuaries, intertidal zones,

mudflats, fishing harbours, tidal creeks and brackish water systems. These various ecological circumstances are conducive to a large number of species of molluscs of the classes Gastropoda and Bivalvia. Recent research on molluscan diversity in East Medinipur recorded 27 molluscan species in significant coastal areas, such as Digha, Mandarmani, Shankarpur, Tajpur, Udaypur, Jaldha, Talsari, Madhabpur, and Selmabad (Chain et al., 2025). The study also drew attention to the ecological and economic importance of these molluscan resources for the local inhabitants.

Historically, shell-based crafts and conch industries have held a prominent position in Bengal's artisanal economy. The traditional 'Shankhari' or 'Sankhakar' communities were shell cutters, engravers, polishers and ornamentmakers. The conch shell bangles, or 'Shankha', are still essential for Bengali Hindu women for their religion and culture. Shells are also commonly used for ceremonial objects, decorative items, jewellery, musical instruments, and souvenir commodities. Hornell (1914) has noted the spiritual and commercial importance of chank shells in India. Later investigations have underlined the importance of shell industries with respect to employment and conservation of artisanal heritage. Coastal India, with its rich marine molluscan resources, has always been a hub for the shell craft business. A detailed study of the ornamental shell business of the Ramanathapuram coast in Tamil Nadu showed that some molluscan species, like Lambis, Turbinella, Conus, Murex, Cymatium, Strombus, and Cypraea, were commercially exploited for ornamental and religious purposes (Natarajan et al. 1987). The study further indicated that shell businesses provide job prospects through activities such as collecting raw materials, processing shells, manufacturing products, and marketing. The coastal tourism zones of Purba Medinipur are progressively showing similar forms of livelihoods.

The development of Digha, Mandarmani, Tajpur, and Shankarpur as key coastal tourism attractions has profoundly affected the commercialisation of shell crafts in the area. The demand for decorative marine products, like shell necklaces, wall hangings, key rings, lamps, mirrors, curtains, conch items, souvenir crafts and creative ornaments, has grown due to tourism. Beach markets, roadside vendors, occasional festivals, and tourist shopping centres sell artisanal trade. Therefore, shell handicrafts have been incorporated into the informal market systems and coastal tourism economy. The seashell handicraft business also reflects the adaptable livelihood choices of coastal populations. Meanwhile, fishing, aquaculture, tourism-related activities, petty trade, dried fish processing, and wage labour are the mainstays of many shellcraft households. The gathering of shells is usually a by-product of fishing activities or a collection from the intertidal areas of the shore. Fishing gears such as drag nets, gill nets, cast nets, and trawl nets often catch shell-bearing molluscs as by-catch (Pijush et al., 2014). These shells are then integrated into local artisanal production networks.

Women are the main workforce in the handicraft industry of shells. Cleaning, sorting, polishing, decorating, assembling, packaging and marketing shell products keep female workers busy. Production in the household permits women to combine domestic duties with income-generating activities. Shell handicrafts help not just in the diversification of household income but also in the economic engagement and social empowerment of women. Although the shell handicrafts industry in Purba Medinipur is socio-economically important, it is still more informal, unorganised, and economically weak. Several environmental and economic concerns threaten the sustainability of the sector. Coastal erosion, marine pollution, habitat destruction, climate-induced hazards, overexploitation of marine resources, irregular supply of quality shells, competition from machine-made decorative products, lack of institutional finance, weak marketing infrastructure, and declining artisanal interest among the younger generation adversely affect the traditional shell crafts economy (Pravina et al., 2025).

Rapid coastal environmental development further raises concerns for marine biodiversity protection and artisanal sustainability. Anthropogenic influences, including tourism expansion, coastal urbanisation, plastic pollution, industrial discharge, and habitat change, have adversely damaged molluscan biodiversity and intertidal ecosystems (Chain et al., 2025). Less shell available for commercial use means higher production costs and lower profits for artisans. In a broader rural development perspective, diversification of livelihoods through non-farm enterprises has become increasingly crucial for vulnerable coastal populations. The shellcraft sector supports livelihood resilience by providing additional income-generating options during seasonal unemployment, falling fish catches or environmental instability. Furthermore, the business maintains indigenous artistic traditions and promotes cultural continuity in coastal countries. Several studies have been

made separately on molluscan diversity, shell industries, fisheries-based livelihoods, and coastal tourism, but there is a lack of integrated studies on the livelihood dynamics and economic importance of the seashell handicraft sector in the Purba Medinipur district. Thus, the present study attempts to analyse the socio-economic characteristics, livelihood structure, employment potential, production systems, tourism linkages, environmental dimensions, and developmental challenges of the shell handicraft industry in the coastal villages of Purba Medinipur, West Bengal.

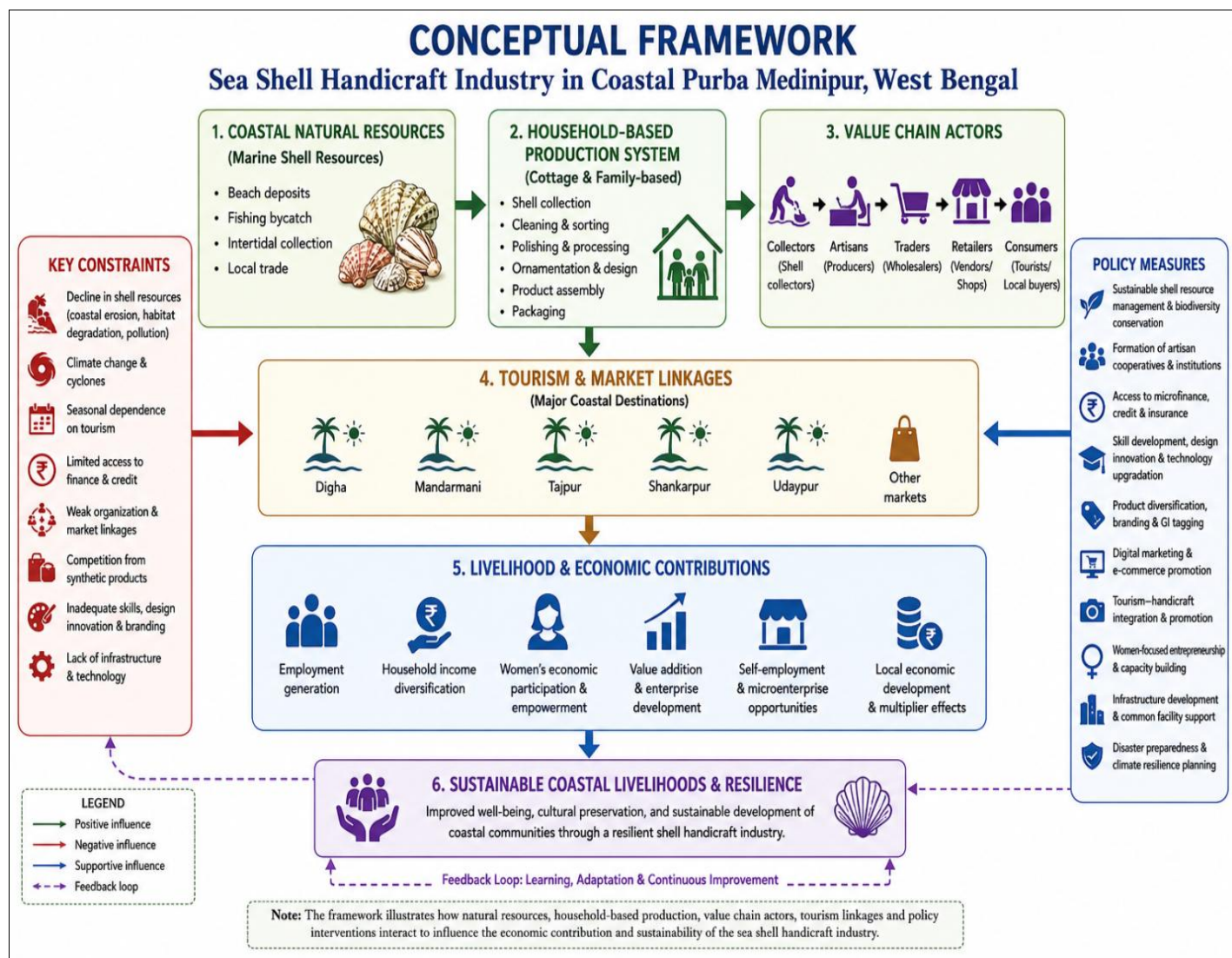


Figure 1. Conceptual Framework

STUDY AREA

The present study was undertaken in the Purba Medinipur district of the southern section of the state of West Bengal, India, located along the northern coastal margin of the Bay of Bengal. The strategically located area is in view of its large coastline, rich marine resource base, tourism economy, and various coastal livelihood systems. Purba Medinipur is located approximately between the latitudes of 21°36'35" N and 22°57'10" N, and the longitudes of 86°33'50" E and 88°12'40" E. The district was created after the bifurcation of the erstwhile Medinipur district and today constitutes one of the most commercially and ecologically important coastal areas of eastern India. Purba Medinipur is flanked on the south by the Bay of Bengal, on the west by the Paschim Medinipur district, on the north by the Hooghly district and on the east by the South 24 Parganas district, across the Haldi-Hooghly estuary system. The southern coastal tract of the district has significant ecological, economic, and tourism value on account of the co-existence of marine habitats, estuarine settings, fishing villages, tourism hubs, and artisanal occupational systems. The district contains a variety of coastal geomorphologic features, such as sandy beaches, dunes, mudflats, tidal creeks, estuaries and intertidal zones,

all of which sustain high marine biological productivity and coastal biodiversity.

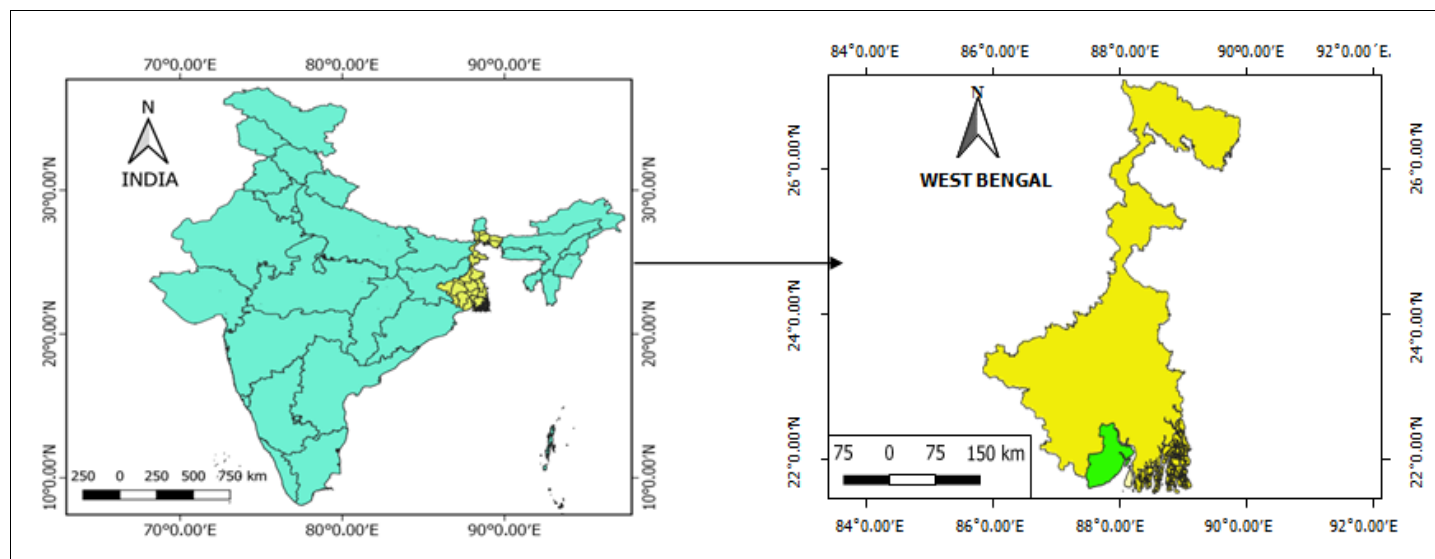


Figure 2. Location of the Study Area

The study was conducted in selected coastal villages and tourism-orientated settlements, i.e., Digha, Mandarmani, Shankarpur, Tajpur, Udaypur, and adjoining coastal villages, where seashell handicraft activities are economically prominent and socially embedded in local livelihood systems. These coastal communities have become important tourist sites in West Bengal and attract a considerable number of domestic and regional tourists all round the year. The growth of tourism has strongly spurred the commercialisation of shell handicrafts through seaside markets, roadside kiosks, souvenir stores, temporary fairs and household-based manufacturing hubs. The selection of the study area was dictated by a set of interacting ecological and socio-economic considerations. The coastal belt of Purba Medinipur is marked by high marine molluscan diversity, which provides a major raw material base for shell handicraft manufacturing. We widely use molluscan shells gathered from beaches, intertidal zones, fishing by-catch, and coastal waterways to produce decorative, ornamental, and ritual handicrafts. The region has a significant tourism economy, with coastal locations like Digha, Mandarmani, Tajpur, and Shankarpur continuously demanding a market for shell-based souvenirs, jewellery, ornamental artifacts, and conch products. Tourism has provided considerable opportunities for artisanal commerce and small domestic enterprises in the manufacturing and distribution of shell crafts.

The research area has a substantial concentration of household-based, cottage-orientated shellcraft operations with craftsmen, women workers, seasonal workers, traders, and tourism-reliant producers. Production systems are generally informal; they are based on family labour, traditional artisanal expertise, and localised market networks. Fishing, aquaculture, tourism services, dry fish processing, petty trade, agriculture, and wage labour are some of the means by which coastal households diversify their livelihoods. Shell handicrafts are an essential component of this diversification. Local livelihoods in the coastal area are largely dependent on the marine and coastal resources, which make the region particularly ideal for a close look at the connection between the environmental conditions and the artisanal economic activities. The coastal ecosystem offers favourable ecological conditions for the occurrence of commercially important shell-bearing molluscan species that sustain tourism-related handicraft manufacturing systems.

However, Purba Medinipur's coastline habitat is ecologically fragile and more sensitive to environmental change and anthropogenic pressure. During the last decade, coastal erosion, cyclonic storms, tidal floods, sea level rise, habitat degradation, marine pollution, tourism expansion, and coastal urbanisation have been significantly affecting marine ecosystems and molluscan diversity. These environmental vulnerabilities directly affect the availability of shell materials, the sustainability of production, and the security of livelihoods for artisan households engaged in marine-based handicraft sectors. Thus, the coastal belt of Purba Medinipur is an important interface between the marine environment, coastal tourism, artisanal production systems, and livelihood diversification. The study area provides a suitable geographical setting for the analysis of socio-

economic dynamics, employment structure, environmental issues, tourism linkages, and the economic importance of the seashell handicraft business in the coastal belt of West Bengal.

OBJECTIVES

The study aims to:

1. Analyze the livelihood structure of sea shell handicraft artisans.
2. Examine the production process and value chain.
3. Assess the economic contribution of the industry.
4. Identify key constraints and policy measures.

METHODOLOGY

The present work is descriptive, analytical and exploratory in nature to study the livelihood dynamics and economic importance of the seashell handicraft sector in the coastal area of Purba Medinipur District of West Bengal, India. The study is mostly a regional desk-based analysis that integrates data from various secondary sources to investigate the links between marine resource utilisation, artisanal production, tourism development and livelihood sustainability. The study area includes the major coastal tourist destinations of Digha, Mandarmani, Shankarpur, Tajpur and Udaypur along with the adjacent coastal villages located in the northern coastal belt of Bay of Bengal. These locations were chosen due to their high diversity of marine molluscs, expanding tourism sector, reliance on marine resources and common shell craft activities. The coastal environment provides favourable biological conditions for shell availability and supports a network of tourism-related economic activities that improve local incomes.

The study is primarily based on secondary data. Data were collected from a wide range of published and institutional sources such as Census of India reports, Department of Tourism of the Government of West Bengal, Fisheries Department publication, Integrated Coastal Zone Management Project (ICZMP) reports, coastal biodiversity assessment, government statistical handbooks and district level development reports. Peer-reviewed journal articles, books, monographs, and scientific research on marine ecology, coastal lifestyles, tourist geography, handicraft industries, and regional development were used as supplementary information. The tourism and economic data used in the research were collected from officially published datasets and publications, taking into account the relevant periods of data reporting and years of publication.

The research did not involve organised primary surveys, interviews or focus group discussions or questionnaire based studies. However, some coastal sites were visited for a limited period to observe generally the shellcraft activities and to photograph the production and selling processes. These observations were not used as a primary source of empirical data, but simply served as additional contextual information. The data gathered were analysed through qualitative and quantitative methods. Descriptive statistics were employed to analyse patterns of tourist expansion, occupational diversification, regional economic activity, and marine resource exploitation. Qualitative content analysis was used to explain the socio-economic importance of the seashell handicraft industry and its impact on creation of livelihoods in coastal communities.

The economic structure of the industry was understood using a value-chain approach. The investigation distinguishes between main actors in the production and marketing process, namely shell collectors, craftsmen, processors, traders, retailers and tourism-oriented vendors. Moreover, the research studies different product categories and market channels through which shellcraft items reach local, regional, and tourist markets. This approach improves understanding of revenue generation, employment linkages, and economic interdependencies in the sector.

The research addressed environmental sustainability issues such as coastal erosion, destruction of habitats, marine pollution and the long-term availability of shell resources. The research recognises the limitations associated with the largely informal nature of the shellcraft business, notably the absence of reliable household-level economic records, production figures and standardised market data. However, in spite of these limitations, the combination of many secondary sources gives a strong basis for assessing the economic importance, contribution to livelihoods and sustainability concerns of the seashell handicraft sector in the coastal villages of Purba Medinipur District. The methodological framework provides a comprehensive regional assessment of the interactions between coastal resources, tourism development, artisanal production systems, and livelihood sustainability, thus enhancing the understanding of coastal informal economies in eastern India.

RESULTS

Livelihood Dynamics

The sea shell handicraft sector is a vital element of the coastal livelihood framework in Purba Medinipur district; especially in tourism centred coastal regions like Digha, Mandarmani, Tajpur, Shankarpur and Udaypur. The industry contributes substantially to the creation of additional employment opportunities for poor coastal households that depend mainly on fishing, tourism, and informal work. The livelihood framework associated with shell handicrafts suggests strong interconnections between exploitation of marine resources, management of home labour, commercialization of tourism and seasonal economic adjustments. The results indicate that the shell handicraft sector acts as a traditional artisanal trade and a flexible livelihood strategy in ecologically and economically precarious coastal areas (Todaro & Smith, 2007; Midgley, 1995; Sarkar et al., 2021). The rapid expansion of tourism along the Digha-Sankarpur coastal region has drastically impacted the commercialization of shell-based craft goods.

Table 1. Major Coastal Tourism Centres and Their Economic Significance in Purba Medinipur District

Coastal Tourism Centre	Major Activities	Economic Significance	Relevance to Shell Handicraft Industry
Digha	Tourism, handicrafts, hospitality, transport, beach vending	Receives approximately 25 lakh domestic tourists annually and contributes nearly 43% of coastal tourist flow of West Bengal	Major commercial market for shell souvenirs and decorative handicrafts
Mandarmani	Beach tourism, resorts, handicraft vending	Rapidly emerging tourism destination with increasing tourist inflow	Seasonal market centre for shell handicraft products
Shankarpur	Fishing, tourism, coastal trade	Tourism-linked artisanal and fishing economy	Important centre for shell collection and handicraft sales
Tajpur	Eco-tourism, beach tourism, small trade	Developing tourism destination with expanding visitor base	Small-scale commercialization of shell handicrafts
Udaypur	Coastal tourism, fishing, informal vending	Growing tourism expansion zone	Informal shell handicraft vending and tourism-based trade

Source: Integrated Coastal Zone Management Project, Government of West Bengal; Purba Medinipur Tourism Portal.

The Integrated Coastal Zone Management Project of the Government of West Bengal indicates that Digha attracts almost 2.5 million domestic tourists each year, representing around 43% of the entire tourist influx to coastal West Bengal. Recent tourism estimates indicate that the coastal tourism sector of Purba Medinipur gets over 2 million annual visitors across several beach resorts. The persistent influx of tourists has created

considerable demand for marine decorative items, tourism souvenirs, and shell crafts, consequently enhancing the economic importance of the artisanal industry.

Household-based Production

The shell handicraft sector of Purba Medinipur is largely dominated by household and cottage based production. The majority of production activities occur in traditional residential environments, where family members work together in the various stages of production, including shell cleaning, sorting, polishing, decoration, assembling, packaging, and retail preparation. The use of household-centred production techniques in turn reduces operational costs, enabling artisans to effectively utilise family labour without large capital outlay or formal industrial infrastructure (Upadhyaya, 1973; Rao, 1994).

Traditional craft knowledge and technical skills are passed on from generation to generation through informal learning processes and family-based apprenticeship systems. Older family members teach the younger generations about shell processing, decorative art, product design and marketing. The intergenerational transfer of indigenous technical knowledge is of great help for the continuity and preservation of traditional shell craft culture among the coastal communities (Mandal, 1997). The cottage-based nature of the sector allows production flexibility in response to seasonal tourism demand and the availability of raw materials. Similar observations have been made in the traditional handicraft sectors across India in household-based artisanal production systems (Upadhyaya, 1973; Rao, 1994). The results show the importance of family-based production systems for the viability of the shell handicraft sector in coastal Purba Medinipur.

Workforce Composition

The shell craft industry creates both indirect and direct employment in the coastal economy. The employment framework is predominantly informal, flexible and labour intensive with many occupational categories related to shell collection, production, transport, trade and tourism related retail marketing (Paul & Jana, 2014). There are different types of employment available in the industry that includes Self-employment, Casual wage employment and Supplementary household income generation.

Table 2. Employment Characteristics of the Sea Shell Handicraft Industry

Employment Category	Characteristics	Livelihood Significance
Self-employment	Household-based artisanal production and marketing	Major supplementary livelihood source for coastal households
Casual wage employment	Seasonal labor engagement during tourism peak periods	Temporary employment generation for low-income populations
Women-led household labor	Shell cleaning, polishing, ornamentation, packaging	Enhances household income diversification
Tourism-linked vending	Beach stalls, kiosks, tourism souvenir markets	Expands direct market accessibility
Family labor participation	Intergenerational artisanal skill transfer	Preserves indigenous technical knowledge

Source: Synthesized from coastal livelihood studies and handicraft economy literature.

Self-employment is the predominant mode of occupational involvement in the shell handicraft industry. Many artisans are engaged in small-scale units of domestic production, selling their products through seaside stalls, tourism markets, roadside kiosks and local craft shops. Low entry barriers (Rao, 1994) imply that the industry still remains open for socially marginalised households with inadequate capital resources. Casual wage employment is predominant in the manufacturing chain, especially during peak tourism seasons when the

demand for decorative shell products increases steeply. Temporary labourers often engage in shell cleaning, polishing, decorating, transporting and marketing activities. The industry is of vital importance in coastal areas where other industrial job opportunities are scarce. In many fishing dependent communities shell handicrafts are an important supplementary income in the periods of low fishing activity, bad weather, monsoon breaks and declining fish landings. Non-farm artisanal occupations were also found to be important for reducing vulnerability of livelihoods of marine dependent people, in other livelihood studies in coastal India (Pijush et al., 2014; Sarkar et al., 2021). The findings suggest that the shell handicraft sector is an important component of the informal coastal economy with regard to occupational diversification and livelihood resilience.

Gender Participation

Women make up a large part of the workforce in the shell handicraft sector in Purba Medinipur. Participation of women is important particularly because production processes are household based and compatible with domestic responsibilities. Women are involved in several stages of the artisanal production process such as cleaning of shells, sorting, polishing, decorative ornamentation, preparing jewellery, product assembly, packing and retail sales (Paul & Jana, 2014). Women's presence makes a significant contribution to income diversification and to the economic resilience of coastal artisan households. In some cases, female labour is required to maintain the household production systems, particularly in low-income households dependent on seasonal tourism and marine occupations (Midgley, 1995).

Table 3. Role of Women in the Shell Handicraft Production System

Production Activity	Women's Participation Level	Economic Importance
Shell cleaning and sorting	High	Essential preliminary processing activity
Polishing and ornamentation	High	Major value addition process
Jewelry preparation	Moderate to High	Small-scale household income generation
Product packaging	Moderate	Supports tourism-oriented marketing
Retail selling	Moderate	Generates direct household earnings

Source: Coastal handicraft livelihood studies and informal artisanal economy analyses.

However, the production and marketing system continue to be characterised by gender inequalities. Women artisans often lack access to institutional finance, market networks, entrepreneurial training, and decision-making authority. Their participation is primarily at the lower end of the artisanal manufacturing chain. Similar gendered labour patterns have been found in informal handicraft sectors across South Asia (Banerjee, 2012). Enhancing women-led self-help organisations, cooperative marketing structures and skill development initiatives can considerably enhance women's economic participation and entrepreneurial potential in the shell handicraft industry.

Seasonal Characteristics of the Industry

The shell handicraft industry exhibits a distinctly seasonal economic pattern which is closely related to travel patterns, holiday demand, weather conditions and the concentration of visitors in coastal tourism hubs. Income from shell handicrafts fluctuates widely throughout the year depending on the number of visitors and market demand at that time of year. Peak income times typically align with Winter tourism season, Durga Puja holidays, Christmas and New Year tourism, Summer vacation periods and Coastal festivals and tourism fairs. During these periods demand for decorative shell products and tourism souvenirs increases, resulting in increased sales and a temporary increase in artisanal employment opportunities. Tourism data indicate that coastal locations like Digha draw millions of domestic tourists per year, thereby enhancing seasonal market opportunities for local artists (Government of West Bengal Tourism Reports, 2024).

Table 4. Tourist Flow and Tourism-related Economic Indicators in Coastal Purba Medinipur

Tourism Indicator	Reported Statistics	Economic Implication
Annual domestic tourist arrival in Digha	Approximately 25 lakh tourists	Expands tourism-based handicraft and souvenir market
Share of West Bengal coastal tourism	About 43% concentrated in Digha	Strengthens coastal informal economy and artisanal trade
Annual visitors in Purba Medinipur coastal belt	More than 2 million visitors	Increases demand for local decorative and shell products
Economic inflow during Digha Rath Yatra season	Approximately ₹100 crore	Creates strong multiplier effects on coastal livelihoods
Estimated Jagannath Dham visitor inflow (2025–26)	More than 1.3 crore visitors	Expands year-round tourism-linked artisanal economy

Source: Government of West Bengal Tourism Reports and recent tourism-economic reports.

Table 4 clearly shows the strong economic link between the growth of tourists and the shell handicraft sector in coastal Purba Medinipur. The large number of tourists that visit Digha (around 2.5 million each year) and the fact that more than 43% of West Bengal’s coastal tourism is concentrated here, ensure a strong and stable market for shell-based handicrafts, souvenirs and other locally-made artisan products. The seaside area draws close to two million visitors a year, providing a huge boost to local business and employment. Major festivals like Digha Rath Yatra witness market inflow of over ₹100 crore (approx.), which enhances the market demand and revenue opportunity for artists and small businesses. “The newly-inaugurated Jagannath Dham is expected to attract more than 1.3 crore people annually, which will boost tourism round the year, reducing seasonal demand fluctuations. The findings revealed that tourism is a major source of job creation, income diversification, value addition and economic development in the shell handicraft industry and broader coastal economy of Purba Medinipur.

Conversely, the off-season periods, with monsoonal precipitation, cyclonic events, coastal inundation and reduced influx of visitors, have a detrimental impact on artisanal income and market operations. Climatic hazards in the Bay of Bengal coastal zone (Panda et al., 2023) enhance the seasonal economic instability of the shell handicraft industry. Although it is seasonal, the sector still provides a vital additional income for people living on the coast. The flexibility and adaptability of shell handicraft manufacturing means that craftsmen can combine this skill with fishing, tourism sales, casual labour and other informal economic activities. The results indicate that the shell handicraft sector is of importance for livelihood adaptability and seasonal income stabilisation in ecologically fragile coastal economies.

Production Process and Value Chain of the Sea Shell Handicraft Industry

The production system of the sea shell handicraft sector in coastal Purba Medinipur constitutes a multifaceted value chain that includes numerous stakeholders, such as marine resource collectors, fishermen, craftsmen, merchants, retailers, and consumers engaged in tourism. The sector is mostly informal and household-based, depending on locally available marine shell materials and conventional artisanal expertise. The value chain illustrates the transformation of naturally accessible coastal materials into economically useful handicrafts via a sequence of labor-intensive procedures.

Raw Material Procurement

The manufacturing process starts with the collecting and acquisition of sea shells. Raw materials are sourced chiefly from three principal origins: (i) naturally deposited shells found along beaches and intertidal zones, (ii) fishing bycatch gathered from local fishing harbours and landing sites, and (iii) shell traders who provide substantial quantities of shells from various coastal areas. The coastal region of Purba Medinipur, especially around Digha, Shankarpur, Mandarmani, and Udaypur, sustains varied molluscan populations due to its

expansive sandy beaches, tidal flats, and estuary habitats (Ramakrishna et al., 2003; Chakraborty et al., 2008).

Table 5. Major Sources of Raw Materials for Shell Handicraft Production

Source of Shells	Availability	Economic Importance
Beach deposits	Seasonal	Low-cost raw material source
Fishing bycatch	Throughout the year	Regular supply of shells
Fish landing centers	Moderate to high	Commercial procurement
Local shell traders	High	Ensures continuity of production
Intertidal collection	Seasonal	Supplementary raw material source

Source: Compiled from Ramakrishna et al. (2003), Chakraborty et al. (2008), and field-based coastal livelihood studies.

Several gastropod and bivalve species from the families Cypraeidae, Muricidae, Veneridae, Donacidae, Arcidae, and Turbinidae are often used in handicraft manufacturing. The Zoological Survey of India has documented around 120 species of marine molluscs in the Digha–Shankarpur coastal habitat, constituting a significant biological resource for shell-based artisanal enterprises (Ramakrishna et al., 2003).

Processing and Value Addition

After procurement, the shells are processed through several stages to improve their aesthetic quality and commercial value. The production process is mainly labour-intensive and relies heavily on domestic labour. The processing activities include: cleaning, bleaching, polishing, cutting, drilling, engraving, painting, ornamentation and assembly. The shells are first washed and purified to remove sediments, algae and organic residues. The shells are then sorted by artisans on the basis of size, colour, texture and market demand. Broken shells are discarded or turned into decorative mosaic items. Manual polishing with sandpaper and polishing tools improves the surface gloss.

Table 6. Stages of Shell Handicraft Production

Production Stage	Major Activities
Collection	Procurement of shells from beaches and fishing centers
Cleaning	Removal of organic matter and sediments
Sorting	Classification by size, shape, and color
Polishing	Surface finishing and enhancement
Processing	Cutting, drilling, engraving
Ornamentation	Decorative design work
Assembly	Product preparation
Packaging	Market-ready presentation
Marketing	Retail and wholesale sales

Value enhancement is usually the result of creative transformation. Artisans produce a range of products including decorative wall hangings, shell flowers, lampshades, jewellery and necklaces, key rings, photo frames, decorative mirrors, table decorations, religious artefacts and souvenir goods. Converting waste sea shells into beautiful items greatly increases the value of the product. The research into the economics of handicraft has shown that the value of raw materials can be significantly increased by artisanal workmanship, depending on the complexity of the product and the market demand (Rao, 1994).



Plate 1: Sequential stages of sea shell handicraft production and representative finished products in the coastal villages of Purba Medinipur, West Bengal. (a) Collection and procurement of sea shells from coastal areas and local markets; (b) Initial sorting and grading of raw shells based on size, shape, and quality; (c) Cleaning and preparation of shells for processing; (d) Cutting, trimming, and shaping of shells using hand-operated tools and equipment; (e) Polishing and surface finishing to enhance aesthetic appeal; (f) Assembly, ornamentation, and decorative craftsmanship during product fabrication; (g) Variety of completed sea shell handicraft items produced by artisans; (h) Display and packaging of finished products for commercial sale; and (i) Marketing and retailing of sea shell handicrafts through local shops and tourist markets.

Source: Photographic documentation undertaken by the author in selected coastal villages of Purba Medinipur district, West Bengal, 2025.

The photographic evidence illustrates the transformation of unprocessed marine resources into value-added handicrafts through a series of labour-intensive processes carried out by local artisans. The process starts with the collecting and buying of seashells, which are then sorted, cleaned and graded according to size, shape and quality. The next stages are cutting, shaping, polishing and ornamental finishing, all of which require a great deal of artisanal skill and craftsmanship. The illustration demonstrates the combination of traditional knowledge and manual skills for the transformation of readily available natural shell materials into commercially viable handicraft products. The final stages of the manufacturing cycle feature finished products, merchandising and promotional activities, highlighting the commercial side of the industry. The manufacturing chain generates employment to household members, particularly women, in processing, adorning, packing and retailing activities. The photo plate depicts the technological process of seashell handicraft production and its contribution to livelihood diversification, rural entrepreneurship, women's economic empowerment and conservation of indigenous artisanal traditions in the coastal economy of Purba Medinipur.

Marketing Channels and Tourism Linkages

The marketing framework of the shell handicraft sector is closely related to the development of coastal tourism. Main trading hubs for shell items are Digha, Mandarmani, Tajpur, Shankarpur and other tourist destinations. The growth of tourism has increased consumer taste for marine ornamental items and coastal souvenirs. The Integrated Coastal Zone Management Project said, Digha attracts nearly 2.5 million tourists every year, which is about 43 per cent of the West Bengal coastal tourist traffic. The large number of visitors provides a great market opportunity for local artisans and merchants. The marketing structure of the sea shell handicraft sector in Purba Medinipur is defined by a complex value chain with several economic participants, distinct product classifications, and numerous market channels.

The value chain is made up of many different kinds of participants performing specialised functions at various stages in the production and marketing process. At the upstream level, shell collectors and fishers are the primary providers of raw materials. Shell collectors extract the naturally deposited shells from the coastal and intertidal zones, but also obtain the additional shell resources as bycatch during maritime fishing from fishermen. The manufacturing phase is essentially characterised by the domestic craftsmen who clean, sort, polish, cut, engrave, decorate and assemble products. These artisanal operations are the key value addition processes in the sector and are generally dependent on traditional skills which have been passed down generations. On the downstream side of the value chain, traders, wholesalers, retailers and vendors in the tourism-market provide product distribution and market access. Institutional entities such as government agencies, self-help groups (SHGs), cooperative organisations and non-governmental organisations (NGOs) provide additional support through skill development, entrepreneurship training, financial aid and promotional activities (Kaplinsky & Morris, 2001; Rao, 1994).

The sector offers a variety of products to cater to the needs of different customer segments and market demands. The shell handicrafts can be grouped into four major groups based on their functional and economic characteristics. At the initial stage decorative objects include wall hangings, flower vases, mirrors, lampshades, ornamental pieces and other home décor products. Second, decorative and jewellery items include necklaces, earrings, bracelets, bangles, pendants and fashion accessories. Third, tourist souvenirs are small boats, shell sculptures, key rings, fridge magnets and other personal gifts made for the guests. Fourth, religious and cultural goods comprise conch-shell artefacts, ceremonial objects and devotional items associated with pilgrimage and religious tourism. Having a diverse product range allows artisans to cater to a wider range of customers and reduces the risks associated with depending on one product type in the market.

The marketing chain generally follows the sequence:

Shell Collector → Artisan → Local Trader → Retail Vendor → Tourist Consumer

Shell handicrafts can be marketed in many ways. These ways differ in their reach, profitability and the number of middlemen involved. Goods generally travel from artisans to dealers and retailers, and ultimately to customers, particularly tourists in seaside areas. Many craftsmen sell their products right from seashore booths, roadside kiosks, tourist markets, seasonal fairs and handcraft exhibits. They enable producers to take a bigger cut of the final sale and to enhance the relationships between artists and their consumers. Moreover, fairs and tourist festivals supported by the government promote the development of markets outside the local coasts. Despite its existing limitations, social media platforms and e-commerce networks are slowly becoming a supporting channel for promotion and sales of products.

Economic Value Chain and Income Generation

The value chain analysis shows that the shell handicraft sector generates economic benefits at different levels. A little more economic value is added at every stage of production, from raw shell collecting to retail sales. However, the highest value added often takes place in the process of creative processing and retail marketing. The industry comprises a number of livelihood activities, including shell collection, transportation, processing, trade, retailing and tourism-based vending. Such activities provide direct and indirect employment opportunities in coastal areas.

The profitability is significantly increased by the demand generated by tourism. Research on tourist economics in coastal Purba Medinipur suggests that tourism related commercial activities have significant multiplier effects across informal sectors like handicrafts, transportation, hospitality and small scale commerce. As tourist spots like Digha, Mandarmani and others have gained popularity, shell-based handicrafts have become more economically viable. However, the value chain is beset with many constraints such as seasonality in demand, dependence on tourism, limited access to institutional credit, lack of product diversification, competition from synthetic ornamental products, weak market structure and lack of formal cooperatives. Such constraints reduce the bargaining power and profitability of artisans, especially at the family level.

Table 7. Conceptual Value Chain of the Sea Shell Handicraft Industry

Stage	Activity	Value Addition
Primary	Shell collection	Raw material acquisition
Secondary	Cleaning and processing	Physical transformation
Tertiary	Ornamentation and product design	Artistic value addition
Marketing	Retail and wholesale trade	Commercial value enhancement
Consumption	Tourist purchase and use	Final economic realization

The results show that the shell handicraft sector is not only a traditional craft, but also a dynamic coastal value chain system including marine biodiversity, artisanal skills, tourist markets and home livelihoods. The sustainability of this initiative is contingent on the conservation of natural resource availability, improved market access, value addition and equitable livelihood development for coastal artisan communities.

Economic Contribution of the Sea Shell Handicraft Industry

The seashell handicrafts industry is a significant part of the Purba Medinipur district's informal coastal economy. Though the sector is still largely unorganised and there is no available comprehensive official statistics on production volume, employment and revenue generation, secondary evidence suggests that the sector is contributing substantially to livelihood diversification, tourism related commerce, household income generation and local economic development. The industry creates economic opportunities at various stages of production, marketing and distribution, by turning local marine resources into value added commodities.

The tourism industry is economically important due to the rise of coastal tourism in places such as Digha, Mandarmani, Shankarpur, Tajpur and Udaypur. Integrated Coastal Zone Management Project (ICZMP) Digha has a footfall of around 2.5 million domestic tourists per year and contributes nearly 43% of the total coastal tourist flow of West Bengal. This is a large visitor base and therefore a substantial market for shell based decorative products and souvenirs. Tourists buy in large numbers for coastal memorabilia and gifts. Thus the tourism demand is the main economic force that supports the shell handicraft sector.

Contribution to Household Income

The shell handicraft industry is mainly an auxiliary source of income for coastal communities. Many artisan households combine the production of shell craft with fishing, fish processing, small trade, tourism vending and informal labour. This diversification of livelihoods reduces dependence on a single income source and increases economic resilience, especially in times of low fish catches, adverse weather and seasonal unemployment.

Table 8. Economic Functions of the Shell Handicraft Industry at Household Level

Economic Function	Contribution to Household Economy
Supplementary income	Reduces dependence on fishing and seasonal labor
Livelihood diversification	Expands multiple income opportunities
Family labor utilization	Increases productivity without additional labor costs

Women's participation	Enhances household earnings
Tourism-linked sales	Generates cash income from visitor expenditure
Cottage enterprise development	Supports self-employment opportunities

Source: Compiled from coastal livelihood studies (Pijush et al., 2014; Sarkar et al., 2021).

Research on coastal livelihoods in eastern India suggests that non-farm artisanal activities are significant in stabilising household economies and easing livelihood vulnerability in marine-dependent communities (Pijush et al., 2014; Sarkar et al., 2021). Shell handicrafts create income-generating opportunities at various phases of the tourism cycle in Purba Medinipur, particularly during the peak visitor seasons.

Employment Generation and Local Economic Linkages

The shell handicraft industry provides direct and indirect employment. Direct employment includes collection, processing, polishing, ornamentation, assembly and retail marketing of shells. Transportation, tourism sales, packaging, local commerce and supply chain operations create indirect employment. The industry is by its very nature informal and labour intensive and is of particular importance to economically disadvantaged groups with limited access to formal employment opportunities. The industry promotes self-employment of artisans and creates seasonal wage employment during the peak seasons of tourist demand.

Table 9. Employment Opportunities Generated by the Shell Handicraft Industry

Employment Category	Nature of Employment
Shell collectors	Raw material procurement
Artisan producers	Processing and product manufacturing
Family labor	Household-based production activities
Retail vendors	Marketing and sales
Traders and intermediaries	Distribution and supply chain management
Tourism-linked sellers	Beach and market-based sales

Source: Synthesized from handicraft economy and coastal livelihood literature.

The findings indicate that the industry contributes to local economic circulation by generating employment opportunities at different stages of the value chain. Because production is labor-intensive rather than capital-intensive, a substantial proportion of economic benefits remain within local communities.

Tourism-driven Economic Contribution

Tourism is the main economic driving force for the shell handicraft industry. Coastal tourism boosts demand for handicrafts and improves market access for artisans. Shell handicrafts are usually available at beach markets, tourist stalls, roadside kiosks, handicraft shops, hotels and seasonal fairs. Survey of tourists in coastal Purba Medinipur shows that out of the 200 tourists surveyed, 144 respondents or 72 per cent were from urban areas and 56 respondents or 28 per cent were from rural areas. This implies that most of the visitors to the coastal tourism spots of Purba Medinipur are from urban areas. The district is the domain of urban tourists, showing that urban demand for leisure, recreation and vacation travel is the primary driver of coastal tourism in the district. Urban tourists generally have more disposable income and are more likely to spend on accommodation, food, transportation and locally made handicrafts and souvenirs. As a result, they make a significant contribution to the local tourism sector and are an important market for handmade products like seashell souvenirs.

Value Addition and Resource-based Economic Development

The shell handicraft industry contributes significantly to the economy by creating value from the locally available marine resources. The raw unprocessed shells collected from beaches, bycatch from fishing and from coastal markets have comparatively low economic value. Cleaning, polishing, embellishing and artistically

transforming these materials make them into high value decorative commodities. Thus, the ornamentation and design provide artistic and creative elements that make the products unique and culturally significant. The artistry used at this stage is significant in distinguishing products and rendering them more attractive to the market. The packaging and branding phase adds commercial value by improving product presentation, providing protection in transit and creating a market identity. Ultimately, retail marketing enables the realisation of accumulated value via transactions with consumers, particularly tourists and local purchasers. The final selling price is the total of all the value enhancements of all the prior stages.

This value addition process promotes local resource based economic development by increasing the market value of the marine resources and promoting small scale entrepreneurship. These way cottage industries are boosted, jobs are created and tourism related economic activities are increased. The industry therefore exemplifies how coastal natural resources can be transformed into commercially viable products using indigenous knowledge and artisanal skills.

Contribution to Women's Economic Empowerment

Sea shell handicraft industry is important for women's economic empowerment in the coastal areas of Purba Medinipur. The survey indicates that 36% of women respondents are engaged in the manufacture of marine jewellery and sea shell products and this is the most important livelihood activity among the occupations considered (Chanda, 2023). Women are involved in shell processing, ornamentation, packaging and retailing, which earns them additional income for the households and contributes to their economic independence. The home-based nature of the sector allows women to combine income-generating activities with domestic responsibilities, which is especially appropriate in rural coastal areas.

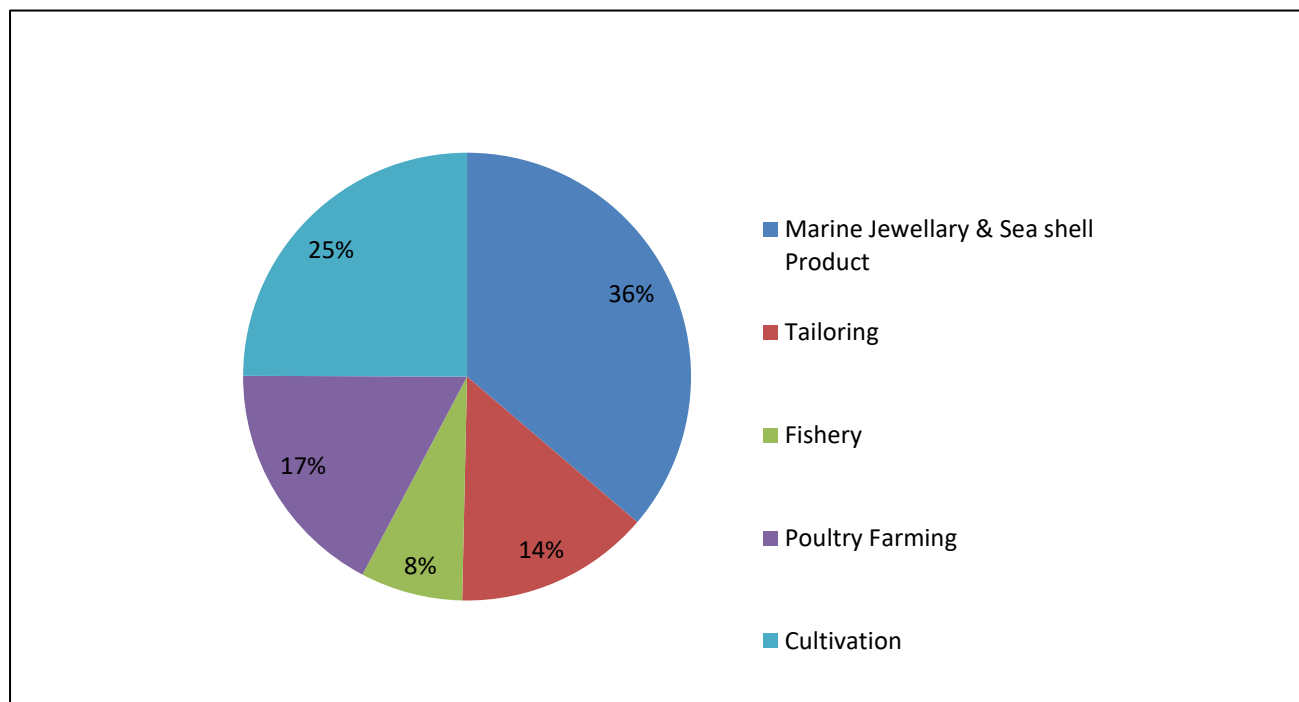


Figure: 3 Different Types of Economic Activities of the SHGs in Coastal Purba Medinipur

Source: Adapted from Role of Self Help Groups in Women Empowerment, Chanda (2023).

Self-Help Groups (SHGs) have been instrumental in increasing women's participation in the sea shell handicraft industry. SHGs enable women to overcome financial constraints and improve the quality of products and access to the market through access to microcredit, skill development programmes and collective marketing initiatives. Membership in SHGs improves women's decision making ability, business skills and social inclusion, and reduces dependence on intermediaries. Therefore, the integration of sea shell handicrafts and SHGs has proved to be a successful tool for improving livelihood, financial empowerment and gender inclusive development in the coastal region of Purba Medinipur.

Economic Constraints and Development Challenges

The shell handicraft industry, despite its economic importance, faces a number of structural constraints which limit its growth potential. These factors include: Seasonal dependence on tourism; Problems are limited access to institutional finance and lack of organised marketing system. Lack of co-operative framework, competition from synthetic decorative items, lack of product diversification, lack of branding and export promotion are the challenges. These challenges have a negative impact on profitability and on the artisans' ability to optimise the growing tourism demand. Therefore, policy interventions targeting skill development, cooperative marketing, product innovation, tourism integration and financial inclusion are necessary to enhance the industry's economic contribution.

The results reveal that the seashell handicraft industry contributes to the coastal economy in many ways, such as providing employment opportunities, diversifying household income, commercialising tourism, adding value, and involving women economically. Although the sector is mostly informal, its economic importance extends beyond artisanal production to broader tourism and livelihood systems. The industry is an example of a coastal resource based enterprise where marine biodiversity, traditional knowledge and tourism demand meet to offer local economic opportunities. Enhancement of market access, institutional support and sustainable resource management can improve the contribution of the shell handicraft industry towards inclusive coastal development of the district of Purba Medinipur.

Key Constraints and Policy Measures

The sea shell handicraft industry of Purba Medinipur has a number of structural, economic, environmental and institutional challenges that hamper the long-term sustainability and expansion of the industry, though it contributes significantly to livelihood diversification, tourism-based income generation and coastal resource-based entrepreneurship. The industry is largely informal and of little official interest, although vital in assisting impoverished coastal families. However, secondary data reveals that the industry suffers from poor institutional support, resource related problems, inadequate market structure and increasing environmental constraints. It is important to address these challenges in order to enhance livelihood security and promote sustainable coastal development.

Raw Material Constraints and Resource Sustainability

The business of handicrafts from shells depends on the availability of marine shells. However, molluscan habitats and shell supply have been adversely affected by increasing coastal environmental degradation, habitat transformation, beach erosion, marine pollution and ecological pressure from tourism. Studies along the Digha–Shankarpur coastline environment indicate that unregulated tourism and human disturbances are threatening coastal biodiversity (Chakraborty et al., 2008; Panda et al., 2023).

Coastal tourism is becoming more and more commercialised and this is a greater threat to the intertidal habitats. Accumulation of plastic trash, alteration of beaches, and habitat degradation diminish the ecological productivity of molluscan populations that provide raw material for shell handicrafts. Artisanal livelihoods are particularly vulnerable to environmental degradation due to the relatively high reliance of the sector on naturally occurring shell materials.

Table 10. Environmental Constraints Affecting the Shell Handicraft Industry

Constraint	Impact on Shell Handicraft Industry
Coastal erosion	Reduction in shell resource zones and beach habitats
Habitat degradation	Decline in molluscan populations
Plastic pollution	Adverse effects on marine biodiversity and shell availability
Tourism-induced environmental pressure	Beach contamination and habitat disturbance of intertidal ecosystems

Cyclonic disturbances	Damage to livelihood infrastructure resulting from declining tourist inflow and reduced handicraft sales
Sea-level rise	Long-term threat to coastal settlements and resource availability

Source: Compiled from coastal ecological studies and Integrated Coastal Zone Management reports.

Market and Commercialization Constraints

The primary problem of the shell handicraft sector is the lack of structured marketing methods. Most craft workers depend on selling at the sea shore, on road side stalls, temporary kiosks and local tourist markets. Marketing channels are often fragmented, with small middlemen in control, putting craftspeople at a disadvantage in negotiations.

Table 11. Major Marketing Constraints

Marketing Constraint	Consequence
Lack of organized markets	Reduced profitability
Dependence on intermediaries	Lower artisan earnings
Poor branding and packaging	Limited market competitiveness
Competition from synthetic products	Reduced demand for traditional crafts
Weak digital market access	Restricted market expansion
Limited export linkages	Constrained commercialization

Source: Adapted from Rao (1994) and handicraft marketing studies.

Mass produced synthetic ornamental articles, which are usually cheaper and more available in travel markets, also pose a serious threat to the business. This can make it difficult at times for craftspeople to stay profitable and competitive in the marketplace. Commercial development of the sector is hampered by limited access to domestic and foreign markets; the product brand is not yet sufficient, packaging requirements.

Financial and Institutional Constraints

The conventional financial systems still largely ignore the shell handicraft sector. Most of these craftsmen are running small home based enterprises and have limited access to financial services, insurance, institutional finance and government sponsored entrepreneurship programs. Lack of financial capital restricts investment in improved tools, production technologies, product diversification, and business expansion.

Furthermore, the absence of strong producer associations and artisan cooperatives limits market integration opportunities and weakens the bargaining power of the producers. Earlier studies of India's handicraft industries (Upadhyaya, 1973; Rao, 1994) have identified institutional weaknesses as a major obstacle to the artisanal economic development. Access to government welfare programs, social security benefits, and economic development programs is also restricted by informal production.

Seasonal Dependence and Tourism Vulnerability

The shell handicraft sector is economically sustainable solely due to the tourism. Digha, Mandarmani, Tajpur and Shankarpur are the main market for Shell based ornamental products and millions of tourists come to visit these coastal tourist destinations every year. The Integrated Coastal Zone Management Project states that Digha receives over 2.5 million tourists annually, which is almost 43% of the total coastal tourist arrivals in West Bengal. Tourism has important market opportunities but over-dependence on visitor numbers increases vulnerability to livelihoods. The income from handicrafts is strongly influenced by the seasonality of the tourist numbers. Sales typically reach their peak during winter tourist seasons, summer vacations, Durga Puja holidays, and the Christmas–New Year period, while off-season months witness a drastic reduction in demand sometimes.

Table 12. Tourism-related Vulnerabilities

Vulnerability Factor	Impact on Shell Handicraft Industry
Seasonal tourist inflow	Fluctuating income
Cyclones and storms	Reduced tourist arrivals
Coastal flooding	Market disruption
Public health emergencies	Decline in tourism demand
Tourism market concentration	Dependence on a limited consumer base

Source: Tourism and coastal livelihood studies.

Moreover, storms, heavy rainfall, coastal flooding and public health emergencies may significantly disrupt tourism activities. The economic consequences of such disruptions were particularly clear during the COVID-19 pandemic, when income dropped significantly in communities in coastal India that are dependent on tourism.

Gender-related Challenges

Women's contributions to shell processing, decorating, packing and selling are significant, but they are often trapped in the lower-income segments of the value chain. Women artisans often encounter obstacles in gaining access to financial resources, entrepreneurship training, market networks and decision-making structures. The uneven distribution of economic opportunities hinders the industry's potential as a tool for women's empowerment. Women-centred livelihood interventions and cooperative structures continue to be a key area of development.

Policy Measures for Sustainable Development

The results highlight the need for an effective policy framework to improve the economic viability and sustainability of the shell handicraft sector. Policy interventions should focus on conserving resources, expanding markets, financial inclusion, skill development and strengthening institutions.

Table 13. Recommended Policy Measures

Policy Intervention	Expected Outcome
Sustainable shell resource management	Long-term raw material security
Coastal biodiversity conservation	Protection of molluscan habitats
Formation of artisan cooperatives	Improved bargaining power
Access to microfinance and credit	Enterprise expansion
Skill development and design training	Product diversification and innovation
Branding and geographical indication (GI) initiatives	Enhanced market value
Digital marketing platforms	Expanded market access
Women-focused entrepreneurship programs	Greater gender inclusion
Tourism-handicraft integration strategies	Increased sales opportunities
Disaster-resilient livelihood planning	Reduced climate vulnerability

The study finds that the shell handicraft sector of Purba Medinipur has immense potential to enhance sustainable coastal livelihood but the development of the sector is hampered by environmental degradation, institutional failure, market constraints, financial exclusion and dependence on tourism. The sector is an example of an informal economy based on coastal resources, where economic sustainability is intrinsically linked to ecological sustainability. Therefore, future development plans should adopt a unified strategy to simultaneously tackle biodiversity protection, livelihood improvement, tourist management and artisan welfare. Strengthening institutional support mechanisms, enhancing market linkages, promoting women's economic participation and ensuring sustainable utilisation of marine resources will be critical for enhancing the long-term resilience and competitiveness of the shell handicraft industry in coastal Purba Medinipur.

DISCUSSION

The result of the present research reveals that the seashell handicrafts sector plays an important role in the coastal subsistence economy of Purba Medinipur district. The industry is a resource-based rural economy that combines marine biodiversity, traditional craft skills, tourism development and household economic strategies. The findings show that shell handicrafts are not only cultural artefacts but also important livelihood resources contributing to income diversification, employment, women's participation and local economic development. The findings are consistent with the Sustainable Livelihood Framework which highlights the importance of natural, human, social, physical and financial capital in determining livelihood outcomes (DFID, 1999; Scoones, 1998).

The general characteristics of traditional handicraft industries in developing countries are well illustrated by the widespread use of household manufacturing as referred to in the study. Like the other artisanal industries in India, the production of shell handicraft in Purba Medinipur is largely dependent on familial labour, indigenous technical expertise and transfer of skills from one generation to another (Upadhyaya, 1973; Rao, 1994). Concentrating on the household for production strategies reduces operating costs and allows for flexibility in dealing with seasonal market variations. Family-based apprentice systems for preserving traditional handicrafts maintain local cultural heritage and generate economic benefits. The finding lends weight to the argument that traditional craft enterprises can be important vehicles for cultural preservation and livelihood security (Mandal, 1997).

The research also shows the importance of the shell handicraft sector in the diversification of livelihoods of coastal families. In some coastal settlements artisanal production is a complementary occupation to fishing, fish processing, tourism-related activities, and informal work. Such diversification is particularly important in coastal areas, where livelihoods are vulnerable to environmental uncertainty, fluctuating seafood catches and seasonal employment. Based on existing literature, diversified livelihood portfolios enhance family resilience and reduce vulnerability to economic and environmental shocks (Allison & Ellis, 2001; Sarkar et al., 2021). The results indicate that shell handicrafts are an adaptive livelihood strategy that increases household resilience in vulnerable coastal habitats.

Tourism is a big factor accountable for the growth and economic viability of the shell handicraft industry. The presence of handicraft markets around the major coastal tourist destinations such as Digha, Mandarmani, Tajpur and Shankarpur reflects a close association between the tourism growth and the commercialisation of handicrafts. Tourist demand and revenue generated for local artists can create market prospects for shell-based ornamental items, souvenirs and cultural artefacts. This finding supports previous research that identified tourism as an important driver of handicraft enterprise development in coastal and rural areas (Ashley & Roe, 2002; Scheyvens, 1999). The sale of handicrafts related to tourism creates effects of the economic multiplier which increases the economic circulation of the local area, strengthening transit services, commercial retail, housing facilities and other support activities. Another important conclusion of the research is the significant participation of women in the shell handicraft manufacturing. Women do a lot of cleaning, sorting, polishing, decorating, packing and selling. Their participation demonstrates the industry's contribution to advancing gender-inclusive economic growth. Similar results were found in the research on rural firms in South Asia focusing on handicraft production, where home-based production systems enable women to combine productive and reproductive work (Midgley, 1995; Banerjee, 2012). The report also shows that gender disparities remain in access to finance, market networks, entrepreneurial opportunities and decision-making. Thus, while the sector has contributed to women's economic engagement, its potential to transform is constrained by broader structural inequities. Therefore, enhancing women-led cooperatives, self-help groups and entrepreneurial activities may enhance economic empowerment and social inclusion.

The value chain study highlights the economic need to transform low-value marine resources into commercially viable handicraft products. Manufacturing involves many steps that add economic value such as collection, cleaning, processing, decoration, packing and marketing. The findings demonstrate the potential of coastal natural resources for the development of local businesses in combination with traditional skills and market demand. Similar resource-based value addition processes have been identified in small-scale artisanal

enterprises in different parts of the world where local communities derive economic benefits from sustainable utilisation of natural resources (Kaplinsky & Morris, 2001). The shell handicraft industry of Purba Medinipur is an illustration of localised value chain development in a coastal tourist economy. The report highlights many problems that threaten the long-term survival of the industry, despite its economic importance. A major limitation is environmental degradation. The impact of coastal erosion, habitat degradation, plastic pollution, environmental stress from tourism and climate change (like cyclones and rising sea levels) on marine biodiversity and availability of shell resources. Increasing environmental stress on coastal ecosystems and molluscan habitats has also been reported in earlier ecological investigations along the Digha–Shankarpur coast (Chakraborty et al., 2008; Panda et al., 2023). The industry is dependent upon marine shell supplies and is therefore vulnerable to ecological degradation, a threat to both the environment and the economy. These results highlight the significance of integrating efforts of biodiversity conservation and livelihood development programs.

The results also reveal significant market and institutional constraints. The lack of organised marketing channels, limited access to institutional finance, weak cooperative structures and dependence on intermediaries reduce the profitability and competitiveness of craft enterprises. Similar problems have been found in many traditional handicrafts industries of India (Rao, 1994; Upadhyaya, 1973). Moreover, traditional shell handicrafts have been losing market share due to growing competition from mass-produced synthetic ornaments. Artists' economic viability in competitive tourist markets may be hindered by insufficient branding, product diversity and market innovation. One of the biggest concerns raised in the research is the reliance of the industry on tourism. Tourism offers considerable economic opportunities, but reliance on tourists for demand increases the vulnerability of livelihoods. Craft revenue can be heavily affected by seasonal variations in tourist arrivals, cyclonic disruptions and external shocks such as the COVID-19 pandemic. This is consistent with the literature on tourism-based economies which argues that over-dependence on the market can heighten economic vulnerability in the absence of diverse livelihood opportunities (Ashley & Roe, 2002; Scheyvens, 1999). This, in turn, may enhance economic resilience by reinforcing alternative market avenues, such as e-commerce platforms and local artisan networks.

The study reveals that the seashell handicraft sector is a vital part of the coastal economy of Purba Medinipur. It promotes livelihood diversification, employment creation, women participation, commercialisation for tourism & local value addition. Environmental protection, institutional support, market growth and climate resilience are the key to the sustainability of the industry. Future policy interventions should adopt a holistic approach to simultaneously promote coastal biodiversity protection, artisanal enterprise, sustainable tourist development and social inclusion. This approach would raise the economic significance of the shell handicraft sector and enhance the long-term resilience of coastal communities to increasing environmental and economic challenges.

CONCLUSION

This research underscores the significance of the seashell handicraft industry as a livelihood and value addition of the coastal economy of Purba Medinipur, West Bengal. The results suggest that the industry operates at the crossroads between marine resource exploitation, traditional artisanal expertise, and tourism-oriented market structures, thereby encouraging livelihood diversity, employment generation and local economic development. The extent of domestic production and family labour reflects the continuing importance of traditional cottage industries in underpinning rural and coastal livelihoods in a more market-oriented economy. The study finds that the shell handicraft sector contributes significantly to the socio-economic sphere by encouraging the occupational diversification of coastal families that are highly dependent on fisheries, tourism and other climate-sensitive activities. The industry adds value to naturally occurring shell resources through a number of phases, converting them into economically viable products, and creating revenue opportunities in the production, processing, marketing and retail sectors of the value chain. The high participation of women in artisanal activities reflects the sector's contribution to inclusive livelihood development and family economic resilience.

Environmental, economic and institutional problems are coming together to threaten the long-term viability of the industry. Challenges to the adaptive capacity and competitiveness of artisanal enterprises include

environmental concerns, availability of shell resources, risks of climate change, low market integration, access to finance and institutional support. These problems highlight the vulnerability of resource-dependent livelihoods in rapidly changing coastal ecosystems. The study concludes that a holistic development framework for the shell handicraft sector is critical for its future sustainability, which addresses resource conservation, livelihood improvement and market expansion comprehensively. Improving sustainable resource management, value-chain development, market access, support for women-led enterprises and integrating handicrafts into coastal tourism planning are essential for increasing economic returns and livelihood resilience. These initiatives would help to conserve traditional craft traditions and promote sustainable and inclusive coastal development.

The findings highlight the importance of small scale artisanal enterprises as locally embedded economic systems that offer livelihood opportunities through the use of indigenous knowledge and natural resources. The sea shell handicraft sector in Purba Medinipur is an important paradigm of community-based coastal entrepreneurship and its sustainable development can mitigate poverty, conserve cultural heritage and promote resilient coastal economies. Finally, future research should address the empirical basis of policy development and sustainable coastal resource management through quantitative assessments of value-chain efficiency, household income dependence, gender dimensions of labour participation, and the impacts of climate change and tourism growth on artisanal livelihoods.

Ethical Approval: Verbal consent was obtained from participants prior to photography wherever individuals were identifiable in the images. No personal or sensitive information was collected, and all data were used solely for academic and research purposes in accordance with accepted ethical research practices.

Conflict of Interest: The author declare that he has no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

REFERENCES

1. Allison, E. H., & Ellis, F. (2001). The livelihoods approach and management of small-scale fisheries. *Marine Policy*, 25(5), 377–388. [https://doi.org/10.1016/S0308-597X\(01\)00023-9](https://doi.org/10.1016/S0308-597X(01)00023-9)
2. Appukuttan, K. K. (2008). *Marine biodiversity and molluscan resources of India*. Zoological Survey of India.
3. Ashley, C., & Roe, D. (2002). Making tourism work for the poor: Strategies and challenges in Southern Africa. *Development Southern Africa*, 19(1), 61–82. <https://doi.org/10.1080/03768350220123855>
4. Baby, R. L., Hasan, I., Kabir, K. A., & Naser, M. N. (2010). Nutrient analysis of some commercially important molluscs of Bangladesh. *Journal of Scientific Research*, 2(2), 390–396. <https://doi.org/10.3329/jsr.v2i2.3364>
5. Banerjee, S. (2012). Problems and prospects of conch shell industry in Bankura district, West Bengal. *International Journal of Social Science and Interdisciplinary Research*, 1(9), 112–121.
6. Bieler, R., Carter, J. G., & Coan, E. V. (2010). Classification of bivalve families. *Malacologia*, 52(2), 113–184. <https://doi.org/10.4002/040.052.0201>
7. Brown, K. M., & Lydeard, C. (2010). Mollusca: Gastropoda. In J. H. Thorp and A. P. Covich (Eds.), *Ecology and classification of North American freshwater invertebrates* (3rd ed., pp. 277–307). Academic Press.
8. Chakraborty, S., Chatterjee, A., & Das, P. (2008). Littoral molluscan diversity of Midnapore coast, West Bengal. *Records of the Zoological Survey of India*, 108(2), 45–58.
9. Chakraborty, S. K., Choudhury, A., & Choudhury, S. (2008). *Marine molluscan diversity and coastal ecosystem dynamics along the Digha–Shankarpur coast of West Bengal* (Occasional Paper No. 281). Zoological Survey of India.
10. Chain, M., Midya, S., Mahato, S., Haldar, A., & Maiti, S. (2025). Molluscan diversity of East Medinipur: Distribution patterns, ecological and economical significance. *International Research Journal of Basic and Applied Sciences*, 10, 91–107.
11. Chapman, A. D. (2009). *Numbers of living species in Australia and the world* (2nd ed.). Australian Biological Resources Study.

12. Chanda, D. (2023). "Role of Self Help Groups in Women Empowerment and Problems Faced by the SHG Members of Coastal Villages of Ramnagar Block-1 in Purba Medinipur District, West Bengal". Critical Studies in Science, Research and Development Cell, Asutosh College, Vol-1, pp.251-261, ISBN: 978-81-966693-7-9.
13. Das, S. (2016). Ecology and habitat diversity of molluscs in Indian aquatic ecosystems. *International Journal of Fisheries and Aquatic Studies*, 4(3), 122–128.
14. Department for International Development. (1999). *Sustainable livelihoods guidance sheets*. Department for International Development.
15. Dutt, R., & Sundaram, K. P. M. (2016). *Indian economy* (72nd ed.). S. Chand Publishing.
16. Flammang, R. A. (1977). Economic growth and economic development: Counterparts or competitors? *Economic Development and Cultural Change*, 25(1), 47–61. <https://doi.org/10.1086/451949>
17. Gangan, S. S., Khot, R. B., & Chavan, V. R. (2014). Diversity of intertidal molluscs from the west coast of India. *Bioscience Discovery*, 5(1), 98–104.
18. Ghosh, A. (1999). Conch shell industry in Bankura district: A geographical appraisal. *Geographical Review of India*, 61(3), 257–269.
19. Heppell, D. (2001). The chank shell industry in India: Tradition and transformation. *Indian Economic and Social History Review*, 38(2), 145–167. <https://doi.org/10.1177/001946460103800202>
20. Hornell, J. (1914). *The sacred chank of India: A monograph of the Indian conch shell industries*. Madras Fisheries Department.
21. Hornell, J. (1982). *The chank shell industry of India*. Government Press.
22. Kaplinsky, R., & Morris, M. (2001). *A handbook for value chain research*. Institute of Development Studies, University of Sussex.
23. Khalua, R. K., Das, M., & Bhattacharya, M. (2014). Seasonal variation in nutritive value of *Bellamya bengalensis* from Midnapore district. *International Journal of Fisheries and Aquatic Studies*, 2(1), 15–20.
24. Mandal, B. (1997). *Folk crafts and artisans of West Bengal*. Firma KLM.
25. Midgley, J. (1995). *Social development: The developmental perspective in social welfare*. Sage Publications.
26. Natarajan, P., Ramadoss, K., Sivalingam, D., & Thillairajan, P. (1987). Ornamental shell industry of Ramanathapuram coast. *Bulletin of the Central Marine Fisheries Research Institute*, 42, 106–111.
27. Panda, S., Das, S., & Roy, P. (2023). Intertidal ecosystem dynamics and biodiversity conservation along the Bay of Bengal coast. *Journal of Coastal Ecology*, 18(2), 56–69.
28. Paul, A., & Jana, S. K. (2014). Economics of conch shell industry in West Bengal. *International Journal of Humanities and Social Science Studies*, 1(2), 84–96.
29. Pijush, P., Mandal, B., & Rana, G. C. (2014). Crafts and gears operated in brackish water fed canal for harvesting fishes in different seasons to maintain livelihood of the fishermen communities. *International Research Journal of Biological Sciences*, 3(9), 8–13.
30. Pravina, X. & Radhika, R. & Lija, P.. (2025). Environmental Degradation and Its Impact on Coastal Fisheries: Challenges and Policy Responses. *International Journal of Advanced Research*. 13. 107-113. 10.21474/IJAR01/21691.
31. Ramakrishna, Talukdar, S., & Mukherjee, A. (2003). Marine bivalve diversity of Digha coastal region, West Bengal. *Records of the Zoological Survey of India*, 101(1–2), 1–35.
32. Rao, T. (1994). *Marketing of handicrafts in India*. Discovery Publishing House.
33. Sarkar, A., Das, R., & Maiti, P. (2021). Livelihood significance of molluscan resources among rural communities of eastern India. *Indian Journal of Traditional Knowledge*, 20(1), 142–149.
34. Scheyvens, R. (1999). Ecotourism and the empowerment of local communities. *Tourism Management*, 20(2), 245–249. [https://doi.org/10.1016/S0261-5177\(98\)00069-7](https://doi.org/10.1016/S0261-5177(98)00069-7)
35. Scoones, I. (1998). *Sustainable rural livelihoods: A framework for analysis* (IDS Working Paper No. 72). Institute of Development Studies, University of Sussex.
36. Seddon, M. B. (2000). Molluscan biodiversity and conservation of freshwater ecosystems. *Journal of Conchology Special Publication*, 2, 45–56.
37. Sen, A., & Sinha, P. (1961). Occupational structure and artisanal economy in West Bengal. *Economic Weekly*, 13(4), 156–163.

-
38. Subba Rao, N. V., Dey, A., & Mitra, S. C. (1992). Freshwater molluscs as supplementary protein resources in India. *Records of the Zoological Survey of India*, 92(1–4), 123–134.
 39. Todaro, M. P., & Smith, S. C. (2007). *Economic development* (9th ed.). Pearson Education.
 40. Upadhyaya, K. (1973). *Economics of handicraft industries in India*. Vora & Co.
 41. West Bengal Tourism Department. (2024). *Tourism statistics and coastal tourism development report*. Government of West Bengal.
 42. World Health Organization. (2019). *World health statistics 2019: Monitoring health for the Sustainable Development Goals (SDGs)*. WHO Press.
 43. Yadav, S., Tripathi, A., & Singh, R. (2019). Field sampling methods for molluscan biodiversity assessment in coastal ecosystems. *Journal of Marine Biology and Oceanography*, 8(2), 1–9.