



## The Seashell Business and Its Supply Chain in Zanzibar: What Is Its Status? What Challenges Its Development?

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<http://dx.doi.org/10.47814/ijssrr.v6i7.1367>

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### **Abstract**

Despite the critical activities of people live in the coastal areas, plus efforts undertaken by fisherfolk, and government in improving the supply of sea resources, seashells supply chain has been regarded to have meagre enhancement economic contributions to the livelihood of coastal community in Zanzibar. This poses considerable challenge in the improvement of the seashell business development in Zanzibar. This study examined the entire seashell business supply chain, the current status of the business and challenges hindering the growth of the business in Zanzibar. The study was qualitative in nature with a case study design. Data were collected from 45 participants who were purposively and conveniently sampled. Data were collected through in-depth interviews (IDI), document review and Focus Group Discussions (FGD). Data obtained were analyzed by content analysis done manually. Findings reveal that currently; the status of seashell business is described differently by different people. While others consider it valuable others see it invaluable. Findings further reveal that government restrictions on seashell export and limited research on the business hinder its growth. Thus, the study recommends to the government to invest massively in research so as to unveil more opportunities presented by the seashell. These opportunities may open room for more development ventures.

**Keywords:** *Seashells; Supply Chain; Zanzibar; Livelihood; Tanzania*

### **1. Introduction**

#### **1.1 Background Information**

Seashells are a hard protective exoskeletons of an invertebrate composed of calcium carbonate (Olivia et al., 2015). Sometime they are called Mollusca marine organisms such as oyster, clam, mussel

and scallops. They are abundantly available around the coastal areas (Kumar, 2019). They consist of three layers: an outer layer (periostracum) made in organic material, a middle layer made of columnar calcite and an inner layer consisting of laminated or nacreous calcite (Hikmatunnisa *et al.*, 2020). Indeed, while some of Mollusca organisms have their bodies enclosed with a calcareous, hard external surface secreted by the animal inside, other have an external calcareous covering. On the other hand, slugs, nudibranchs, octopuses, squids, and cuttlefish either have internal shells or no shell at all. Their availability bring about so much importance to the livelihood of the coastal inhabitants and those far from the coast too (Gadgihalli *et al.*, 2017).

Seashells are of significant importance to people. They are utilized for various purposes to meet urgent needs (Jena, 2019; Lertwattanaruk *et al.*, 2012). While in some instances seashells are used as currency (in the past), they are on the other side used as ornaments (crafts, art and architectural decoration), cutting tools and lamps, thus presenting an important role in ecology and society in particular (Nandini, 2021; Gadgihalli *et al.*, 2017). Studies have moreover reported that seashells are at times used as a replacement of manufacturing products like cement, power manufacturing and alike (Olivia *et al.*, 2015). Moreover, they are used as highly nutritious food stuff and are favourite foods among coastal communities. Thus, they contribute towards maintaining their food security (Ammari *et al.*, 2017).

In several other studies, seashells have been reported to have more than the mentioned benefits. For example, a study by Elliot-Richardson and Fuller (2013) reports that, seashells are useful in making aggregate and the practice started in the early 18<sup>th</sup> Century. In the same vein, a study by Peceno *et al.* (2020) reveals that a part from being used as lime substitute, wastewater decontaminant, soil conditioner, fertilizer constituent and feed additive among others, seashells are currently a source of building material in most European countries replacing conventional materials such as gravel, sand and lime (Yoon *et al.*, 2004; Yang, Yi & Leem, 2005; Adewuyi & Adegoke, 2008; Yang *et al.*, 2010). Moreover, a study by Eziefula, Eze and Eziefula (2018) and Bamigboye *et al.* (2022) reported that, for environmental conservation, seashells have been turned to be a source of concrete even in the African context especially Nigeria.

In other countries such as Indonesia, Malaysia, and Singapore; seashells collection and associated activities have widely contributed to facilitating livelihoods of different people. Seashells have been reported to be used in the manufacturing of handicrafts, fertilizers and soil decomposers (Bamigboye *et al.*, 2021; Jović *et al.*, 2019). A study by Mijman *et al.* (2015) reports that seashells are important raw materials for cosmetics and decoration; and have helped to generate incomes from general sales. In the mentioned countries, apart from being used as raw materials in manufacturing of different products, they are used as food by local communities and sold as food to visitors and other peoples from distant locations (Nijman *et al.*, 2015; Everett & Shalli, 2014; Naung Oo, 2018; Bamigboye *et al.*, 2021). To this end, it is well suggested by previous studies in different parts of the world that, the economic contributions of the seashells and their entire supply chain to people's livelihood cannot be underestimated.

In the East African Coast, particularly Zanzibar, seashell collection has been one of the major economic activity among people in the Isle. They have, in the first instance been used as food, and later as ornamental commodities sold to different people with in the island or those who visit the island. It is widely reported that, the shapes, colours and structures of seashells have attracted so many people to participate in the business and to many, it has become a hobby. The coastal areas being active in the supply chain seashells, it has facilitated coastal communities to directly being involved in the act of collecting these shells, processing them and selling them to different individuals. (Gadgihalli *et al.*, 2017).

Tanzania's coastline is covered by 800km stretching from latitude 4°49'S, which is situated to the narrow continental shelf with the 200km contour depth about 4 km offshore. In such situation, the Islands of Zanzibar and Mafia have coastal shelves extending to 80 Km and covered by the 200m depth contour. In general, both Tanzania Mainland and Zanzibar have a total about 30,000km<sup>2</sup> (Francis & Bryceson, 2001) palatable for supporting marine life as well as being an ultimate source of coastal community livelihood (Everett & Shalli, 2014). Thus, due to the fact that the sea has been their main source of livelihood, people living along the coast have been participating in the supply chain activities of seashells. Such activities include harvesting, distribution and marketing (Nandini, 2021). In this condition, seashells supply chain builds up products chain principally for ensuring economic use like food, incomes, and manufacturing as one of the versatile functions in the coastal community (Jena, 2019; Mwitondi *et al.*, 2021; Nandini, 2021; Olivia *et al.*, 2015).

While a study by Eziefula *et al.* (2018) report that more than 16 billion tonnes of Molluscs are harvested annually worldwide, little is known regarding the proportion of each continent and the country. Moreover, it is not clear the proportion of the Molluscs used for food and commercial purposes. In the Tanzanian context and particularly Zanzibar, despite the reality that Molluscs and seashell collection has been a growing business of recent and the government has invested several efforts to improve the seashell business in Zanzibar, there is dearth in literature presenting the nature of the business, its entire supply chain and contemporary challenges it faces. This study therefore intends to explore the entire seashell business supply chain, its current state and challenges facing it faces.

It is expected that findings of this research will be beneficial for providing advocacy materials, as well as for decision making among various stakeholders such as seashells customers, wholesalers and foreign visitors on the activities and contributions of seashells materials. The research also will help the government to be aware of the activities of seashells supply chain since this sub-sector contributes significantly to the blue economy while improving the livelihood of the people involved in it.

## 2. Literature Review

### 2.1 Seashell Business around the World

Along the world, seashell collection and business contribute widely to people's life and livelihood. It has been reported by Edalat-Behbahani *et al.* (2019) that currently, apart from being used as food, seashell business is a growing business that expects to replace the ordinary concrete and mortar in the construction industry in the European countries. Moreover, Kamarudin *et al.* (2018) reports that, in Malaysia, apart from being used as an ornamental product, currently, seashells are associated with the manufacture of protective materials in the military because it contains a reasonable amount of Calcium Chloride. This implies that seashell business is booming and is associated with industrial development. In another study conducted in Spain on seashell by Peceno *et al.* (2021) reveals that seashells are more likely to be used as raw materials for the manufacture of fire proofing materials in the construction industry. This not only improves safety in homes but also contributes to industrial development. Soltanzadeh *et al.* (2017) argue that seashells are more than food as they hold the potential towards being used as raw materials for the manufacture of blended cement. A study by Agwu, Akpabio and Akpabio (2020) reveal that, while in other African countries seashells are only used for food and decoration, they are in Nigeria used as additives in drilling fluids and oil well cements. In the same view, Bamigboye *et al.* (2020) report that seashells are useful materials in the manufacture of roofing tiles in Nigeria. In the Tanzanian context, seashell business according to Ojala (2012) and Hafidh and Sharif (2021) are useful for marine food and marine tourism. This generally implies that while in other parts of the world seashell business is booming, it seems that only food and marine tourism are the openly known economic activities previously known

and attached to seashell business in the country. This calls for a study to reveal what is taking place in the entire business supply chain.

## 2.2 The Supply Chain Process of Seashells

The economic activities of seashells in the context of supply chain involves three main functions notably harvesting, collection and handling, manufacturing, as well as marketing. With regards to harvesting and collection functions, fishers collect seashells in the deep sea (Mwitondi *et al.*, 2021) and this is mainly conducted during the low tides (Barbachi *et al.*, 2017). The harvesting function is conducted through putting them into sacs, buckets or boats for facilitating handling and transportation (Naung Oo, 2018). The harvesting activity is traditionally conducted on the coastal areas While the manufacturing of seashells activity is practiced through manufacturing of ornaments and decoration tools such as handicrafts (Jiddawi, 2018); this is coupled with manufacture or produces of fertilizers and soil conditioners. Similarly, manufacturing functions involves the construction of coastal settlements along the coastal areas (Fredel, 2019; Bamigboye *et al.*, 2021; Jović *et al.*, 2019). Literature further informs that the marketing role is undertaken through distribution, bargaining and selling the seashells to the customers across the supply chain (Poloju *et al.*, 2018; Nijman *et al.*, 2015; Mwitondi *et al.*, 2021).

However, the above functions widely attribute to positive impacts of the seashells to the coastal community and their livelihood, given that the issue of producing cosmetics, decoration, incomes, foods, settlement as well as ornaments are obtained through active functions of supply chain (Bamigboye *et al.*, 2021 ;Hikmatunnisa *et al.*, 2020; Odunbaku B.James., 2012; Jović *et al.*, 2019).

## 3. Methodology

This research was carried out in Zanzibar and concentrated in Jambiani a village in the Southern region of Unguja Island. The village was used because of its abundance in the number of seashell collectors, the long laid sea shore along which seashell collection takes place, and numerous tourists who normally frequent the village to ask for or buy such shells. Also, the village is considered to be among the area in which shells wholesalers, harvesters and fishers are easily accessible and available in greater numbers compared to other parts in the southern region.

This study employed a qualitative case study design. These facilitated researchers to get in-depth data on activities of seashells supply chain and its economics contributions within the livelihood of coastal community and the country's economy in general. Qualitative approach facilitated the exploration, explanation, discovery as well as an understanding of the current status of seashell business in Zanzibar. The approach helped authors to closely engage with respondents through direct contact with them as well as physical involvement in the setting as suggested by various scholars for instance (Astalin, 2013;Wisdom & Creswell, 2013). The approach helped the researcher to capture feelings, perceptions, attitudes, values, beliefs and experiences of various respondents who participated in this study (Mohajan & Mohajan, 2018;Hancock, 2009).

For the purposes of obtaining the right number of participants of the study, convenience and purposive sampling approaches were used. In this regard, the study included a sample size of 45 participants from whom 5 participants (seashell whole sellers) were obtained from Kibigija village, 20 participants (seashell collectors) sources from Kikadini and Kibigija villagers and the remaining 20 participants (intermediate traders) were obtained from Jambiani village. While whole sellers were sampled purposively, seashell collectors and intermediary traders were obtained conveniently. While researchers were aware of the shortcomings of convenient sampling including biasness, researchers

ensured that participants are obtained from different areas to minimize the level of biasness. Moreover, findings obtained from the sampled participants were compared to already existing ones for validation.

Data in this study were collected the use of key-informant interview, Focus Group Discussion as well as the review of important and relevant documents. The key informant interviews were held with sampled participants where they were found. For instance, whole sellers and intermediate retailers were interviewed around their working places while collectors were interviewed at home or at the seashore. The interviews lasted for around 30 minutes in order to give the participants reasonable time for continuing with their activities and were guided by the interview guide. The sampled key informants were recruited in the study based on their information about the subject, professional background, leadership role or personal experience (Anom, 2011).

Along with interviews, four Focus Group Discussions were carried out by the two researchers, a moderator and a recorder. Focus Group Discussion (FGD) were comprised of 5 men and women respondents aged between 20 and 40. Apart from acting as a validation of Key informant interview findings, FGDs helped the researcher to capture perceptions, opinions, beliefs, and attitudes of the seashell stakeholders regarding the entire seashell business along Jambiani. It also provided checks and balance of the information adding to trustworthiness of collected information. Some of the documents reviewed by authors included previous relevant research reports, government report, and website pages providing insights about seashell business in general. Before the entire data collection exercise, researchers ensured that they had a data collection clearance permit from the College of Business Education and the Zanzibar Second Vice President's office. Researcher also ensured that all participants consented to participate in the study after being informed of the objectives of the study. Researchers ensured that participants' identities and information they provided were kept confidential.

Owing to the qualitative approach applied in this study, the authors adopted a content analysis strategy to summarize, arrange, organize, interpret and present the findings in relation to the main and specific objectives of the study. Transcribed data that were translated from Kiswahili to English by two independent qualified translators were spread into tables. From these tables, findings were generated based on the research objectives. This was done by two researchers in the first three transcripts to check if they obtain similar codes. Then, codes were harmonized and the entire coding of all findings was thoroughly done. Data codes were grouped accordingly and categories of contents they form were created from which important contents were generated. Where necessary, important quotations were captured and presented along findings in the findings section.

## ***4. Findings and Discussion***

### **4.1 The current state of seashell business in Zanzibar**

In order to reveal the nature of seashell business in the current moments in Zanzibar, participants were asked to describe the general nature of this business as it stands. Three important categories of findings were obtained after coding participants' interviews and focus group discussions. The categories included domestic food stuff, marine tourism attraction, domestic decoration, a product sold to tourists, a valueless business. Table 1 presents the obtained results.

Table 1: The state of seashell business in Zanzibar

Categories of findings	Description	Quotations	Implication
<b>Domestic food stuff</b>	Seashell collectors normally sell their catches to people who use seashells as domestic food.	<i>... we are a fishing community, we eat seashells. I sell most of my catches to people around. (P.3).</i>	Seashells contribute to food security.
<b>Marine tourism attraction</b>	Seashells are attractive organisms of the sea. Tourists get attracted to them and pay to see them caught or eaten	<i>The shells are useful. We get paid by tourists only to touch or take photos with them. (P 10)</i> <i>...they are attractive to tourists and pay me to see touch eat them (P17).</i>	It is only a business when there are tourists.
<b>Domestic decoration</b>	Seashell are just collected for home decoration.	<i>...we sell them to those who want to decorate their homes (P12).</i> <i>They are attractive domestic decoration materials. (P 2)</i>	Seashells are sold for domestic decoration.
<b>A product sold to tourists</b>	Some seashells are sold to tourists fetching high prices.	<i>I only sell them to tourists (P21).</i> <i>It is until I see tourism peak season that I sell all my collected seashell (P.17)</i>	It only a meaningful business during the tourism season.
<b>Valueless materials of the sea</b>	Some collectors do not find any useful importance of seashells to them	<i>The business to me is no longer valuable. That is why most of it is littered around here (P4)</i>	The business currently has no value.

#### 4.1.1 Domestic Food Stuff

Findings collected from participants revealed that seashell collectors currently sell their catches to coastal communities who normally use them for their domestic food. Because most coastal communities use seashell meat for food it is common for them to buy seashell from collectors for their needs. During an interview, one collector was quoted saying: *... we are a fishing community, we eat seashells. I sell most of my catches to people around (P.3)*. This implies that even if seashell collectors sell their catches, they fetch little amount of money because they are sold to poor communities around the coast.

#### 4.1.2 Marine Tourism Attraction

Findings reveal that, seashells based on their colour and structure attract most tourists who frequent Zanzibar. It is reported that tourists, most of whom from developed countries are even ready to pay to accompany collectors while hunting for seashells. It was moreover reported that at times tourists pay to touch shells, eat them or even take photos with them. One of seashell collectors reported that to him seashell business is his livelihood strategy and gets a lot of money from it. He was quoted saying that: *“The shells are useful. We get paid by tourists only to touch or take photos with them.” (P 10)*. Cementing this contention, another seashell collector added: *“...they are attractive to tourists and pay me*

*to see touch eat them” (P17).* Such findings imply that to some extent some people involved in the business get some income resulting from seashell collection as compared to others.

#### 4.1.3 Domestic Decoration Material

Findings presented that participants viewed the seashell business as directed to obtaining materials used for domestic decoration. It was revealed that people normally buy seashell from collectors for their interior and exterior domestic decorations. During an interview, a trader said: *“They are attractive domestic decoration materials” (P 2).* Because they are readily available and sold to people with in the community they fetch low prices. During another interview session, an intermediary trader lamented: *“Even if we generate little from them, we sell seashells to those who want to decorate their homes (P12).* Such findings imply that even if seashells are attractive, they do not fetch a lot of income making the business to lag behind compared to how it is in other countries.

#### 4.1.4 A Product Sold to Tourists

Findings obtained from participants of the study reveal that seashells are, during the peak tourism season, sold to tourists who frequent the Zanzibar island. Findings further reveal that because the period is between three to four months, seashell collectors are forced to starve during low tourism season. During an interview, a whole seller reported that: *“It is until I see tourism peak season that I sell all my collected seashell” (P.17).* This implies that seashell business is only a seasonal endeavour that forces participants to find for other activities during low seasons.

#### 4.1.5 Valueless Materials of the Sea

It was vivid from these findings that to some people the current status of seashells is low as they consider seashells to be valueless materials from the sea after their food has been consumed. It is moreover reported that these collectors consider the reality that they do not have any value with seashells because currently there are restrictions dealing with seashells especially when one wants to export them or sell them to tourists. They provide that, because seashells are not valued they are currently littered everywhere and some have been used as building materials (aggregates). During an interview a collector said: *“The business to me is no longer valuable. That is why most of it is littered around here” (P4).* Such findings denote to the reality that restrictions to dealing with seashells have barred many whose income depended on seashells.



Figure1: L-R disposed seashells and seashells used as a building material(concrete)

Even though findings presented varied findings regarding the status of seashell business in Zanzibar, findings are double faced when compared to findings from other parts of the world. Studies by

different scholars (Ojala, 2012; Mijman et al., 2015; Jovic et al., 2019; Bamigboye et al., 2021; Hafidh & Sharif, 2021) report that seashell business is one of the booming economic activity and is useful for tourism attraction, decoration and cosmetics and a source of food to most coastal communities around the world. These studies further stress that as a result of seashell business, tourism has grown widely in coastal communities leading to economic development. On the other side of the coin, findings revealing that seashell business is currently not a valuable business in Zanzibar, are in contradiction with those from other scholars around the world (Edalat-Behbahani et al., 2019; Kamarudin et al., 2018; Soltanzadeh et al., 2017; Paceno 2012) who relate that seashells are of greater importance and the status of their business is growing faster as they are used in manufacturing of cement, protective materials in the military and much more. These findings imply that seashell business in Tanzania is still in its infancy as there are limited studies opening seashell opportunities to collectors, government and traders themselves.

## 4.2 Activities in the Seashell Business Supply Chain

In this objective, the researchers intended to bring to light important activities involved in facilitating the entire supply chain of seashells in Zanzibar. Findings obtained from participants after being coded provided mainly three activities including collection and handling, processing and marketing of seashells. These activities are illustrated in the following sections

### 4.2.1 Collection

Findings obtained from participants revealed that the first activities involved in seashell business is collection and handling of seashells. This involves two types of collectors. While small seashells are collected by women during the low tides, big sized seashells are hunted and collected by special fishermen most of whom use canoes and source them from sea rocks. Upon being collected they are handled in special containers or even in the canoes. Although to some extent collected seashells might be dangerous to fishermen especially when handled poorly, it takes an experienced seashell collector's experience to handle them as required. During an interview session, one collector said: *"There is no seashell business if there are no collectors who hunt, collect, handle and deliver them to different other stakeholders"*. Moreover, while presenting the reality that seashells need special handling another collector added: *"...that is why the big-sized seashells are collected by men because they need careful handling. Otherwise they are quick at snatching the collectors' fingers and cause devastating damages"* (P. 23). Such quotations reveal that the seashell business is only possible if there are collectors who bring seashells from sea to the shore.

### 4.2.2 Seashell Processing

Findings reveal that seashells are processed differently depending on the intention of the processor and the customer. For instance, while some seashells are processed by being boiled to obtain their flesh, others collect the already eaten seashells and use them in creating ornament products by weaving them or sometimes painting them to create other attractive items. During an FGD session, several voices revealed various processing means. They were quoted saying; *"it depends on what you need to use seashells for"*. Another one said: *"while others boil them for food, others include them in special cuisine as directed by their customers"*. Findings further provide that the process of boiling shells nourishes them and adds to their shelf-life. With relation to ornaments, a seemingly experienced craftsman said: *"I sometimes paint them or use them to weave bangles or necklaces that I sell to tourists"*. This implies that seashells are, after being collected from the sea, processed in different ways depending on what one needs them for. This activity involves domestic cooks, hotel workers, craftsmen and women who in one way or the other obtain some income.





Figure 2: Semi-Processed seashells

#### 4.2.3 Seashell Marketing

The marketing activity is always the intention of any one in the business. It is this period financial returns are realized. In this activity, seashell collectors and processors normally present seashells to traders including intermediary and whole sellers. It is in this period that sometimes intermediary traders sell these shells to tourists who visit Zanzibar. Intermediaries normally stage their shells to areas where tourists pass. These areas include hotel gateways, beach gateways and sometimes the public markets. Findings presented by intermediary traders provide the truth that the marketing session is the most important one in the entire supply chain because it is through this that they get their invested funds. One of them said: “...we have to use every technique possible to ensure that seashells are bought. That is why we create very attractive materials out of them to appease our customer” (P.29). In support of this pursuit, another intermediary trader said: “...I am always here. That is where they pass. I know if I don't stage these shells here, it might be difficult to sell them”. (P. 13). Such quotations imply that the seashell business is only complete and valuable when seashells are sold at a reasonable price. It implies further that the entire supply chain of seashells is meaningless if seashells are never sold.

Findings in general present three important activities involved in the seashell business supply chain. Findings reveal three important activities including collection, processing and marketing. Such findings concurs with those of different scholars((Mwitondi *et al.*, 2021; Barbachi *et al.*, 2017) who provide that seashell business starts with collection which is done by hunters in the deep sea during the low tides handled effectively (Naung Oo, 2018) processed to add value to them so that they fetch higher prices (Jiddawi, 2018) and marketed through distribution auction and vending(Nijman *et al.*, 2015; Mwitondi *et al.*, 2021). Findings generally imply that the seashell business supply chain activities are interdependent in the sense that each one depends on the completion of the other. Seashells cannot be sold if they were not collected and processed as required. Thus, the failure of one activity leads to failure of other activities in the seashell business supply chain

#### 4.3 Contemporary Challenges Facing Seashell Business in Zanzibar

In this section, researchers were interested to know what has always hindered seashell business in the current times in Zanzibar. Findings were obtained after asking participants on “*what do you consider to be challenges facing seashell business in Zanzibar today?*” After coding, findings revealed four major challenges including current government regulations on seashell business, limited research on seashell, prices and customer inflow and inadequacy in seashell business mainstreaming. Each of the challenge is detailed in the subsequent paragraphs.

##### 4.3.1 Current Government Regulations on Seashell Business

It was revealed that the current government of Zanzibar has restricted the exportation of raw seashells out of the country. This has led to a number of tourists to abstain from buying seashells because

they are always to surrender them at the airport when caught at the airport scanners. The government has established a seashell shop at the airport. Thus, who ever needs to take unprocessed seashells needs to buy them from the airport from where he/she obtains a permit to take them out of the country. It was however noted by one trader who lamented that:

When tourists buy seashells from us, up on reaching at the airport, government officials confiscate seashells from tourists and sell them again through the government special store at the airport. The act discourages tourists from buying shells from us. By so doing, the government kills our business” (P. 11).

Such a quotation denotes that while the government is restricting uncontrolled export of seashell, it has failed to put an inclusive system that does not deprive intermediary traders and whole sellers the chance to sell their seashells to their targeted customers. The act might be interpreted as centralizing the seashell business by the government which deprives other players of their right to earn a livelihood.

#### **4.3.2 Limited Research on Seashell Sector**

Findings reveal that while the seashell business is one of the trending business in other parts of the world as it presents more opportunities in the manufacturing sector, in Zanzibar, seashells are only used for traditional purposes of domestic and personal decorations. No additional researches are done to see the possibility of having other functions of seashells apart from the known traditional ones. Findings reveal that because of government restrictions of haphazard exportation of seashells, this explains why a reasonable amount of seashells are hipped in different places with no other useful value. During an interview, a whole seller said:

...it won't change if we keep seashells for only these traditional uses and depend on the tourists. If we had serious research on what seashells can be used to manufacture like it is done in other countries, we wouldn't get pressurized by government restrictions. We wouldn't have hips of littered seashell all over the place (P. 17).

Such a statement implies that the seashell business only depends on the existence of traditional values attached to them. Inadequacies in the number of researches in this important business challenges the growth of more serious and profitable of opportunities that would open up various cascading positive impacts to people and the government in general.

#### **4.3.3 Seashell Prices and Customer Inflow**

Findings from participants reveal that, even though seashells have various benefits to people, their prices in Zanzibar vary depending on who buys, where they are sold and the uses of such shells. It was revealed that, unless they are sold to tourists in tourist hot points, otherwise they are sold cheaply. For instance, a middle-sized shell sold to tourists in tourist hot points fetches around \$10 while the same fetches between \$1-2 when sold to locals and in normal markets. It should be reiterated that tourists have a special period of around 2-3 months when the season is over limited income is obtained from seashells due to its limited prices.

#### **4.3.4 Limited Government Efforts of Mainstreaming Seashell Business**

Findings obtained in this study reveal that, while the Zanzibar government has identified the blue economy to be one of the strategic economic sectors it has to mainstream, limited efforts have been invested in seashell business despite its opportunities it presents in the economy. It is moreover revealed

that because the business has not been mainstreamed, that is why it still fetches limited income, it is not among the vibrant business and has not attracted many private organizations to invest in it. During an FGD discussion one of the participants said: *“there is no political will in mainstreaming the business, ... just mere pronouncements”*. On the same issue another said: *“had it been mainstreamed it wouldn't be undermined by many and tagged a low-income earner activity”*. Such quotations explain the reality that seashell collection is considered to be done by low income earners. Moreover, the low participation of people in the sector are partly caused by low mainstreaming efforts by the government and limited financial benefits seashells currently hold.

While these findings present realities concerning what challenges the development of the seashell business in Zanzibar, one of the greatest challenges is research in the field on the possibilities of having more opportunities from seashells. While findings from previous studies present the possibility of having valuable raw materials for the manufacture of military protective materials (Kamarudin *et al.*, 2018), Pecano *et al.* (2012) report that seashells can be used to manufacture fireproof building materials. In the African context, apart from being used for ornaments, Bamigboye *et al.* (2020) report that they are useful materials for the manufacture of roofing tiles. Such findings imply that, to a greater extent, inadequacy of research in the seashell sector holds the full growth and development of the sector in the country.

## 5. Conclusion and Recommendations

In this study, researchers investigated the entire seashell business supply chain. Specifically, the current status of business and challenges for the full development of the business have been explored. The qualitative research approach was adopted and the study obtained its data from respondents sampled from seashell collectors, intermediary traders and whole sellers in Jambiani, Zanzibar. Although findings reveal mixed findings regarding the status of seashell business, it is a fact that the business has declined and has led to most of it being hipped around houses as it has no uses. The government restrictions on export of shells, and overdependence on the traditional uses of seashells that is mostly caused by limited research in the sector inhibits other opportunities that would have been obtained from the sector. In general, the seashell business presents a partially tapped opportunity.

Based on the obtained findings and conclusions, researchers put forward a number of recommendations

- i. The seashell business presents an open opportunity that has to be tapped. This can be done through the government of Zanzibar investing in research on other benefits that seashells presents (roofing materials, concrete, blended cement, military protective materials among others). The obtained findings can help more investment in the business. Such investment will present cascading benefits to individual people and the government.
- ii. While Zanzibar has been facing various challenges resulting from building materials especially gravels. Seashells present an open chance of being used as a building material especially when mixed in aggregates. Thus, upon thorough research on its suitability, seashells can be used instead of gravel for aggregate.
- iii. While controlling the export of seashells is a good initiative, the government of Zanzibar through relevant bodies should not centralize seashell business rather identify special areas where seashells should be sold. In the same area, there should be a government representative providing valid permits of exporting these seashells upon thorough validation. While this will facilitate business, it will empower private seashell traders.

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