Chapter five

URBAN ECONOMY AND MARITIME TRADE
Urban Economy and Maritime Trade

**Port-City-Hinterland Linkages**

A city forms the focal point of a wider region. Cities serve as the basis of mutual exchange of goods and services between the city, on one hand, and its hinterland, on the other. The study of the relationship between them highlights the contribution of the city as the economic focus of the region and at the same time underlines the dependence of the city on the villages for the surplus production of food and raw material. The city flourishes on the wealth of surplus production in the surrounding regions.

The present section discusses the economic base of the port-cities of Goa in particular to the three port-capitals of Chandrapur, Gopakapatana and Ella. The site catchments analysis or the subsistence theory will be used to find out whether the surrounding villages and its hinterland contributed to the economic base of the city for its agro-industrial produce for urban consumption and trade and if possible to identify such villages.

This theory is based on the scientific assumption that further the resource area is from the site the less likely will it be exploited. This can be done by walking 1 or 2 km outward from the site in question and study various aspect of the landscape and soils. Area close to the settlement around 1 km is fully exploited, 2-3 km, 70%, 3-4 km, 50% and 5 km, 32% as the distance increases the % of exploitation decreases this can be done by studying the artefacts and ecofacts found at the site by surveying the catchment area resources of the site. For example farmlands will be located 5 km or 1 hr walking distance and this can be identified through the irrigation provided and soil erosion.

**Agriculture**

Agriculture was the mainstay of the economic life of the people of Goa. The climate and soil was conducive for the growth of a wide variety of products. Soil was one of the basic natural resource for the human survival and its socio-economic development. Soil at the port-capitals of Goa that is, Chandrapur, Gopakapatana and Ella were marshy, saline,
lateritic and sandy coastal, surrounded by fertile alluvial areas along the banks of the river Zuari and Mandovi. This type of soil led to the formation of different land forms namely

➢ **Morod lands** or the upland or terraced fields sustainable for horticultural crops or rain-fed crop of rice. A type of land found at the port-capital of Chandrapur as biar morod, nai morod, bail morod, savari morod, coliechem morod and ada morod.

➢ **Ker lands** refer to flat land at low elevation above sea-level and having a high water table, arable, sandy to sandy loam. It is conducive for multiple cropping through irrigation for the cultivation of rabi, paddy, vegetable and pulses. The type of land found at the port-capital of Chandrapur and Gopakapattana which is suitable for the cultivation of paddy.

➢ **Khazan lands** are low lying areas often below sea level, along, the estuaries. Khazan lands and sluice gates at the port capitals are named on the basis of their size as (dakti and vodli manos), person who reclaimed it or constructed it or who donated it, (bircasana) village, (damcasana) location, flora and fauna (vanacasana).

**Type of khazans found in inscriptions:** Inscriptions provide lot of references to the grant of khazan lands, for example, copper plate inscription of Maurya Amniritavarman grants one hala of khajjana land to a Brahman and also states that this Brahman would enjoy the produce of the land by putting up a bund to prevent salt water from entering. The following are the type of khazans found mentioned in the inscription:

- **Pukolli Khajjan:** A type of khazan land situated in the upper region mentioned in the copper plate of Bhoja Kapalivarman.
• **Kapotî- Khajjan:** A type of *khazan* land probably located along the river to the north in the village Malara mentioned in the copper plate inscription of Bhoja Prithvimallavarman.⁸

• **Vakulaka chehha kshetra** refers to a field protected by embankments.⁹

These lands were owned by the village communities, cultivated and shared the produce jointly.

**Produce of the land**

Fertility of the land led to the cultivation of two crops, summer and winter. For example, the inscription of Rattaraja refers to a rice field yielding two crops annually in the rice village of Kalvala.¹⁰

The main produce of the land at the port-capital thus includes the following:

➢ **Rice:** The staple food of the Goans and an important crop of Goa even today. It is cultivated in all the three type of lands mentioned above. There are different varieties of paddy seeds cultivated according to the nature of the soil such as *sotti* grown in the rabi season, *korgut* and *azgo* are salinity tolerant, grown in *khazan* lands besides, *kendall, khochri, mermar, babri, damgo, korgut, shangar, azgo,* etc.¹¹ The port-city of Gopakapattana might have acquired rice from Neura, a village known to have produced abundant rice.¹²

➢ **Coconuts** were abundantly found all along the coast at the port-capitals of Goa, chief among them was Chandrapur which was known for its abundant coconut crop. Inscriptional evidence in the Kharepattana plate of Rattaraja refers to King Aiyapa who was crowned with the water of the coconut trees growing near Chandrapura.¹³ Even today, the coconuts of Chandrapur are in great demand by the people from the surrounding regions of Goa.¹⁴

➢ **Spices** like turmeric, cinnamon, cardamom and nutmeg.
Fruits like bananas, mango, cocum, jackfruit and betel. The Asoge plate of Kadamba Jayakeshi II refers to Konkan which is full of betel and banana trees.\textsuperscript{15}

Vegetables like brinjal, lady finger, gourd, \textit{tendli} and the like.

Besides other produce which was grown in the hinterland also added to the products consumed by the people at the port-cities. These include \textit{nachini}, pulses like \textit{aldsano}, \textit{urid}, \textit{moog}, \textit{tur} and nuts specially ground nuts.\textsuperscript{16} (ch.5. Plate I)

**Irrigation**

The port-capital provided a good network of irrigational facilities in the form of storage tanks, lakes, small diversion of streams, \textit{bandharas}, natural springs and wells which not only led to agrarian expansion but was a source of fresh water supply to its settlers. Adequate supply of fresh water is essential not only for agro-industrial production but also for sustaining the population at the port. The ports provided fresh water supply in the form of wells and tanks.

**Wells:** Wells are referred to in the inscription as \textit{yupaka}.\textsuperscript{17} The inscription of Prithvimallavarman mentions donation of a yupaka in the middle of a field.\textsuperscript{18} The site at Gopakapattana, which is presently called \textit{zoricho waddo}, and where the Kadamba palace and \textit{rajvithi} was located is said to have seven wells according to oral sources and site survey.\textsuperscript{19} Besides, a visit to this place during the rains provides evidences to this natural source of water in the form of springs.

The port of Ella is also known for its large number of wells which were buried due to plague, for example, a well, near St Paul’s college ruins having a fleet of steps, a recently found well while digging the ground near the Se Cathedral.\textsuperscript{20} The port of Chandrapur also provides freshwater to the city population through its wells.\textsuperscript{21} (ch.5. Plate II)
Tanks: Alternate arrangements were made during the summers by constructing tanks along streams to store the rain water for local use and irrigation. This proved to be a successful endeavour for the promotion of agriculture which in turn resulted in the economic prosperity of the kingdom in general. The copper plate inscription of Maurya Annirjitavarman refers to an unnamed Rashtrakuta tank that was given to the donee.22

The Harihara inscription of Vijayanagara (1391) refers to the donation of a tank called Madhava Tirtha and Manchalasamudra, the water of which was used for the cultivation of betel trees.23 The word Bati means Spathe of arecanut, probably the waters of Manchalasamudra was used to water the betel trees grown at Bati. (ch.5. Plate III)

Irrigational tanks

<table>
<thead>
<tr>
<th>Chandrapur</th>
<th>Gopakapattana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guhalatoloi</td>
<td>Gandagopal tank</td>
</tr>
<tr>
<td>Chamatoloi</td>
<td>Kuzmorayachem tallem or Kadambarayachem tallem</td>
</tr>
<tr>
<td>Godeamtiloloi</td>
<td>Karmali tallem</td>
</tr>
</tbody>
</table>

Urban Maritime Crafts and Industries

Different type of crafts and industries flourished during the ancient and medieval periods which played an important role in shaping the economy of the region under study. They serve as the basis of a thriving economy in terms of trade and commerce.

Products were in great demand not only for the use of the local people whose needs were few and simple but also among the elite class who had unlimited needs and wants. Thus, the cities depended upon their luxurious items and needs from the surrounding areas for the purpose of consumption and trade.

The main industries that flourished at the port-capitals include the following.25
Crafts and Industries at the Port-Capitals

<table>
<thead>
<tr>
<th>Chandrapur</th>
<th>Gopakapattana</th>
<th>Ella</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brick making</td>
<td>Oil extraction</td>
<td>Gold smithy</td>
</tr>
<tr>
<td>Salt making</td>
<td>Shipbuilding</td>
<td></td>
</tr>
<tr>
<td>Fishing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pottery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toddy tapping</td>
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</tr>
</tbody>
</table>

**Salt extraction:** Salt extraction has been the major activity of the people along the banks of the river Zuari specially at Siridao, Bati, Santana, Curca and Saleri and Mandovi, specially at Calapur, and Raibandar which forms part of the present city of Goa Velha or ancient Gopakapattana. Salt pans known in the local language as *agors* are also found in other coastal areas of Goa like Bardez, Salcete and Pernem. But, Tiswadi is said to have the largest number of salt pans. 26 these places can be identified through place names Saleri and Kharrasai at Goa Velha. (ch.5. Plate IVa)

**Palm product:** The advantage of having abundant coconut plantation at the port- capitals could be used for producing products of household use such as supply of brooms, spoons, ropes, coir, mattress, basket, woven leaves, oil, toddy, *urrak*, palm sugar and the like. The toddy tappers who were involved in distilling and processing toddy are found even today at Agassaim belonging to the Bhandari community.27

**Brick making:** Chandrapur was famous for its brick making industries. Traces of burnt bricks were found at the site during excavation and even today this industry is flourishing at the site. Commonly used bricks were of laterite and granite which were probably quarried, chiselled and brought from the hinterland to the cities for the purpose of construction. There is a place called Batteye, Chandor famous for baking bricks.28

**Metal works:** Metals were in great demand for various purposes such as to produce material for the military, building purpose, as plates to write royal charters, for making agricultural implements, utensils, ornaments, coins, shipbuilding and other articles. Place
names in Chandor, like Kamarcondi, Locondol shows that there were specialised villages of artisans. 29

**Leather works**: Leather items were made of oxen, goats and buffalo skin which was probably brought from the ports of Cambay and Gujarat. Leather goods were necessary to meet the needs of the urban population by providing footwear, covers to swords used for naval and military aspects and for the purpose of animals specially horses who were equipped with saddles and bridles.

**Oil pressing**: Coconuts were found in abundance all along the coastal tracts of Goa. Oil was in great demand not only for the purpose of local consumption but also for burning lamps in temples, for navigators as a form of rescue, for medicinal purpose and other needs of the urban population. The ancient port city of Chandrapur was famous for the abundance of coconuts which were probably exported to Gopakapattana which had an oil pressing industry. This is evident from the huge stone grinders present on the site which were probably used for the purpose of oil extraction. 30 Besides coconut, sesame or *til* oil was extracted in the hinterland and brought at the port-city. The amount of oil given to temples indicates that great quantity of oil was extracted. Village properties were also assigned to individuals on the condition that they pay tax in the form of oil.

**Pottery**: There were specialised villages which would produce clay items such as making of earthen lamps for religious purpose, storage jars and utensils for the urban population and pots for trade. One such specialised village is Kumbarjua located in the Tiswadi *taluka* which could be one of the feeder village supplying pottery to the city of Gopakapattana. besides, pottery could have been imported from the up-ghat Kumbarkhand a centre, famous for pottery. They were sold in the village markets, fairs and weekly markets. (Plate ch.5. IV b)

**Gold smithy**: Gold smithy was one of the flourishing industries operated by specialised *sonars* or *shets* which made ornaments of precious and semi-precious stones as well as
coins. Today we can identify the settlements of sonars from villages of Ella and Azossim which have small village divisions called sonar bhat.31

**Medicinal preparation:** The art of making medicines of the Maxem plants found at Azossim and used for curing skin blisters32 probably flourished at Gopakapattana as large basins called medicinal bowls were found at the site and currently displayed at the museum of Pilar.

Other crafts and industries of the feeder villages includes sculpting, manufacturing of transport equipments like carts, ships and boats, masonry, structural buildings, objects of art, spinning and weaving of cotton.

**Technology**

Technological advancement played a crucial role in the evolution, development of an urban culture and efficacy of trade and commerce which is highly dependent on merchandise and efficient trade organisation.

The application of technological know-how in production of better quality goods and in larger numbers must have provided an incentive to trade and commerce and also raised the standard of living of people.

**Techniques used in the agrarian sector:** New agricultural knowledge, agricultural implements and irrigation methods brought unprecedented agrarian expansion and a congenial atmosphere for urban growth. The production capability and quality of the commodities produced is directly inter-linked with the tools and implements available to the producer.

**Agricultural implements:** The methods of agriculture were almost the same as today that is, indigenous tools like plough or nangor, zuum or yoke, gunto or harrow for soil levelling, pata kuddalli or hoe for breaking soil and loosening weeds, picao or pickaxe, khorem or mattock, shovel to gather up the grains or pavadi, iron hooks used to separate the hay from the grains, the planks with wooded teeth to mix the fertilisers and revolve the mud called danto was used.33 The Parshuram legend implies the arrival of the parshu
or axe in Goa that could help in clearing forest lands and increase agrarian production. Bullocks were used for the purpose of ploughing the field. (ch.5. Plate Va)

**Irrigation methods**

**Sluice Gates/Manos:** The ancient settlers developed an automatic system of regulating the flow of water at high tide and low tide by constructing or arranging laterite, granite or horizontal wooden planks with shutters placed vertically made of the *matti* wood or coconut bark which opens at low tide letting the water in the *poi* or canal going around the field, and closing at high tide to prevent saline waste from entering the fields. *Adamo manos* is an additional *manos* erected near the sluice gate in the monsoon to maintain the level of water in the fields.

Outer embankments or *mero* are made of stone, mud, straw and are larger than the inner embankments to protect flooding. Inner embankments are made of mud and straw to protect the field from nutrient leaking, soil erosion and saline water\(^\text{34}\) (Plate ch.5. V b)

**Technique for water lifting:** Water lifting was done by using bullocks to draw water from the wells or a huge log with a weight at one end and a pot tied to a rope at the other end was inserted into the wells which were dug in the middle of the field.

**Technique for pounding grains**

*Mussol* or the pestle was used to pound grains by making small holes in the ground. The *Mussol* dance performed at the ancient port city can provide evidence to this form of operation.\(^\text{35}\) (ch.5 Plate Vc)

**Technique for oil extraction:** Stone grinders were used for pressing oil. Bullocks were probably used to churn the *copra* for the purpose of extraction. These grinders are found lying at the port of Gopakapattana. (ch.5. Plate Vd)

**Technique for salt extraction:** Salt is extracted using the following method. First and foremost water from the sea is captured into small ponds or *poi* by means of a sluice gate. This salty water, or *agor*, is then sent to another small enclosure and is kept for drying. This enclosure has a small outlet for water to go in yet another small enclosure which is
kept for drying and later, by using the wooden flat stick, water is pulled and placed in very small enclosures for drying and later kept on the mero or embankments. There the extracted salt is kept for drying and to be sold.  

**Technique for extracting medicine**

The art of extracting medicinal juice probably of the maxem leaves by crushing them using small stone basins having a hole towards the end.  

**Shipping and Navigation**

One of the principal sub-disciplines of maritime history is the study of ships and its shipping technology. The aim of the present study is to use iconography, documentary and ethnographical evidence to present an account of how boats and ships were built or designed, propelled and steered. This will enable us to understand the shift in technology, fundamental differences and patterns during the period of study.

**PARTS OF THE SHIP**

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>English Name</th>
<th>Description</th>
<th>Local Name</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Mast</td>
<td>A long upright post of timber set up on the ships</td>
<td>Kuo</td>
<td>Support sails</td>
</tr>
<tr>
<td>2.</td>
<td>Sail</td>
<td>Square or semi-rectangular of cotton material extended on riggings.</td>
<td>Sheed</td>
<td>To catch the wind and propel the boat/ship</td>
</tr>
<tr>
<td>3.</td>
<td>Chords</td>
<td>Rope attached to the mast and sail</td>
<td>Sumachi doram</td>
<td>To raise the sail</td>
</tr>
<tr>
<td>4.</td>
<td>Stern (front)</td>
<td>Upright timber at the bow ship</td>
<td>Nau Anye</td>
<td>To guide the ship</td>
</tr>
<tr>
<td>5.</td>
<td>Stem (back)</td>
<td>Rear part of a ship</td>
<td>Yerem bor or Sukane</td>
<td>To propel the ship</td>
</tr>
<tr>
<td>6.</td>
<td>Side balance (horizontal)</td>
<td>Two horizontal wooden logs at the side of the ship</td>
<td>Ulanii</td>
<td>To support the boat</td>
</tr>
<tr>
<td>7.</td>
<td>Sticks (vertical)</td>
<td>Two vertical wooden sticks</td>
<td>Baikona</td>
<td>To join the Horizontal logs from</td>
</tr>
</tbody>
</table>
8. Anchor A device of stone or metal *Roili or nangor* To hold or stop the ship

9. Fixture A wooden log attached to the dug out at the bottom *Atyo* To prevent it from damaging the base

10. Logs of wood Two wooden logs smeared with vegetable oil or cashew *dik* *Torna* To slide the boat on it to dock on the shore

11. Oar A wooden stick with a flat base. *Voli or pat* To propel the ship

12. Cross beams Wooden slabs across the hull *fali* For sitting

13. Flag A small piece of cloth on the flag post or mast *Baoto* For identification

14. Keel A single log of wood on slabs are raised *Pattan or patti* The backbone vessel

15. Hull The planks attached from the keel To increase breath of the vessel

16. Helm A device To control the rudder

17. Rudder A device below the keel To turn the ship

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**TYPE OF BOATS OR SHIPS**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Boat type</th>
<th>Local name</th>
<th>Technique</th>
<th>Material</th>
<th>Building sites</th>
<th>Place of operation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bundle rafts</td>
<td>Tarane or Tarna</td>
<td>construction</td>
<td>Stem of the Banana tree</td>
<td>Sattari Calangute, Ella Colvale Uccassaim Kaisua Verem</td>
<td>River Madei</td>
<td>To ferry people, deities and agricultural across using poles</td>
</tr>
<tr>
<td>2</td>
<td>Dugouts</td>
<td>Balao (small)</td>
<td>reduction</td>
<td>Banyan tree</td>
<td>Rivers and estuaries</td>
<td>Rivers and sea</td>
<td>Fishing, goods and people</td>
</tr>
<tr>
<td>3</td>
<td>Dugouts</td>
<td>Poneo (long)</td>
<td>reduction</td>
<td>Banyan tree</td>
<td>River and sea</td>
<td>Fishing, carrying</td>
<td></td>
</tr>
<tr>
<td>Sr. No.</td>
<td>English name</td>
<td>Local name</td>
<td>Functions</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>Boatman</td>
<td>Vodhekra, tarikar, or taryomama</td>
<td>Owner of the boat</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>Chief or Captain</td>
<td>tandel</td>
<td>Guides the ship, prevents it from dangers at sea, had navigational skills</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>Helmsmen or oars</td>
<td>Tanpi-tantat</td>
<td>Crew members of the Kharvi community who propels the ship as per the orders of the tandel, set the sails, set the anchor</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

**Workers of the Sea**

<table>
<thead>
<tr>
<th>passangers, goods</th>
<th>Sea and river</th>
<th>Fishing, carrying goods and people</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Dugouts planked Vodhi (small)</td>
<td>reduction, construction transformation</td>
<td>Banyan mango, gotting asan</td>
</tr>
<tr>
<td>5. Planked Vodhe (big)</td>
<td>construction transformation</td>
<td>Banyan, mango, gotting asan</td>
</tr>
</tbody>
</table>

**Boat Building**

In the construction of boats different techniques were used depending upon its type such as rafts, dug outs, keeless and plank sewn.

- Construction refers to the means by which several elements are joined together as binding reeds into bundles or when making a framework by weaving, plaiting or fastening planks together by lashings.

- Reduction: Here the raw material is reduced in volume as in hollowing a log.

- Transformation: refers to altering the shape of the material without subtraction or addition.\(^{39}\)
Rafts: These are constructed by joining the stem of the plantain tree. For example tarane or tarma. 40 (ch.5. Plate VI)

Dugouts/Canoes: These are constructed by selecting a suitable length of a tree trunk mostly banyan and mango is preferred. The upper portion of the trunk is first flattened and the central part of it is scooped out. The lower portion is thicker than the upper portion with a thickness of 5 cms. The hollowed log is then smeared with mud or kodu tel and inverted over the fire to smoothen the surface and to expand the hull by placing cross beams. For the crew to sit two beams one near the stem and the other near the stern is placed. Poles are used for maneuvering the canoe.

The hull is than applied with dik of cashew or vegetable oil to prevent it from insect borers and leakage. To increase the length of a canoe two tree trunks are selected and then joined together by sewing it. For example, Balao and Poneo. 41 (ch.5. Plate VII)

Sewn-plank boats

Boat without keel

Skeleton first or frame-first method
A thick plank called pati is laid, instead of a keel, to which are fixed the stem and stern. The planks are kept ready by bending it using the following technique:

Plank bending: raw planks for construction are applied with kodu tel and is then heated over the fire. When the exact temperature is reached the plank is bent to the required shape. For complex bends pressure is applied by means of a wooden lever.

The edges of the planks are joined together with a layer of kodu tel or dammar, cotton and coconut coir is placed over it and is then drawn together by lashings passed through a series of holes drilled closed to each other in adjoining strakes and iron nails are driven through the planks. The holes are plugged with coir fibre by means of wooden pegs. On the inside two thick ribs are added at a quarter distance both from the aft and
fore ends. It is manoeuvred by poles or oars and sails. For example the *Vodhe* and *Vadhi*.42

**Boat with keel**

The keel is laid and then fixed with planks rising from the bottom upwards. For example the *poneo* planking is done using different methods.

**Planking technique:**

- Edge to edge planking: notches are cut near the lower edge of each strake and spikes were driven in oblique across the seam into the lower plank.

- Flush or carvel fit or treenail planking: the sewn boat were fastened by tree nail obliquely driven through the edge of flush laid planking.

- Side planking is done row by row upwards. Each row from end to end, side fitting of planks is done by interfingering and row to row by perfect Vadhera jointing.

- Side planks are clinker or reverse clinker fitted with each succeeding plank overlapping inboard the upper edge of the strake below.

Outriggers are added to extended dug outs or keel boats. These are horizontal beams are attached to the vessel by means of 2 sturdy poles generally closer to the stem end of the vessel.43 (ch.5. Plate VIII a,b,c,d,e,f,g,h,i,j,k,l,m)

**Representation of boats depicted in iconography**

Representation of boats on stone is analysed herewith based on the following:

- Vertical lines across a depicted hull possibly represents the bindings of a bundle rafts.

- Vertical lines extending below a hull may represents oars
➢ Horizontal lines along a hull may represent planking

➢ Short vertical lines across these horizontal lines may represent plank fastening.

The prows of the boats shown in the sculptures show different type of boats operating in the rivers of Goa. For example, Boat Devis of Shayll, Melaulim, Sattari, shows horizontal lines across the hull, short vertical lines across the horizontal lines representing plank fastening and vertical lines extending below the hull representing oars. Savarde boat devi motif shows vertical lines across the hull representing the bindings of bundle rafts with oars. (ch.5. Plate IX a,b,c,d,e,f,g,h,i,j,k,l) (ch.5. Plate X & XI) Navigational Know-how

One of the most essential requirements for pilotage is to have knowledge of the seas. Navigational skills during early centuries were essentially non-instrumental, acquired through the process of trial and error, keen observation, practical experiences and oral transmission of knowledge. An attempt is made to explore and focus on the maritime navigational aids inherited, conserved and practised by seafarers of Goa.

The sailors of Goa possessed the following knowledge which aided him to his destination safely.

Knowledge of the winds: Winds are named according to the direction as follows:

<table>
<thead>
<tr>
<th>Direction</th>
<th>Local Names of Winds</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern winds</td>
<td>Upparvaro</td>
<td></td>
</tr>
<tr>
<td>Southern winds</td>
<td>dakshinvaro</td>
<td></td>
</tr>
<tr>
<td>Eastern winds</td>
<td>Tadeovaro</td>
<td>Helps to put the boat in the sea</td>
</tr>
<tr>
<td>Western winds</td>
<td>gavorvaro</td>
<td>Increases the speed of the ship to reach the destination</td>
</tr>
<tr>
<td>South-Eastern winds</td>
<td>surmuchivaro</td>
<td>A dangerous wind for sailors identified by a stain in the clouds</td>
</tr>
</tbody>
</table>
➢ Knowledge of the waves: waves are locally known as *osadi*. The direction of the waves guides the mariner to predict the shore.

➢ Knowledge of the depths: To know the depth of the sea the sailors insert a rope whose one end is tied with a stone or a metal piece. The rope is knotted at a distance of horizontally stretched arms at shoulder length called *voia* equivalent to a fathom. Depending upon the knots covered, they measure the depth of water as well as distance covered by them. The sound of the sea also enables them to find out the roughness of the sea and its depth.

➢ Knowledge of the colour: the changes in the colour of the sea helps the sailors to predict the weather for example, the red colour would signify the arrival of heavy rainfall.

➢ Knowledge of the tides: tides locally called as *bortichem pani* or high tide and *suktichem pani* or low tide. High tides are very useful to the mariners because he can load and unload its cargo into the estuaries. Lack of knowledge would lead to dangers of getting stuck in sand bars or *batiye*. The time period between the high tide and low tide is of 3 hours duration. The arrival of the tides depends upon the lunar position.

➢ Knowledge of the currents: the sailors at sea understand about the arrival of currents when they experience drifting away of their fishing nets and the ship.

➢ Knowledge of celestial bodies like the sun, moon, stars, sky, clouds, would guide the navigator in terms of its location, altitude, time, position, direction, and weather changes.

  • Stars: The sailors of Goa depend on three main stars to guide them to the shore. Namely, *katyo* or *sat boini* or seven sisters, known as the great bear or *sapta rishi*, *konostar*, which looks like a bed and khuris or cross.
- Sun and Moon: the shadow position of the sun and the rising time of the moon help the mariners to know the time. For example the moon rises every day with a gap of one hour everyday.

➢ Bad weather is predicted through the calmness of the sea, darkness of the sea and the observation of sea. For example, when far away objects seem to be very close one can predict natural calamities like tsunamis, storms, cyclones etc.

➢ Type of sea water also helps to predict the underwater topography, for example, oily water called lavpani is considered to be bad for the fishing nets, black water informs about the existence of the fish kale. Konoyre udok is considered to be best for a good fish catch.

➢ Knowledge of coastal topography like high peaks, cliffs, trees, mangroves shore profile, shore configuration, man-made structures like temples, forts churches are aids for the navigator to approach the harbour for anchorage. The Macazana hillock, and the Chandreshwar temple at Chandrapur, located on the Paroda hillock in Salcette taluka close to the ancient capital of Chandrapur, the Goveshwar temple at Gopakapattana on the Pillar hillock and the Gomanteshwar temple at Ella hillock probably served as a light house to guide navigators to approach the ports of Goa.

➢ Knowledge of fauna: observation of birds like sea crows, sea gull often help to sight the shore. Besides, sea creatures such as snakes, locally known as kusde are found in the sea. If bitten then the only medicine to get cured is by applying the chikol or mud from the sea.

➢ Knowledge of historical documents in the form of sailor’s log book introduced by the Arabs such as Malam-ni-pothi—handbook of sailors which provides knowledge of rumb lines and stellar bearings. The diary of sailors called Ghos-ni-pothi, also helps to give information about the daily experiences at sea.
Knowledge of essential techniques such as zam, for measuring distance, kamal, for measuring latitude, night plates, to fix mainland features, star charts, based on the azimuthal stars, sand glass, for measuring time, machha yantra or magnetic needle to show position.

Communication at the sea: the navigators in the vast seas come across myriad perils to be overcome during their journey as well as boundless and unpredictable obstacles from the ocean. In such a situation, how do sailors rescue themselves? During the day the sailors would call out for help by raising the oars, by using a glass or whistling out if they are close by and during the night by lighting coconut shells or palm leaves. If the sea is foggy then the sailor would wait at sea till it clears off to get to the shore, otherwise there is the possibility to lose his way.46

Intra regional and overseas commercial contacts

Intra-regional contacts: This refers to port to port trade contacts along the coast and other trading centres. The coast was known for its brisk trading activity since ancient times where country crafts plied to and fro usually in the pre-monsoon and post-monsoon season with local and foreign goods.

The port of Chandrapur probably had contacts with some of the flourishing ports of Broach, Sopara, Vijayadurg and Kalyan right from the Satavahana period. During the time of the Shilaharas, the Ballipattana plate of Rattaraja refers to Dhammiyara of the Shilahara house of South Konkan for the foundation of the port of Balipattana. The inscription mentions the arrival of the vessels from Chandrapura, Chemulya and Kandalamula to Ballipattana. This shows port to port coastal voyages between Balipattana and the ports of Goa.

The Kharepattana plate of Rattaraj refers to tolls levied on every ship coming from foreign lands and from every ship coming from Kandalamuliya, with the exception of Chemulya and Chandrapura, anchored at Ballipattana. This shows that Ballipattana
emerged as a point of convergence of vessels from foreign lands as well as the coast near Goa and those from the north of Ballipattana.\textsuperscript{47}

The *Arthashastra* of Kautilya under the heading of functions of the director of trade states that he should encourage the import of goods produced in foreign lands and to those who bring such goods in ships or caravans he should grant exemptions from taxes that would enable a profit to be made by them on water route.\textsuperscript{48}

It also shows that the coastal commerce yielded revenue in the Konkan coast and the local coastal ruler’s awareness of it. Vessels arriving from Chandrapur were, however, exempted from tolls and customs. These exemptions could be to encourage commercial linkages between Balipattana and two important harbours situated to its north and south.

The port of Gopakapattana under the Kadamba rulers of Goa as mentioned in the Panjim plates are said to have trade contacts with fourteen countries namely Kerala, Gurjara, Chandrapura, Konkan, Sangameshwar, Chiplun, Shivapur, Valipattana, Zangavar, Pandya, Kedda, Shrytyam, Bangal, Lalpust or Pulicat.

The Marcella copper plate of the Goa Kadamba ruler Shasthadeva II (1038) records his visit to holy places of Gokarna, Kolhapur and Somnath, a famous place of pilgrimage for the worship of Bhagavati, Mahalakshimi and Somesvara.\textsuperscript{49}

The Narendra inscription (1125), issued during the reign of Vikramaditya VI of the western Chalukya and his vassal, Jayakeshi II, narrates a voyage undertaken by Jayakeshi’s ancestor, Shasthadeva II eulogised as ‘the lord of the western ocean’, from Gove to Saurashtra to visit the temple of Somnath.\textsuperscript{50} Inscription speaks of a pilgrimage made by Guhaladeva to the temple of Somesvara from his capital Chandrapura.\textsuperscript{51}

Shasthadeva in the inscription of Jayakeshi I (1059) highlights that travellers came to him for wealth from the eastern ocean, Himalayas, west ocean, some who stayed and others who left satisfied.\textsuperscript{52}
Pilgrimages to these places gives a clear account of long voyages along the western sea board reaching up north not only to the north Konkan coast but also extending to Somnath on the Kathiawar coast of Gujarat and north Kanara to Gokarna.

The port of Ella also engaged in coastal trade under the Vijayanagara, Bahamani and Adil Shahi rulers with ports on the Malabar coast like Kumbala, Calicut, Cochin, Quilon, Trivandrum and Cape Camorin.

**Overseas contacts**

Overseas trade contacts refer to the trans-oceanic and international trade relations between the ports of Goa and the overseas ports.

The earliest contacts with the ports of Goa were probably of the Romans whose coins are found at the port of Gopakapattana and currently displayed at the Pilar museum followed by the Arabs who established a settlement of merchants called Hanjamanagar at the port of Gopakapattana during the time of the Shilaharas. It also established contacts with the Persian Gulf as seen through the Persian coins of Khusru II unearthed at Chimbel.

The port of Ella under the Bahamani rulers had trade links with Cairo, Italy, Genova, Venice, Mecca, Turkey, Egypt, Persia, Africa and Ethiopia through the ports on the Malabar Coast, Goa, Dabhol, Mahim and Masulipatnam.

Under the Adil Shah rulers also the traders had relations with the merchants of Arabia, Persia, Ormuz who brought horses to Goa which were in great demand in the Deccan. Proverbs used in the local language do give us hints of overseas contacts. For example, *To zatitea desanche udot pieta, Khapreak sangleem goyan vochun zai mhon Khapri vochun ailo.* The name *Kapri Ravalnath* shows contacts with African countries. Sculptural evidences carved on panels as shown in the photograph below shows contacts with Sumerians and Mongolians.
Routes

Hinterland and Foreland routes:
Maritime activities do not take place in isolation but are linked up not only with areas inland but also with other harbours in various littorals far and near.

A glance at the map of Goa will show that the west coast of Goa and the estuaries which provided an outlet to the sea as well as the mountain passes inland clearly impresses upon us the importance of harbours and ports of Goa to the littorals.

The question arises as to what could be the routes taken by merchants, traders and local population to travel from one place to another. Here an attempt is made to trace the trade routes from Chandrapur, Gopakapattan and Ella to the ghats and beyond using the three forms of routes.

Routes can be divided into land routes, river routes and sea route

Land route
Land routes were natural routes provided by nature and frequent use of these natural ways formed tracts gradually forming permanent routes and passes. These routes passed through dense forest, over hills, valleys, plateaus, villages, religious centres, caves, rivers and streams. It is interesting to note that some of the ancient sites such as Buddhist caves, Jain basti, and other religious centres along with names given to places, such as Dodamarg and dovornem or headrest can give us useful clues regarding the inland routes from the ports to the ghats. These trade routes also provided hospitality to travellers along the way in the form of rest houses. (ch.5. Map I) (ch. 5 Plate XI a,b,c,d,e)

The rulers and merchants too made generous donations to these religious establishments. The Bhoja inscription of Prithvimalavarman in the 25th regnal year mentions rocky roads which were probably used by people. The port-capitals from the harbour were connected to the ghats such as Talkati ghat, Ram ghat, Chorlem ghat, Kelghat, Tinai ghat, Kuvessi ghat, Dighi ghat, Kundel ghat Donkerpem ghat and passes of Khandepar, Bolkodem, Usgao and Tinari.
River route

The navigable rivers of Zuari, Mandovi, Mhadei, Dudhsagar, Kushavati served as arteries in the progress of trade and commerce. Mandovi was navigable for 100 km. and Zuari for 60 km. while Terekhol, Chapora, Baga, Sinquerim, Sal, Talpona and Galgibag were navigable for a lesser distance ranging from 25-2 kms. Paroda was 16.5 km. and Khandepar 13.5 km. Some of these rivers were navigable throughout the year and the tidal effect of the sea in terms of its currents and tides could be felt extending in the interior which was conducive for navigation in the river routes. But during other times when the water column reduced, land routes were preferred. 55 (ch.5.Map II & III)

Sea routes

Long distance journeys also took place to far away lands. People from different countries visited the sea port using land or river routes which connected them to the coastal route.

Commercial Centres

A commercial centre refers to a fixed place where exchanges of goods take place for the purpose of consumption or for the purpose of trade and commerce. These centers can be identified on the basis of the following.

- The presence of non-perishable raw material not available in the local area.
- The presence of finished articles not manufactured in the local area.

Local commercial centres would include market centres within the region such as in the villages and cities. The villages had weekly markets as well as special markets set up during religious events and functions. Commercial centres in the capital cities were called as pattana owing to its connection with trading activity.

Thus we have Gopakapattana. Around this port city in the village of Karmali or presently, Carambolim there is a market place called pether similar to pentha, 56 a centre of trade, in the Deccan, emerged as a local market centre. Also in the village Mandur in
Tiswadi, called Mand Ur. Mand similar to Mandapikas or modern day Mandi, an exchange centre could be applied to this market place of Goa. Other terms like tito, tikso, baihi peth, bitholi peth and sundarpeth identified as Sundarika in the inscription of Asankita at Bicholim or Dicholi, pethecha vadda at Korgao, Pernem similar to peths in Maharashtra and Aai are other local centres functioning in the hinterland. The port of Chandrapur had a market place called tito located at the convergence of three villages Chandor, Cavorim and Giridolim.

Secular and religious centers like temples, mosques, monastries, mathas, tirtha shetra served as centres of trade.

Temples and mosques attracted pilgrims from far and wide and to cater to their needs several merchants emerged in association with temple centres. Itinerant traders were attracted and supplied important items to the local people. Commercial activities at temple centres were boosted by religious functions such as festivals of the deity and periodical markets and weekly markets held during gatherings.

The Haj pilgrimage also fostered a great trade network. Nearly all pilgrims traded if only to finance their voyages and this made their holy city and their port Jeddah a great entreport where were to be found goods from different parts of the world. According to Duarte Barbosa, many ships of the Moors came to Goa from Mecca and must have provided fine opportunities to the Muslim for the Haj pilgrimage. 58

Mathas: Mathas functioned as major economic centres as they received endowments in the form of land and money from the ruling class for various purposes like religious festivals, ceremonial fairs, feeding of ascetics and pilgrims, burning of lamps, performing of worship. They also served as halting places on pilgrimage routes. The towns of mathas became the centres of a brisk trade and commerce on the occasion of annual fairs or the celebration of religious ceremonies.

Tirtha shestras or sacred centres, which grew due to their location on the banks of rivers and holy shrines of local importance developed as pilgrim centres and served as trading centres. For example the Gorakshamath at Ella. (ch.5. Plate XII)
Ports

Trade acts as a strong motivating factor for the creation of infrastructure for maritime culture. Port is not called port unless there is transaction and movement of human beings for exchange of goods, transportation and cultural reciprocation. The ports came into existence for the purpose of trade, transport, movement, adventure, curiosity, exploration, of the land beyond stretchable area.

Anchorage is in the form of rock cutting or auxiliary harbour where ships could anchor and discharge cargo later transported by small crafts to towns.

Port is a harbour with terminal facilities which consist of the following

The ports of Goa provided for:

- An excellent harbour offering the following features
  - Safe and sheltered anchorage for ships from open seas
  - Sufficient depth of water at anchorage to enable vessel to lie afloat
  - Easy accessibility of anchorage from the sea and vice versa
  - Proximity to overseas and coastal shipping routes which facilitates a variety of merchandise to be imported and exported, thereby helping to establish growing trade.

- Terminal facility
  - Availability of convenient landing and shipping ground
  - Foreground to accommodate cargo and passengers.

- Back country
  - Providing adequacy of land spread about 200 sq. km. to perform various maritime functions.
  - Suitable terrain which is even, flat, rich and fertile hinterland to supply resources in the form of man, material, water, market, skills and power.
  - Easy access by way of routes and effective communication between the port and hinterland.
- Fresh water for sustaining the port.
- Conducive climate such as winds, tides and currents.
- Availability of raw material and other supplies.

Ports of Goa

Goa was dotted with a number of active and excellent ports. These ports were estuarine, seasonal and tidal. They served as the medium for not only exports and imports of merchandise but also spreading of culture. Some ports were active since very ancient times and continued to be for a long time while some ports became prominent during a particular period and perished or lost their significance. Subsequently, some ports were meant for internal trade and transportation and others for export of commodities to far off countries. (ch.5 Plate XIII a,b,c,d,e)
The chart below shows the distribution of the active and small ports scattered in the area of study.

<table>
<thead>
<tr>
<th>Active ports</th>
<th>River</th>
<th>Period</th>
<th>Connecting small ports</th>
<th>River</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chandrapur</td>
<td>Kushavati</td>
<td>4th-14th century</td>
<td>Bati, Bondir, Tiswadi 60</td>
<td>Rio de Bati</td>
</tr>
<tr>
<td>Gopakapattana</td>
<td>Zuari</td>
<td>6th-14th century</td>
<td>Raibandar, Tiswadi 61</td>
<td>Mandovi</td>
</tr>
<tr>
<td>Ella</td>
<td>Mandovi</td>
<td>14th-15th century</td>
<td>Chimbel /Chemulya, Tiswadi</td>
<td>Mandovi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14th century</td>
<td>Bondir, Calapur, Tiswadi</td>
<td>Mandovi</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10th-13th century</td>
<td>Bondir, Tar and Guleli, Satari</td>
<td>Mhadei</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10th-13th century</td>
<td>Usgao and Ganjem, Ponda 62</td>
<td>Mhadei</td>
</tr>
<tr>
<td></td>
<td></td>
<td>10th-13th century</td>
<td>Bondir, Pernem 63</td>
<td>Chapora</td>
</tr>
</tbody>
</table>

**Articles of Trade**

Trade is very important to our understanding of ancient life ways for it was not only a vehicle of material exchange but exchange of ideas as well. Trade usually takes place because articles considered desirable or necessary to the group are not available within the ecological or cultural boundaries of the group. Articles of trade brought and sold at different places include agrarian and industrial products.

**Articles of Export and Import**

Goa being an agrarian economy produced rice, paddy, nachni, coconut, turmeric, cardamom, arecanut, cotton, jaggery, oil, salt, medicinal plants, fruits, dry fish, and pottery.

The port of Chandrapur was famous for coconuts. Even today people from different parts of India, especially Mumbai, come to Chandor to take coconuts. The Kharepattana plate of Rattaraja refers to King Aiyapa who was crowned with the water of the coconut trees growing near Chandrapura.
From the 7th to 10th century hide, leather goods were exported from the west coast to Arabia along with indigo, coral, pearls, ivory, cloves, turmeric and cinnamon.

The Kadambas of Goa traded in gold, silver, cotton cloth, paddy, fruits, spices, camphor and betel leaves. Iron, textiles, spices, camphor, coconut, betel, perfumes were exported from Goa to other regions during the time of the Kadambas.⁶⁴

During the rule of Mohammad I the Bahamani rulers who ruled over Goa and Cannarore exported pepper, ginger, cardamon, myrabolans, canafistula, zerumba and zeedoary.

Their main products included cotton, silk, iron, steel, copper, diamonds, velvets, satin, scarlets, damasks and woollen cloth were imported into Goa. Their ships exported textiles, bidri works, warangal carpet and other merchandise and bought gold, spices, china goods, perfumes, drugs, horses, pearls and slaves.

During the 15th century items from Malabar and Goa such as pepper, ginger, tamarind, stones, cotton, amber and sandal wood were exported. Mediterranean traders exported velvets, rose, knives, gold, silver, raisins, woolen cloth, glass beads, brass and horses. Chinese exported items like linen, brass ware, coral, copper, silver, gold, vermilion, saffron, porcelain, and tin to the Malabar ports which in turn was brought to the port of Goa.

During the time of Adil Shah the articles that were traded included velvet, damask, satin, pieces of chimna. The merchants of Arabia, Persia and Ormuz who brought horses to Goa took back with them calico, fine muslin, rice, arecanut, betel, spices and many gold pardaos and graos because horses were worth a great deal.⁶⁵ Ghodde vele host haddilo shows that the horses were exported from Goa in return for goods. Villages specialized in certain commodities Girvodeche Redde, Parra Vimkunk this proverb shows that redde who were in abundance were sold to Parra.

The question arises as to what did the ports of Goa export and import. The chart below shows the products exported to and imported from the hinterland and far off countries.
### Products exported from the port-capitals

<table>
<thead>
<tr>
<th>From</th>
<th>Exports</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chandrapur</td>
<td>Coconuts, rice, <em>redde</em> (oxen), burnt bricks</td>
<td>Gopakapattana and ghat and upghat region</td>
</tr>
<tr>
<td>Gopakapattana</td>
<td>Salt, pottery, rice, vegetables, medicinal plants, toddy and oil</td>
<td>Chandrapur, Kerala, Gujarat, Konkan, Sangameshwar, Chiplun, Shivapur, Valipattana, Zangavar, Pandya, Keddha, Shrytyam, Bangal, Lulpust or Pulicat. Sub-ghat and up-ghat areas</td>
</tr>
<tr>
<td>Ella</td>
<td>Horses</td>
<td>Deccan</td>
</tr>
</tbody>
</table>

### Products imported to the port-capitals

<table>
<thead>
<tr>
<th>Articles imported</th>
<th>From</th>
<th>To</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt</td>
<td>Gopakapattana</td>
<td>Chandrapur, sub-ghat and up-ghat regions</td>
</tr>
<tr>
<td>Jaggery, sugarcane</td>
<td>Sub-ghat regions namely Dhamshe and Padeli</td>
<td>Chandrapur, Gopakapattana and Ella</td>
</tr>
<tr>
<td>Horses</td>
<td>Arabia, Persia and Ormuz</td>
<td>Ella</td>
</tr>
<tr>
<td><em>Nachni</em>, timber, arecanuts, stones, vegetables</td>
<td>Sub-ghat regions</td>
<td>Chandrapur, Gopakapattana and Ella</td>
</tr>
<tr>
<td>Woolen clothes or <em>Kambli</em></td>
<td>Jamboti in the up-ghat regions</td>
<td>Chandrapur, Gopakapattana and Ella</td>
</tr>
<tr>
<td>Oxen</td>
<td>Chandrapur</td>
<td>Parra, Bardez</td>
</tr>
<tr>
<td>Pottery</td>
<td>Kumbarkhand</td>
<td>Chandrapur, Gopakapattana and Ella</td>
</tr>
<tr>
<td>Textiles</td>
<td>Balaghat</td>
<td>Port cities</td>
</tr>
<tr>
<td>Diamond and precious stone</td>
<td>Bijapur</td>
<td>Ella</td>
</tr>
</tbody>
</table>
Medium of Exchange

One of the essential requirements of the port is its free convertibility. Ideally, there were three forms of exchanges taking place at the ports: currency, dan and dakshina and barter. It is rather surprising to see that in spite of Goa being famous for its thriving commercial activities the finding of coins is rather meagre yet proved to be a store house of information pertaining to various aspects of history. Besides studying the coins found in Goa and surrounding regions, which once formed part of Goa, relevant inscriptions and travel accounts are interpreted to find out references to coins in circulation.

Here an attempt is made to list out the different types of coins in circulation and their denomination from the 4th to 15th centuries. Besides, based on the find spots of coins, the trade routes are discussed and their relation to trade and economy is discerned. Similarly, coins in circulation in other parts of the country will be compared to understand trade contact with different geographical areas including present Uttara Kannada, Dharwad, Belgaum, Karnataka, Konkan coast upto Ratnagiri district of Maharastra.

During the period under study there was no uniform currency. It depended upon various factors such as ruler who ruled, prosperity of the ruler, availability of raw material and the like.

They made use of three methods to make coins a) punching b) moulding c) die striking. The patterns on coins were based on mythology, sacramental practices, symbols and geometrical designs.

The epigraphs of various dynasties throw interesting and unique accounts of the type of coins in circulation. The object of most of the inscriptions is to record religious and eleemosynary matters but is silent with regard to direct money exchanges and matters of trade which could not find much importance in them. Inscriptions provide references to coins when mentioning the prices of commodities, tolls, dues, grant and taxes levied in cash.
Type of Coins in circulation

Satavahana coins: Coins belonging to the Satavahana rulers of Paithan in South India were unearthed from the ruins of Chandrapur. They issued coins of potin, lead, copper and silver having the symbol of lion, elephant, horse and bow, hill and mast. Probably the Bhojas of Goa used the Satavahana coins for exchanges as they were their feudatories.

Bhojas Coins: The inscriptions of Bhojas are silent with regard to the type of coins but provide information of taxes being imposed and collected on the village goods as well as on goods coming from outside the village.

Coins of Chalukyas of Badami and Kalyani: The Chalukyas issued gold coins with the symbol of a boar or varaha, the royal insignia. The different coins in circulation in South India and Deccan were dramma, gadyana, pana, honnu, haga, kagini, visa, gutike and bele.

The value of coins is as follows:

1 gadyana-10 panas
1 pana-4 haga
1 pana-4 kagini
1 haga-4/5 visa
1 haga-2 bele

Shilaharas: The inscriptions of Shilahara throw light on gadyana, dharana and dinar. Gadyana were gold coins of a highest value followed by dharana and dinar. The inscriptions of Shilaharas directly provide references to the type of coins in circulation. The Kharepattan inscription of Rattaraja refers to gadyana of gold charged for every ship coming from outside and dharana of gold for every ship coming from within. The Pattanakudi plate of Avasara II refers to three merchants who had to pay 40 dinars as taxes. Besides the Goa State Museum has a collection of silver coins of Shilaharas exhibited.
Kadamba Coins: The Kadambas of Goa, who ruled for over three centuries and well known for its prosperity, issued many coins of gold and a few of silver. Gold coins were probably issued for the purpose of large transactions such as land grants and for commercial transactions specially trade. While silver coins were minted for small purchases. The source of metal and the mint used for the manufacture of coins throw light on the trade links. The Kadamba coins had symbol of a lion usually with legs upraised, circle of dots, symbol of gopurams of temples, their family deity, Saptakoteshwara, Bhairava, title of King such as Malavaramari, Chatra, Ankusa, trident, lion with ball in mouth, Gajasimha, bilingual and biscriptual inscription, flagstaff, radiating lines and other small symbols such as name of the ruler and cyclic year such as Durmati, Isvara, Bahudanya, Kitaka, Plava, Angira, Pramoda.

The Goa Kadamba inscriptions mentions different type of coins which were in circulation during their period of rule. Kadamba coins were die struck coins, that is, a blank disc adjusted to proper size and weight was heated. They include the following: brihad bhairava gadyana-Coin named after god Bhairava, nishkas, gadyanaka, gadyana, ganiga gadyana, lokkiyapriyasrahe gadyana-lokki refers to the name of the place where coin was minted, lokkiya pon gadyana, lokki nishka, priyasriya, gadyana, katigadyana, malavara mari nishka- coin named after the title given to Jayakeshi III as malavaramari, tairavas, avisa, aravisa , honnu/ponnu, hana/pana, haga/hoga, bele, kani, tara and visa.

The Goa Kadamba rulers namely Jayakeshi I, Jayakeshi II, Jayakeshi III, Tribhuvanamalla, Shivachitta, Soyideva, Vishnuchitta or Vijayaditya and Kamadeva issued coins ranging from 76.5 grains, 45 grains, 89 grains, 62 or 63 grains and small coins of 6.3 grains respectively. The value of coins is as follows: (ch.5 Plate IVa,b,c,d)

1 gadyana = 10 panas
1 pana = 20 visa
1 pana = 4 haga
1 haga = 2 bele
1 pana = 64 kani
1.5 tara = 1 kani

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Bahamani coins: The Bahamani coins were similar to the patterns of the Delhi Sultanate coins of gold, silver and copper. Gold coins were called tanka of 170 grains, dinar of 197 grains. Silver coins of 170 grains and copper of lower denomination. They were circular and rectangular in shape with high sounding titles, quotations from Quran, name of the issuer, father’s name, name of the mint, date of issue, minted at Gulbarga, Bidar and Bijapur.73

Vijayanagara Coins: The coins in circulation during the Vijayanagara period include coins of gold, silver and copper. They were known as gadyana, varaha, pon, pratapa, kati, pana and haga. The coin of highest denomination was called gadyana also known as varaha, pon and pratapa weighing around 52 grains. They probably issued double varaha. Inscription mentions varieties of gadyana and varaha such as chakragadyana, katigadyana, pratapagadyana, ghattivaraha, doddavaraha, chakravaraha and nijaghatti varaha.

Pratapa is a gold coin of lower denomination equal to half of a varaha used by Harihara II and was around 26 grains. Lower gold coins were called Kati which was half of a pratapa. pana, a gold coin of lower denomination, was one tenth of a varaha and weighed around five to six grains. There was gold chinnam, one eighth of a patapa and haga which was one fourth of a pana/ kakini. bele is equal to half of haga. tara is a silver coin in circulation which was one sixth of a pana while pana, jital and kasu were copper coins consisting of 247 -15 grains.

The coins were usually carrying symbols of their emblem such as Hanuman, Garuda, Bull, Elephant, Uma Maheshwar, Lakshimi Narayan, Lakshimi Narasimha, Saraswati Brahma and were inscribed in Kannada and Nagari. The Inscription of Vijayanagara Harihara II 1391 refers to two type of coins rayya tankas and jaithalas which refers to tankas and jintals and karuka or a small coin.74

\[
doddavaraha-doddagadyana-2 varahas
\]
1 varaha-1 gadyana-1 pon-1 pogada
1 varaha-2 pratapa
1 pratapa-2 katis

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Adil Shah: Coins are circular and square in shape. They have coins of gold weighing 52 grains, copper in four weights 267,180,120, 60 and silver of 70 grains. They contain titles, date and Persian couplets. Coins of Ibrahim I and Ismail Adil Shah were found in the Pilar tank. Literary references on Adil Shah coinage identify coins such as

1 hon-2 dharana
1 dharana-2 partapas
1 hon-4 partaps

Basatin Salatin states that Ibrahim struck copper coins with the name Nauras. Yusuf Adil Khan did not issue gold coins but copper coins of 60, 120, 180 grains.

Dana and Dakshina as a form of Exchange
The custom of giving dana and dakshina to individuals served as a medium of exchange. Dana refers to gifts given by the king, merchants, traders and others on special occasion while dakshina refers to gifts given to gods which is symbolic while for the priest it is the actual object that is given. Gift exchange was first present in the agrarian societies but with urbanization the attitude towards land changed. Land was seen as a major economic unit. It acted as a means of exchange and redistribution of economic wealth. Fields and villages were given as dana.

Here the donor and the recipient confer status on each other. The king gives dana in the form of land to the service of the Brahman who is regarded as an intermediator between god and man for the purpose of merit. The Brahman in turn gives dakshina to god for the merit of the king which is more symbolic. It is basically a give and take relationship where both benefit in this form of exchange.
Barter as a form of exchange seem to be still prevalent in the villages as inscriptions throw light on items given in kind, for example, the Shilahara inscription of Rattaraja stresses on the payment of 24 lakhs of betelnut as annual cess to the hadapa for his services, besides payment in cash.\(^7\)

Thus, we find there was revival of money economy as it is clear from the different names of coins and their denomination. There was revival of punch marked coins. Uniformity of weights is noticed in the gold and silver coins though issued by different dynasties. It brought about growth of trade and industry, growth of cities, infrastructural development in the form of digging wells, tanks, canals, lakes for irrigation, roads, palaces, ports, temples, mercantile community emerged. Money lending business developed into guilds.

**Weights and measures**

Buying and selling exchanges becomes both easy and efficient when a developed system of regular weight and measures exists for the purpose of weighing, measuring and counting different kinds of products so that the buyer and seller do not have to feel uncertain about the quantity or size of the products bought or sold. At the trading centres of the port of Goa the idea of exact measurement must have been prevalent. One of the bases of urban economy is standardization of weights and measures. Inscriptional, oral and ethnological evidences in Goa and the surrounding regions which formed part of Goa have been utilized for this purpose.

Measures were of different kind

- Local exchange measurements such as hands and fingers to measure food grains such as rice, paddy, *nachni* and other agricultural products as well as oil.

- Commercial exchange measurements for the purpose of food grains and spices.
Measures in Goa | Similarities in Karnataka and Maharastra
---|---
1 khandi = 20 kudo | khandi = khanduga
1 kudo = 10 podi | podi = padi
4 podi = 1 paila | kudo = koda
1 podi = pod | solage = sollage
½ podi = solage | ginarte = giddana
½ solage = anarte | paili = naili
½ anarte = ginarte | dhane = dhare
½ ginarte = dane

Hosahalli copper plate of Harihara II refers to 1/11/25 and 8 khanduga of land as well as land of 10 or 60 salage. 78 The evolution of area measures is traced from Baudhayana Dharmasutras as hala or plough measure, nirvatana, padavarta or foot measures, measures related to the quantity of seed sown as in Vrihipitika and according to the yield of land such as khanda. These measures were used in Gujarat before the 13th century. In the case of Goa. (ch.5 Plate XV a,b)

➢ Land measures—land was measured in terms of nirvatana which indicates the extent of land bounded by a line travelled by a person starting from a particular point and coming back to it within a specific time. It was the universally accepted measure in Deccan mentioned in the inscriptions of Shilaharas and Kadambas.

➢ Area of land or hala indicates a particular extent of land which could be conveniently ploughed with a plough and a pair of bullock in a given time the copper plate records of Konkan Maurya Annirjitavarman refers to the grant of one hala of khajjan land. 79

➢ Land was measured on the basis of the sowing capacity called as kudo in Goa and Karnataka as koda.
Linear measures such as rods or ropes. The inscription of Sivachitta- Kamaladevi (1174) refers to the use of a measuring rod to measure land called as _danachintamani_. Besides rice fields were measured using cow hide.\(^80\)

- Measuring of land on the basis of the walking distance.

- Demarcating boundaries of land, villages was done on the basis of the natural topography such as trees, rivers, lakes, wells, rocky paths, heaps of soil, and mountains.

The copper plate inscription of Prithvimallavarman records the location of a field called _Kapoti-Khajjana_ situated in the village Malara, in Kupalakata-desa, which was having the following boundaries, east- rocks, south- rocky road, west- a place called Vesimika and north a river along with a _yupaka_ in the middle of the field.\(^81\)

**Oil measures:** The Dharwad inscription of Jayakeshi II provides references to oil measures as _pavas_ as well as paddy called _satteya_.\(^82\) The inscription of Sivachitta Permadi 1160 refers to oil measure called _mana_.\(^83\) The Devaraya inscription refers to 17 pots of oil of 16 measures or 51 pots of 16 measures given by Gopal Bhatta, one _gidu_ of _ghee_, one _gida_ of thrashed rice.\(^84\) Control over weights and measures was done by the king who had powers to punish the defaulters.

**Transport and Communication**

Transport and communication forms the backbone of an urban, social, economic and maritime life. The means of transport since ancient times were land-borne and sea-borne. The animal driven cart and the sail propelled boats ruled the transportation scene during the ages. It was used to transport goods and for the movement of the people internally as well as externally.
Land Transport

Surface transport plays a key role in the development of the city and in spreading the effects of urbanization in the hinterland.

The land transportation consisted of:

➢ The road network system connecting the port city and the area immediately adjacent to the city, linking market places, industrial centres followed by the major highways, linking the hinterland and isolated villages thus facilitating inland trade. For example, the Royal road or the Rajvithi or vodli bidi meaning highway which extended from the port of Gopakapattana to the city of Ella and up-ghat region.

➢ City roads dividing the entire city into different parts such as north, south, east and west. For example dakti bidi or vithi meaning small road.

➢ Village roads which were called as paivatt in Goa or roads created by the local folks by walking on foot across fields, hills, mountains, valleys and plateaus. The port of Gopakapattana was connected to Ella through the paivat which went from the hill of Gauvxi via Talaulim to Old Goa or from Agassim–Neura-Bati-Talaulim-Calapur-Raibandar and Ella. The people of Zuari (Goa Velha) even today go on a pilgrimage to Old Goa or Ella by foot taking the above route.

➢ Transport conveyances used for administrative, military, agricultural and commercial purposes would include the following.

- Horses and elephants were used by royal personages and soldiers
- Chariots of horses were used by the kings and queens
- Palanquins were made used by the Brahmins which were carried by humans on their heads or on their shoulders mostly by the sudras, kunbis, boyas, mahars who were known for their hard work.

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• Bullock carts used by the common people to transport their goods to the market areas
• Foot
• *Katre*: the heritage home of Sara Fernandes at Chandor displays a *Katre* a kind of a portable bed in which a lady member of the family travelled in a recumbent position when visiting friends and relatives.
• Mennom or *palki* the heritage home of Sara Fernandes at Chandor displays a kind of means of transport to carry *bhat* or *gurav* family members. It has a seat on an elevated position on pillars. (ch.5 Plate XVI a,b,c,)

➢ Facilities: The travellers were provided facilities like, wells and tanks for water, trees and caves for shelter, safety on the highways and roads, head stands for resting loads on head. One such head load rest is found at Calapur.

**Water Transport**

The water transport system provided a good source of transportation to the ancient cities which flourished along the coastal belts. Remains of ancient ships or boats belonging to the period under study have not been found so far through archaeological excavations or through underwater explorations. The only source available is through oral and visual sources and its interpretation found in inscriptions, sculptures, coins, viragals, *satikals*, and travellogues.

Waterways

1. Main Rivers-Mandovi and Zuari
2. Tributaries
3. Streams and lakes

➢ Transport equipments in the form of boats, ships like *patmari, tarva, vaddi, voddem, poneo* Proverbs like, *Doryant Vhaddem, toder Ghoddem* means in the sea are boats on the shore are horses *Goyant Tarum, ghantar ghodi*. These proverbs shows that the means of transportation on the ghats and the rivers was in the form of boats and horses
Communications
Postal services were maintained for sending news from place to place within the city or kingdom or to other kingdoms. Messengers or runners called valegars or sherogars were used. Val means a palm leaf which was used to carry messages. They carried the news and newsletters through land routes, river routes and sea routes either on foot, horse, boats and ships. The charges for these services could be on the basis of the weight, the distance to be covered and the mode of transport to be used. They belonged to the class of Marathas having surnames like Sawant and Naik.

Guilds
Guild is an association of a profession having a well-defined structure, code of ethics and membership governed by certain regulations and qualifications.

Inscriptions and coins have provided us with innumerable references of guilds which played an important role in the urban set up. When we speak of urbanisation which depends upon the appropriation of surplus for consumption and trade we often tend to ask questions as to who and how a regular supply of food was sent from the villages to the towns for the survival of the urban dwellers and urban economy.

It was, however, emphasised that a political authority could not force the production of a surplus if a congenial climate for the same did not exit. Thus, authority in the form of guilds brought about a positive control over the surplus and looked after its channelisation.

Guilds are broadly divided into two

➢ Merchant guilds: indigenous, itinerant, foreign, protective
➢ Craft guilds: agricultural and industrial guilds
Role of guilds

Guilds played an important role in organizing mass production of essential commodities necessary for consumption at the urban centre and for the purpose of trade and commerce. The guilds fixed rules of work, quality of finished and manufactured products, commercial transaction, internal and external trade, regulation of price, finding markets, interaction with craft and industrial guilds, banking, investing, civic administration, sanitary arrangements, celebrated feasts, religious functions and minted currency.

Guilds were controlled by the sresthi, the head of the central board who administered the affairs common to the entire merchant and craft guilds in the city.

The earliest references to guilds is made in the inscription of Dharmamaharaja Kapalivarman which mentions one Aditya-Sresthi from whom the land called Pukolli-Khajjana in the upper region within the boundary of the village Sivapura was given to Svamikaraja who in turn gifted it to a Brahman, Bhavarrya, of the Kaundiya gotra. ⁸⁵

The sources of the period throw light on a number of professional and functional designations of merchants such as Sresthin, Mahajans, Thakkura, Sarthavahana ⁸⁶

The Sarthavahana is a caravan leader under whose leadership and guidance the merchants of a town gathered and carried goods to distant centres of trade. He is supposed to be a highly capable person knowing not only the routes but also the rules and regulations of sale and purchase in different states. ⁸⁷

Sresthi collected local goods and also supplied liquid capital on interest to needy merchants. ⁸⁸ The Pattanakudi plates of Avasara II refers to three merchants named Nagai-Sresthin, Lokkai Sresthin and Adityavarman. ⁸⁹
The Kharepattana plate of the Shilahara Rattaraja refers to one family each of washerman, potters, gardeners and oilmen. This shows that artisans or craftsman were not dependent but also worked independently and derived benefit of the developing trade and commerce and went up the ladder of social prestige. They made donations to temples and also occupied high posts in the service of kings.  

Communities
The thriving commercial activity at the ports of Goa witnessed the immigration of trading communities namely Kols, Kharwas, Mundas, Shabars, Jains, Buddhist Bengali, Baniyas, Banjaras, Persians and Arab. Description on these communities will be dealt in the succeeding chapter.

Thus, the Economic features of Goa and the port-capitals in particular provided a sound basis for urban settlement, maritime trade and contacts.

Notes and References:


19. Field Visit to Gopakapattana, Zoricho waddo, 6th July, 2006,


25. Based on structural remains and toponomy of Chandrapur, Gopakapattana and Ella.


30. Field visit to Gopakapattana, 20th April, 2006.

31. Based on interpretation of place names in Tiswadi taluka.


37. Exhibits at Pilar Museum, Goa Velha.


47. V.V. Mirashi, *op.cit.*, p.185.


57. Ranabir Chakravarti, “Trade at Mandapikas in Early Medieval North India” *Trade in Early India*, New Delhi: Oxford University Press, 2001) p.188.

58. Varsha Kamat, op.cit., p.50.


60. Field visit to Bondir Waddo, Bati on 9th September, 2006.


64. V.T.Gune, op.cit., p.42.

65. Ibid., p.135.


69. Ibid., p.185.

70. V.V. Mirashi, op.cit., p.179.


74. *Ibid.*, pp.141,142


77. V.V. Mirashi, *op.cit.*, p.179.

78. K.G. Kundanagar, "Hosahalli Copper Plate Grant of Harihara II" *Journal of Bombay Historical Society*, pp.132-133.


87. Ibid., p.356.

88. Ibid., p.352.

89. V.V. Mirashi, *op.cit.*, p.179.

90. Ibid., p.193.
Plate I: Main produce of the land (paddy and coconuts)
Plate II: Spring at Zoricho waddo
Plate IV a) Salt Industry at Goa Velha
b) Pottery making
Plate V  

a) Agricultural Implements
b) Technique of building *manos*
c) Mussol or Pestle for pounding grains
Plate V d) Technique for oil extraction
e) Technique for salt extraction
f) Technique for extracting medicine
Plate V: (g) Technique for unloading horses at Ella
Plate VI: Technique of making tarane (sketch based on oral description)
Plate VII: Technique of making dug outs
Plate VIII. Technique of making sewn-plank boats: a) Warming the coconut husk before use b) Flattening the coconut husk before use and plank bending technique.
Plate VIII: c) Shaping of the *pati* or central log to which the stem and stern is added d) Fixing planks to stem and stern
Plate VIII: e) Application of *dammar*, cotton and cutting of excess cotton f) Laying of coir and sewing using *sumachi dora*
Plate VIII: g) Drilling of holes for sewing h) Sewing using the cross pattern
Plate VIII: i) Criss crossed sewing pattern of sea going vessel
Plate VIII j) Application of dik to prevent from leakage and insects k) Vodhi with stem, stern and support.
Plate VIII 1) Different parts of the boat
Plate IX: Sketches of Boats
Plate X: Sketches of Boats prepared from Hero stones (A.S.I Museum)

1 ship

2 ships

3 ships

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Plate XI: Land Routes: a) bid at Chandor b) Rajbid at Goa Velha
Plate XI: c) Bidi from Sulla Bhat via Gaunci to Ella d) Dovorne or head load rest at Gauncim.
Plate XI: c) Road leading to Ella.
Plate XII: Porne Tirth, Divar and Pilgrimage to Saptakoshwar
Plate XIII: Ports: a) *Bosti* or dockyard at Chandor b) Port wall at Gopakapattana
Plate XIII c) Bondir, Bați d) Tarir, Agassaim
Plate XIII e) Dockyard at Mandvi, Ella.
Plate XIV a,b, Kadamba Coins

GOLD COIN OF KADAMBA KING SHIVACHITTA [1147-72 A.D]

GOLD COIN OF KADAMBA “MALAHARMARI” TYPE

OBVERSE

REVERSE

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Plate XIV c,d Kadamba Coins

OBVERSE

REVERSE

OBVERSE

REVERSE

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Plate XVI Transport Equipments: a) Bullock Cart b) Katre c) Mennom or palki
Map I: Land routes from Chandrapur, Gopakapattana and Ella to the up-Ghat region.
Map II: River Routes of Goa
Map III: Tidal Reaches of the River, Inland of Goa