INTRODUCTION:

The tendency of human beings is to accept change due to various forms of impacts. The result is the rapid transformation of society itself. This impact introduces certain fluidity into the traditional folk society. Redfield's (1955) concept of folk-urban continuum provides the conceptual framework of folk society. He is of the opinion that the contemporary Indian society is the result of many divergent patterns of interaction between local regional and classical cultural influences. Here the catalytic action is due to modernization. In addition to that the establishment of an urban centre act as agent of change. Rural societies can also be modern in many sense as for example our present rural areas are modernized due to educational facilities, agricultural improvements, rural banking, better housing facilities etc.

In fact, diffusion of a culture trait is not merely unidirectional. It is rather prominent that a trait diffuses from a developed culture to a less developed culture. The flow to opposite direction is not conspicuous, because it is assimilated quickly by a conscious group into their already complex-culture.

It is of common experience that any impact must sooner or later, produces the resultant effect like
Nevertheless it is the quality as well as the demand of human society to show, slow or quick response to different impacts which always yield space to the old order.

The new wave of development and modernity in the port area is due to emerging town complex where more people are attracted to overcome all obstacles in the path of progress of inhabitants of Paradeep-Port, because it gives ample scope for job facilities. It is mainly the younger generation those are more inclined towards town-area or urban area.

There is a tremendous impact of Industrialization and Modernization as a result of which Paradeep-township emerged. Moreover, the diversification of job facilities for growing population is mainly responsible for rapid expansion of Paradeep town. But for the same value, the impact shows different responses for different communities.

It is because of the socio-cultural and economic condition, the infiltration of outside 'modern' culture evokes a differential response towards modernity. The fishermen have maintained their traditional mode of life with an acceptable blend of modernity.

Sachchidananda (1988) says in the context of tradition and modernity, 'Any development due to impact of modernization is nothing but a socio-cultural context of which the tradition is an integral part. It may retard the progress
or it may promote it. In some case it may act as neutral one. It is therefore important to study the interaction between tradition and development.

Paradeep-Port is not an exception to this basic principle of social norm. Due to establishment of industry like Paradeep Phosphate Limited, and ship repair workshop, slow and steady changes in the traditional mode of life ensued. The gradual development of urban setting and inflow of multi-ethnic population is expedited the influencing process on various aspect of traditional community life. According to Dube (1958), 'Kinship, Caste and territorial affinities are the major determinants that shape the social structure of village communities'. This multifold urban activity provides urban units for collective benefits. Any urban complex is not a rigid structure because it is more flexible towards change, irrespective of its location, ethnic composition alongwith their socio-economic conditions of people. Here the production and regional growth may vary accordingly. Various religious, linguistic group people gave rise to town-complex where liberalisation of values and mutual tolerance started coexisting.

Urbanity does not merely depend on some infrastructural impending factors, it is essentially in the attitude of the people, which is sharpened through education in modern style. Moreover, all sorts of economic and functional activities are centralised around the newly emerging town
complex at Paradeep-Port. It shows the agglomeration of mixed economic elements which is the characteristic feature of town-complex where various occupational groups create economic diversities. Unlike rural areas, it does not prevail on any particular or mono-economic base. This economic variation and diversification amongst the urban population enables it to sustain optimum flexibility for a better way of living.

Therefore, any impact either in the socio-economic sphere or even in occupational sphere of such urban society does not destabilize them, in comparison to rigid social system of rural area, where heavy impact often erode the inherent values.

In urban area, it is more co-related with economic progress due to multifold job facilities, alongwith alluring income opportunities. A traditional occupational group if finds their occupation not economically viable under hard competition, is likely to switch over to a safer economic option. Urban complex usually unfolds many job facilities for such people, either as skilled or unskilled/semiskilled worker, where the central management is controlled by technocrats, but they are ensured of a steady income as wage. Prevailing uncertainty drives these people to jump over to the organized employment. So the Paradeep town-complex shows maximum linkages and inter-dependence on its rapid growth with high degree towards economic progress. The impact of urbanization accelerates the industrial as well as
technological advancement which attracts large number of multi-ethnic groups. Generally the area becomes over populated. Evidence shows that an urban-complex is nothing but the conglomeration of several socio-economic units of various components where functional-interdependence is the vital phenomenon. Considering the import and export facilities, Paradeep is the only port in Orissa. It is considered as the trade centre of the State, because to-day the key bunch of progress is the foreign exchange. It is only possible through export facilities of Paradeep-port which fulfills the rapid need of money not only in the State level but also our country as a whole. The agencies of different forms and functions mainly help in shaping the port-town economically feasible, physically efficient, administratively viable and above all socially satisfying the adjacent communities specially fishermen (As they are the dominant group). The Orissa Town planning and Improvement Trust Act operative since 1956, works as an expedient to make provisions for the development, improvement and expansion of towns of Orissa, including Paradeep-Port Town-complex.

Here due to impact of urbanization artificial inter-personal relationship is well articulated with their vested interest for the individual benefit. The people here usually try to accommodate long-range target for diffused benefits of Society as a whole. Here one has to be well acquainted with the problem of urban area and their
magnitude. However the velocity of urban development enhances the quantum of demands, along with other related problems.

The fisherfolk of village Sandhakud, adjacent to Paradeep-Port through exposed to town-culture, appear to be less affected as it is expected to be, because of their cohesive social bonds, rigid social system along with poor economic status. Their main binding factor is their occupation which needs utmost co-operation. Besides all these unity amongst fishermen, some remarkable changes have been marked in their market economy as a result of the dichotomous economic division.

Basically the traditional groups were oriented towards a subsistence which now due to competitive process with the mechanized sector has become export oriented. This pressure has propelled them to secure help for transportation, freezing plants and processing units.

Under the competitive economic system, a new stratification system has emerged out which is of the following type: -

a) Differentiation of production process.
b) Modification in fishing equipments.
c) Variation in income source.
d) From share system of income distribution to salary system amongst the boat, net owners and crews.
e) Accumulation of capital to specific persons (few in numbers).
f) Inequality amongst crews and owners regarding catch distribution and division of labour.

All these processes which in combined form constitutes 'Fishing', will be discussed later on.

It has been described earlier that social organisation in the fishing community is not flexible, there in urban community. Due to impact of modernisation, though low response is observed amongst the fishermen of village Sandhakud but some effects have been marked.

(A) IMPACT OF FAMILY PATTERN, SIZE, AUTHORITY, STATUS ORIENTATION:

Family is regarded as the most important primary social group, performing socio-economic task, where the members behave as a part and parcel of the community and household in particular (First loyalty to household and then to community). The function of family includes the need of man-woman intimacy, procreation, social & individual security, having common residence with economic co-operation through division of labour. Previous statistics shows very high occurrence of joint family (89%) which is now being reduced to nuclear family type. In the occupational field, the family members and kin groups behave as an integrated whole but in family life, after marriage the couple prefer to establish separate house-holds with separate cooking arrangements. Basing on these facts Marvin Harris has defined 'individual family into domestic group
where the main concerns of the members are to share domestic services like provision of food, shelter and clothing where it is not necessary to stay in the same house. On the other hand, other division of family is the residential group where the members may live in the same house, but from separate domestic group or separate house-holds.

Family constitutes a specific social group where interactions amongst the members have been disintegrated due to economic degradation. The interaction pattern is the norm of society which reflects the unique feature, values as well as beliefs shared by the members. Harris called it as 'unique set of roles and values'. During this interaction process the expectations amongst the members through sharing the emotions, performance of tasks, pattern of division of labour. The most relevant point in family interaction process is the authority structure or decision making pattern of the family, as it is guided/governed by the seniormost member of either sex (patriarch/matriarch). A family is considered as a social institution where certain rules, customs, regarding marriage, inheritance, rituals, establishment of new relationships through marriage, maintenance of kin-relations etc. are the some of the foremost functions. These are still rigid amongst the fisherfolk of Sandhakud inspite of severe impact of modernization.

Now-a-days, the joint family in its original form has become rare but the concept of joint family still
has its importance. Among these fishermen many small nuclear family units have come up (based on separate cooking), but rituals related to birth, marriage, death, religions performance are organized jointly or participation by each unit becomes obligatory. This reflects the vestiges of joint family system, where administrative and economic managements are separated but not the social and ritualistic matters. All the family member along with kin groups work in co-operative manner in their occupational field which definitely needs more man power. Although it is the conditional effect of modernity to establish separate households after marriage, yet the 'traditionalism' is so deep rooted in their social organisation system, that it can not be dispensed very easily.

In the village 'Sandhakud', the family whether extended or nuclear is termed as 'Kutumba'. Monogamy is the rule i.e. one spouse at a time.

**FORMATION AND BREAKUP OF FAMILIES:**

In their society early marriage mostly occurs. It is inbetween 14 to 17 years in case of females and males 17 to 21 years respectively. The fishermen strictly obey the rule of caste-endogamy, i.e. marriage is permitted within their own caste group. Both inter and intra village marriage takes place. But they give more preference to marry amongst their own kin groups. There are two reasons, one is to keep their fishing assets (which are the most precious
property for them) intact within their kin groups and second is to get more help in their occupational field through marital and kinship ties. Here the preferential mates are bilateral kins, mostly they prefer cross-cusin marriage. 'Menachium' is the common term for cross-cusins in their society. Marriage between uncle niece is of common occurrence. Most of them are Telgu Fisherfolk (Migrants of Andhra), where the traditional custom is to pay bride-price, just like primitive tribal communities, now has been replaced by dowary system. This practice of dowry system is found amongst urban people. It proves clearly the impact of urbanization on their society. So now after the commencement of marriage, the bride comes to her in-law's house with household utensils, boxes, mat, pillow besides the jewellery according to the capacity of her parents. The family of the bride-groom usually offers feast of his kingly groups and other members of the village. Amongst the fishermen, till now there existing the tradition of giving bride price which is not compulsory amongst the poorer sections. The actual tradition is to pay even symbolic presents to the bride as dowry if their economic condition is very poor.

Setting up a separate nuclear family is probably due to desire for independent management and greater privacy. Outside world, (i.e. complex urban societies) adopt it due to other reasons where economic pivotage is a part. But here fishing venture remain collective. This may be a fall out of modern system.
Now-a-days in the village under study, the newly married couple always has got the tendency to establish a separate household mainly for privacy, though income may not be a factor, but in the occupational field they work together.

Suryanarayan (1977) observed on North-East Coastal Andhra fisherfolk, 'the status conflicts and economic conflicts lead to a partial separation of extended families where the means of production are not divided and the fishing is still carried out together and the produce divided equally but the individual nuclear families look separately'. This opinion holds good for the fisherfolk of the village Sandhakud of Paradeep-Port.

MODE OF INHERITANCE:

It is the custom of fishermen community to share equally the assets and liabilities of old parents. As primogenture is the rule, the eldest son must have to take care of dependent and unmarried brothers and sisters and also major responsibilities of debt is to be taken by him. Girls are only entitled to get ornaments, utensils at the time of marriage as dowry.

DIVISION OF LABOUR:

The fisherfolk have got a very good perception regarding proportionate division of labour. It is basically of two types like household work which is usually performed by the females and outdoor 'fishing' is the work of male members of the family. In preparing fishing crafts,
launching of same, fishing operation, team formation, procurements on marketing, processing but females are now taking active part in management of fishery finance, besides their household work. This shows the status elevation of women in fisherman community. Very often it is also marked that females take part in processing the catch and marketing the fish. As the prawn processing units are engaging girls for beheading prawns, similarly do the fishermen engage females in prawn processing to gain higher market values then the economic contribution will be higher. In fishing operation, 'father' is the active member who has to take the help of all married sons and even unmarried ones though they play minor roles. After marriage the sons get full share of catch and accepted as full-fledged members of family and community as a whole, where as up to marriage, they have to depend on their parents for their maintenance. After adulthood they may demand full share of their catch but it is a must after marriage.

**STATUS REORIENTATION:**

Now economic status is the key for the elevation of social status of an individual. The same is also applicable to the fishermen society. Day by day market price is increasing and they also try to cope with the changed economy. So the fishermen who are considered to be the economically backward caste now want to elevate their position in the society through hard labour. It is their faith that more work will gain more economically. So they
try to work hard for better income where by they cope with the changing market economy.

IMPACT ON AUTHORITY AND INTERNAL MANAGEMENT OF FAMILY:

Modernity has also cast its shadow on the authority system. Father as the head of the family was so long the sole authority to decide about any problem regarding fishing, selling process, future planning of the family or any other matter. His decision was final. But now the youngsters (specially the sons) interfere in family matters decision making system to some extent. Although the head of the family (father) wields the authority, often appears less aware about the happenings in contemporary world. By virtue of going to the town ande mixing with various people, the young-adult children become more aware or conversant with modern privileges, market rate, demand, government provisions etc. Some amount of education has also spurred them. For these reasons, they also open up during any family discussions and father/head often find it difficult to ignore them. Segregation of family in to nuclear types has also divided the 'authority pattern from one single individual (father) to many heads (separated sons). At each family level, gradually the internal unity and integrity day by day becoming less rigid as it was prevalent in the past. Previously the people were less in number, having less requirements and less aware of the facilities. But now due to market competition, the family disintegration process has ensued and the internal
cohesiveness of fishermen community of village 'Sandhakud' is at stake. Indirectly, it also diminishes the communal responsibilities to individual interest when any unexpected danger or mishap occurs.

MODIFICATION IN MATERIAL ASSET, FOOD PATTERN, TIMING:

Multi ethnic population strength is gradually increasing as the port-town at Paradeep emerged, on the horizon. Obviously it has produced certain peripheral impact on the fishermen community living in the adjacent village 'Sandhakud'.

Definitely it has some impact on the material asset, food habit and other cultural behaviour of fishermen of traditional category. Mainly the material culture like fishing equipments which includes fishing boats, nets are now more developed type in comparison to perviously existing varieties.

Replacements of old fashioned items, as for example, earthen pots, fire wood or bamboo baskets etc. by aluminium utensils, coal fuel, metal boxes etc. have been found. Availability of kerosene, coal etc. have encouraged them to use these and the town-market is the source.

Now the fishermen are more conscious about the food items, habits according to easy availability in the near by market areas. They have developed the food habit of having more protein contents like fish, egg, meat along with rice according to their own capacity. Beforehands they
were using only rice, fish etc. Now the use of bread, sweets etc. shows the change of usual pattern of food. Change in food pattern has been noticed, when many of the fishermen switch over to taking bread as supper and as mid-day meal on board their boats, use of some ready made food stuff is no doubt the influence of urban market, yet to incorporate it is their daily life, depends on acceptibility and feasibility. It may releave many household preparation and at the same time easy intake; but requires pyschic flexibility. Now if any unavoidable circumstances occur they can also manage with some tiffin instead of rice.

The fishermen are now more conscious about health and sanitation. Household utensils, dress materials are comparatively used in clean condition. Different government facilities of life saving vaccination like D.P.T, etc. are giving to their children. In case of any disease, they are consulting the doctors appointed in nearby Port hosiptal. Previously they were mostly depending upon different magical practices to cure their diseases. Despite of their poor economic condition, they are now more conscious about health and hygiene.

The fishermen are more conscious about the limited size of family through adopting different family planning procedures like taking contraceptives and family planning operations of both males and females. Though the practice is not so much popular like urban people, still then they are aware of all these adverse effects to some
extent which was just a dream for any rural population.

ECONOMIC REORGANISATION:

The emergence of port at Paradeep has enhanced the export facilities of fish. So economic importance of fish and other catches has grown up due to widened market facility which has favoured some fishermen to boost their economy. On the otherhand several non-technical persons (other than fishermen) have entered in to the field of marine fishing for high economic gain through export facilities. Moreover the mechanized sector has opened a huge production which has also attracted to big fish merchants to export along with the petty vendors (local as well as outside) have started a new economic re-organisation. Thus local market economy has widened its sphere to interstate and international level.

Regarding the recent trends of economic organisation, Ray Chaudhury (1980) has written, 'the economic consideration and the feeding of proprietary right are gradually having considerable impact on the traditional shared units'. He also mentioned that the unlike past the marine fisherfolk cannot be treated as self sufficient economic isolates. Now-a-days not only they are selling the major part of their catch to outsiders through a long chain of intermediataries involved in the marketing operation, the procurement of their basic tools and food involve them in
varied symbiotic relationship with the general peasantry of the region. In the economy of two fishing trade and regular supply of fish to profitable market centres, various types of middlemen have emerged and they have great chain organisation'. (Raychaudhury, 1980)

This has resulted in a shift in the marine based economy of the fishermen. In the past, when the port did not exist, the fishermen group were selling their catch (fish) in the local markets to a few vendors and there grew a relationship of interdependency. As these fish-vendors were dependent on the fishermen for their trade, they had mutual trust, which is not expected from the big fish merchants from outside (distant) areas. Fishermen could hand over the catch to local vendors and merrily go for fishing. The big merchants with greater investment capacity, do not solely depend on the fisherfolk. The fisherfolk in order to have better payment, go to them, bow to their terms and have to remain alert for any cheating. A lot of anxiety haunts them even after a day's haul.

DETAILS OF FISHING TECHNOLOGY:

Titze, Mohapatra, Cunningham (1985) are of the opinion that, 'the Telgu fisherfolk of South Orissa have more elaborate and realistic perceptions and knowledge of winds, navigation and other aspects of sea fishing, owing to their longer association with sea fishing'. The fishermen of Sandhakud village of Paradeep-Port are not exception to
these basic criteria. They organise their fishing party, technique in a very systematic procedure. Generally the number of crews including the master in a single fishing boat varies from 3 to 8 individual basing on type of fishing boats, nets, method of operation. Depending on personal experiences, the master selects the spot where the net has to be set or operated. It is basically called fishing ground. Normally to undertake a fishing operation there is need for a combination of craft and gear. The craft is important in that it is used to take the fishermen to the fishing ground; is their abode for the duration of the fishing trip and functions as the first storage point for the fish before it is brought to shore for sale. The gear (Nets, hooks, lines) is what actually catches the fish and the variations in its nature (size, strength, and form) to a large extent determine the type and size of fish that will be caught using it' (Kurej^n, 1982).

In the operation process, they use different types of fishing crafts for different purposes.

DIFFERENT TYPES OF FISHING CRAFTS:

It is basically of three types as used by the traditional fishermen of village under study.

a) Catamarans or Teppa:-

These types of fishing boats are locally known as 'Teppa' and used more in numbers in the village Sandhakud. It is also written as Catamarans (Kurej^n, 1982).
These 'Teppa' are common from Paradeep Southwards. Generally the length ranges from 4.2 to 8.5 metres. A Teppa may be of 2, 3, 4 log pieces which joined at the centre to form the fishing boat. In each log piece, several smaller pieces are pegged together. Kodanda Rao (1990) name it as 'Catamarans'.

The fishermen mainly use two-logged teppa which are joined at the centre. It is biggest variety of Teppa (amongst 4, 3, 2-logged Teppa). When fishing is over, the two parts are separated from each other and kept for drying on the open sand beach. This Teppa can be usually handled by 3-4 fishermen.

It has been observed very often, they (fishermen) also use three or four logged teppa but number is very few in comparison to two-logged teppa. These are smaller in size than that of two-logged teppa, which can be operated by 2 fishermen. The average length is 4.2 meters to 5 meters in case of three-logged teppa where as 4.5 meters to 5.5 meters in case of four-logged teppa.

A craft 'Teppa' is very light in its weight with more buoyance, and the fishermen can easily operate the craft. As can easily float on the sea waves, less man power is required for the operation. This is made up of Albizza Stipulata and Erithryna indica, which are locally known as Chakunda and Paldhua wood. These are most common fishing craft used in the offshore fishing in Orissa. The average size of two-logged teppa, propeller is 8 meters length and a
triangular sail 7.5 meters at the luff and 6.25 meters at lower angular size for propelling the craft. The three log and four-log Catamarans have a bamboo mast of 4 to 4.5 meters in length and triangular sail which measures 4 to 4.5 meters at luffside and 2.8 to 3 meters in angular side.

NAVA:

The fisherfolk of Sandhakud call 'Nava', it is commonly used fishing craft amongst Paradeep coastal fishermen like Catamarans. The 'Nava' is called traditional fishing boat. It is plank-built boat generally brought from Andhra and operated in open-sea beach during October to February in peak fishing season, when weather is comparatively calm. The length of this boat varies from 8.5 to 10 meters. It is comparatively larger in its structure, generally made of heavy plank wood. Due to its heavy weight, it can easily move on the sea having less possibility of capsizing or sinking inside sea. It has a wooden mast of 5.5 meters length and operated by a triangular sail which measures 8 meters. In southern coast line they go 20 to 30 Kms. away from sea beach. 'Nava' or 'nao' is the only fishing boat which is not made by carpenters of Orissa. The fishermen procure it from Andhra. Here in the village 'Sandhakud', most of them are of southern origin and daring, well acquainted in rough sea fishing, for which they go to maximum distance i.e 25-30 Kms. away from the shore. For their fishing purpose, they also take the help of Nava during peak seasons; but high rolling waves of sea cannot be
resisted by the same where as it can be easily withstand by catamarans.

**BAR-BOAT:**

The bar boat is locally named as 'Podhua' where average length is 7 to 8.3 meters. It is made from Mango-Planks (Scientific name Mangifera indica). The boat is having no frames. The peculiarity of this craft is that it can withstand the surf-beaten sea and its wave. It is also lifted in a swift manner along with the ups and downs of waves, specially during cyclonic or stormy weather. Due to its specific resistance in rough sea, the fisherfolk of Paradeep Coastal village use it for beach-seining during October to April and afterwards when weather is rough and stormy. As the name suggests, it is made up of wooden bars attached one with other, having a mast of 2.5 meters length and move by a triangular sail having 8.3 meters length at luff region and 5.6 meters by 4.9 meters on the angular region. This fishing craft is of rare use.

**DIFFERENT TYPES OF NETS USED BY FISHERFOLK:**

The fisherfolk of Paradeep coastal area use various types of nets which are described below.

**Gill Net:**

Jagavala is one type of Gill Net. In Telgu term 'Vala' means 'Net', where as 'Jalo' is the Oriya term for the same. This gill net is used as bottom drift net but not as a surface drift net. In this net generally the
Fishermen catch prawns besides that ribbon fish, croakers, pomfrets and other fishes are also caught. The Gill net is operated throughout the fishing season. Usually it is set in the early morning hours and hauled around noon.

Generally in this net operation, 3 crews are engaged in handling the same. In one piece of net, there are 1500 to 2160 meshes in lengthwise and 120 to 130 meshes deep or breadthwise. During the time of operation, 10 to 12 nets of the above said length are joined to form an unit. The mesh size ranges from 60 to 70 mm. One of the interesting aspect of this fishing operation is that the net (Jagavala) is not anchored on the sea bottom as it is usual process of fishing. The net is just lowered towards the ground by adding additional weight to the sinker line (Use stones, bricks etc.) and then taken out of water but fixed to a catamaran or in local term called as 'Teppa'. The 3 crews taking part in fishing operation, get share of their catch, because the catch is to be divided into 5 shares, where one is to the net owners (2 shares also in case of same individual having boat and net) and rest three shares are equally divided amongst three crews. In this Paradeep coastal village, the boat owner is called as 'Sarang' and crews are called it as 'Raita'. Here the boat and net owner takes ₹.20/- and ₹.30/- respectively on rent basis from the fishermen (Crews). They carry their catch to shore from the boat by means of Nylon bag called 'Senkam'.
In fact sea is a limitless biotope containing a large number of species amongst which some are periodically available where as a few species are available throughout the year. Mathur (1978) opined, 'the sea is inexhaustible source of wealth to fisherfolk who exploit it for their subsistance. Thus the whole mode of fishermen's life develops from their constant contact with sea'.

According to Pannikkar (1981), 'the marine fishermen are dependent upon the sea life, thriving in a specific ecology. Though sea is hostile and inhospitable to man with its dangerous waves, tides, currents and storms, it is the most fertile source of food, swarming with animal life and substances'. The catch is fluctuating type and even if in good catch, the income may not be increased due to price fluctuating of different varieties of fish.

The gill net is always set in a transverse position to the movement of fish. Due to this, it is considered as a passive fishing gear. When the fish swims forward, get entangled in the meshes of net through their gills. For which it is named so. Sometimes also at the beginning of the upperside or behind the gills and opercles attachment of fish, does not allow the same to swim neither forward nor backward. In case of large fish, when try to free themselves, become entangled in the net, for which gilling is very often combined with entangling. For proper attachment of gills or entangling the fish, the meshes of
The net must have to be made in appropriate shape and size. The entangling capacity of the net can be more enhanced by hanging the net in a very loose position by extending the length of float line and reducing the amount of weight on the ground line.

Gillnets are used in two ways like drifting on the surface or in other way it is connected with a rope to a fishing boat or set which anchored on the sea bottom. It is operated close to the sea bottom to catch prawns. Again the entangling capacity can be increased just by changing the number of sinkers. Marine-fishermen use this gillnet exclusively as driftnets. Only variation is marked in length, depth, size of mesh in its design and construction which is related to different varieties of fish and operational pattern. As for example variation is marked in the size of mesh length and even operational pattern for prawns and Hilsa because both stay in deepwater (demersal varieties) and need different forms and sizes of mesh on the net.

The fisherfolk of Paradeep area, mainly use gillnet which are bottom drift type (Jagavala) to catch prawns, and small varieties of prawns can be caught by surface driftnet called Kilumala. For the pelagic varieties of fish like Mackerel, Sardines and Anchovies, other surface drift net used to catch called 'Katlala' or 'Kavalvala'.
KAVALVALA OR KATLALA:

It is only one type of gill net used by marine fisherfolk of Orissa which is still made up of cotton. The net has wooden floats and sinkers. This gill net is operated with a small Catamarans by 2 crews. It catches mainly the fishes like sardines, anchovies and whitebait. The mesh size of Kavalvala is varied depending on the fishing ground season, specific varieties of fish. As for example it is 40 mm. in size for sardines where as 12 mm. for anchovice. Its length depth is also range from 4180 meshes (length) 700(d) to 6845(e) 700(d). Unlike Jagavala were 10-15 pieces of nets are joined together for catch, here only single piece of net is operated. The period of use ranges from October to February. Nets of smaller mesh size (both length and depth) are usually operated upto 3 Kms. off are operated upto 5 Kms. away from the shore. During peak period of fishing season, when shoals of fish come very close to the shore, net is also operated within 2 Kms. from the shore; when fishermen use 'Kavalavala', fishing continued from morning hours to noon. The logical proof of using cotton instead of nylon or polythene is that during active fishing period the net is to set several times during the same day and after each haul, the teppa (Catamaran) returns back to the shore to unload the catch. So due to this repetition process, cotton causes less damage than artificial yarn. Here in this operation catch is divided into 3 equal shares unlike Jagavala (Gill net) where catch
divided into 5 shares. Because herein this operation only one share goes to boat and net and rest two shares to two crews, engaged in fishing.

KILUMALA:

This is a surface drift net. In this net the same species like prawns, pomfrets, small ribbon fishes, jew fishes as well as croakers, like 'Jagavala'. Kilumala net can be operated throughout the year except rough stormy weather. As it has been described earlier that during South-West monsoon from June to July generally weather is rough due to outbreak of rainy seasons. It is operated more closer to shore; than 'Jagavala' which must not exceed 6 Kms. Its mesh size is 40 mm. to 60 mm. which is slightly smaller in size than that of 'Jagavala'. Its depth is less than half (55 meshes) of depth of 'Jagavala'. One piece length of Kilumala has 2400 meshes. In small Catamaran 4 pieces of Kilumala can be operated whereas as in larger form to teppa 12 pieces in joint form can be operated. In the former case 2 crews (fishermen) are required to operate, whereas minimum 4 crews are essential to operate the later. It requires same float, Sinker line and all other accessories are required like that of Jagavala. The sharing system is same in both Jagavala and Kilumala when 12 pieces of nets are operated. But in 4 pieces of nets, sales product equally divided into 8 parts, out of which 5 shares to 2 crews and 3 shares to boat and net. In this sharing system where lion share goes to the crews for which they take keen interest for better catch.
LAUNCHING OF FISHING CRAFTS:

At launching time, the fishing craft is kept right angles to the surf area and then taken off when surf condition permit, then gradually the fishermen row the boat with an oar. If the favourable wind blows in proper direction, they hoist the sail and try to move the craft through wind propelling process. In the time of returning, the fishermen take utmost care that the Catamaran donot dash against the shore. Then finally by the help of rope trapping, it is taken to the shore and lift it by their shoulders. Immediately after landing of the boat, the Catamaran is splitted up into two equal halves as it is joined in the middle (when it is two-logged teppa) and carried out to sandy beach for drying. The fishing nets are then to be rinsed in the backwaters to remove the slime of fish and dried on sand. Then the fishermen sortout different varieties of fishes for selling purpose.

COMPOSITION OF FISHING PARTY:

The composition of fishing party largely depend on the type of craft and gear used for the same. Here in this fishing occupation, one thing is certain that it cannot be performed single handed manner. When Catamarans (Teppa) are of necessity, then 2-4 fishermen are required to the operation. Generally the fishing party may consists of 8 to 10 persons. This fishing is invariably regarded as men's work since it always need stamina, energy and strength.
SELECTION OF BOAT MEN FOR FISHING:

In the coastal Paradeep near by village, 'fishing in Sea' is their primary occupation. All of them donot possess boat and net of their own for fishing. Sometimes the middlemen provide the fishing equipments in lieu of the fish catch. At times also the clever people amongst them who take active part both in operation process (fishing) and selling the catch (fish) can accumulate sufficient money to have their own boat and nets. These boat and net owners freely choose more efficient, skilled fishermen (work as crews) from their own community, kin group to work for them throughout fishing season, either on share or salary basis. As it is discussed earlier that the boat and net owners are otherwise known as 'Sarang' take into account of individuals' dealings, physical fitness and ability along with their fishing skill. There are persons in their fishing community who take their own boat and net alongwith 3-6 numbers of crews or even their own family members in which case there is no option for choice of boatmen in fishing operation. Even if the crews of the same family get their share of catch divided amongst themselves to make their principle intact. In case all the crews and master are belonging to same family then there may some relaxation in dividing catch because all the income will go to same place. The process of equal distribution of catch also reduces the unnecessary risk of boat owners as they are not to pay any fixed wage to the crews (when the owner and
crews belong to different families). When there is even no catch or remarkable reduction in catch, no share or money is demanded by the crews. Some times the raitas (crews) are to be paid some advance money to ensure that they would not cheat the 'Sarang' (Net and boat owner). This advance money acts as contact for which raitas are bound to work for that particular owner (Sarang) atleast for that whole fishing season. In very rare case it is deviated.

TIME FOR FISHING:

Besides the cyclonic or stormy weather, the fishermen daily starts fishing usually in fixed time i.e. at about 3.30 to 4.30 A.M. before sun rise. They usually reach the fishing ground (minimum 10 Kms. away from shore), see the rising sun. When weather does not permit them to go for fishing, it is suspended temporarily to avoid forthcoming danger.

When fishing continues for 2-3 days inside the sea the fishermen get well prepared with cooking materials, drinking water and smoking materials like cigarettes, Bidi, Cigar (Pika).

Generally during the month of March to September fishing is operated through Nava (which is heavier than Teppa, Bar-boat) because they go upto short distance from shore due to South-West wind. Again during actual fishing season i.e. from October to February fishing is operated through 'Teppa' which is comparatively lighter.
Kurein (1982) has mentioned, 'the most memorable feature of traditional fishing technology in India is its heterogeneity in craft-gear design which shows some exotic varieties. This is our adaptation of 'imported' techniques to local conditions. As for example 'Catamarans' show Polynesian origin, boat seine is of Spanish origin where as canoes are of Arab influence etc'.

FISHING PROCESS:

Traditional method of fishing by the fisherfolk of village Sandhakud displays a lot of technical knowledge which is percolated from generation to generation. Although they start fishing venture at a time but selection of spot for setting the net fully depends on their personal experience. The knowledge of good location is usually kept secret by the fishermen. When father goes for fishing in a boat with other men than his own son (who lives separately), then he also keep it secret, 'when and where to set the net' as it is observed by Raychoudhury (1980). Depending on this the catch of different fishermen varies from the same fishing ground. This practice of keeping a good spot secret from another fellow fisherman, seems to have a sense of competition within a limit of group co-operation. Such competition never put fellow friends in trouble but rewards one's own skill. The occupation 'Marine fishing' is a real gambling, if luck favours, one can get bumper catch but from the same spot it may be nil for others. So from the starting point of 'fishing venture', they have to depend blindly on
mercy of God. In otherwords this is their fatalistic approach towards life; due to uncertain occupation. The fisherfolk feel very much jealous and uneasy when others get good catch and emerge more successful than him. But that jealousy does not motivate them to sabotage others ventures.

However, depending on the type of sea bed, movement of shoal of fish and their types, (details of which has been described in the earlier chapter), the fishermen use different types of net and the operators from their personal experience have developed an indigenous way of balancing the fishing craft perfectly. After setting the net, they wait in the boat. The fish with the current of water enter into net through its opening end which is kept immersed in sea water. After that they slowly drag the net from the water level after closing the mouth of the net by pulling the thread and finally take it out where the fish remains as the captives. The catch is removed and kept in bamboo baskets along with ice for temporary preservation. The same process is repeated till the time of return from the fishing ground. It is most important to note here that the particular time requirement for the entry of shoal of fish into net (when it is set inside water) accurately calculated by the experienced fishermen (Master of the fishing boat). Then the other fishermen or the crews drag out the net. The next work is also same when repeated fishing is done. They return back to the shore (in the afternoon) otherwise the haul can not be marketed.
DISTRIBUTION OF CATCH:

The economy of fishing community solely depend on the market value as it is their only source of livelihood. First of all the valuable fish (according to market price) are sorted out by them. Then less economically valuable fish are called as B-Class and 'C' category. These B and C class fishes usually auctioned on the sea-beach itself.

The catch is usually taken to the sea-beach by means of Nylonbag called 'Senkum' or very often by bamboo baskets. Subsequently they are busy for selling the catch to the fish merchants. When it is not sold in the market in very rare case they preserve it as dry fish. Usually the middle men wait near the shore to purchase the catch. After selling the catch, the boat, net owner and crews get their share (details of which has been described earlier).

The Sociologist and Anthropologist who have studied the 'fishermen community' like Mathur (1978), Raychaudhury (1980), Kureân (1982), Subba Rao (1984), Kodanda Rao (1990), have opined about the sense of 'unity and equality in getting share', make the system more effective and progressive. They have the inhibition to achieve 'better catch' where both the owners as well as crews get the benefit. Here hard labour is well paid along with owner who invest their boat and net for an economic gain to the poor crews. Because the crews cannot afford money as required for boat and net of their own. These are their financial
inability. So this distribution of catch makes the participation on equal note. Because of the whole day job of fishing, the fishermen do not have the time to know the market price.

Moreover the poor fishermen take loan from middlemen or fish traders during off season for which they have to sell their fish, in very low price. Now the most valuable fish 'prawn' are separately sold to the fish traders. Rest of the less valuable fish are sent to the local markets. The fins of Shark usually send to 'Tamilnadu' and its flesh to Kerala.

IMPACT OF RECENT TRENDS ON ECONOMIC ORGANISATION SYSTEM:

The previously described facts of fishing crafts, gears, nets, selection of fishing party, procedure, catch distribution, processing, marketing system etc. reveals that marine fishing is a highly specialised art along with specific techniques, adopted by traditional fishermen.

Marine fishing requires considerable preparation, skill and experience. From the beginning stage to operation of fishing craft and net, in which the fisherfolk of Sandhakud village are well-skilled. This perpetuation of traditional knowledge from generation to generation makes them adept in marine fishing which they apply in this professional field with inductive reasoning. Normally the core of fishing technique of traditional group
is the preparation of crafts like 'Teppa', 'Dangi', 'Nava' and nets and their operation which was previously completely monopolised by fishing castes. Here the symbiotic relationship is maintained between owners and crews.

Along with the emergence of port of Paradeep, some kind of modifications are marked amongst the fisherfolk's traditional technology due to impact of recent trend in the market facilities. To some extent, they have accepted the modern facilities due to new innovations made by mechanised sectors (through the introduction mechanised boats). As a whole the traditionalism and economic condition are the constraining factors. They have now adopted nylon thread to prepare gill nets. In fact the poor fishermen are afraid of taking any risk of experiment for which a huge amount of money is required. As Dube (1988) has described, 'the farmers were not unwilling to adopt 'a' seed of proved worth but showed great hesitation to experiment with items about the merits of which they are not convinced'. The advantage of using nylon net is its greater durability than the net of cotton thread. It also does not require any preservative to counteract the saline action of sea water.

The modern impact of the emerging port town has broadened the sphere of economic organization system of traditional fisherfolk. 'With the change from subsistence to economy to market economy and with an increased and specified demand at home and abroad for fish and prawns, a process of specialisation and diversification of artisanal
fishing technology has been initiated' (Kalavathy and Tietze, 1985). It leads to a new fillip to the fishing trade. Previously, the marketing system was restricted within the circle of local market either in fresh or in dry form. Now new opportunities like establishment of freezing plants has reduced preservation by the fishermen in dry condition. Dry fish had its restricted demand, whereas fresh fish has wider demand, because of the freezing plants have the capacity to preserve the fish for months together in fresh condition. So after sorting, processing (separating heads of prawn) the catch is usually sold. The middlemen and procurers are the financers who actually help the needy fishermen and get the catch in double profit. Obviously, the advantage of their poverty is fully utilised by fish-traders or the mediator. Thus the modern impact of new marketing system has completely dominated by mechanised sector, by putting fishermen of Sandhakud village in a spell bound condition.

Now processing and marketing of fresh fish is performed in two ways. Previously, it was mostly a family level work of traditional group, which has recently brought to a large scale process, through the establishment freezing plant and export facilities. Then the fishermen auctioned their catch to fish-traders at whole sale price or even they sell it in the local market where from the procurers purchase it from the fishermen through fish-traders. 'The distance of the producing centre from the real consumer also
seems to be a factor which contributes to the emergence of a number of middlemen, i.e. greater the distance, greater is the possibility of emergence of more middlemen' (Raychoudhury, 1980). 'It is seen while the production end of the chain is virtually limited to the traditional fishing caste, the rest of the chain is manned by people belonging to a wide range of castes and communities. There are of course, some tendencies towards monopolistic specialisation by some particular communities or groups even in this sphere', (Raychoudhury). It creates the gap between the fishermen and procurers. Then it is preserved in the freezing plant which helps a lot for export purpose. The fishermen now even sell their catch to the traders on the shore itself.

So it is quite evident from the above facts that the marine fisherfolk of Sandhakud village, now cannot be treated as self-sufficient economic isolates, where before the emergence of port, they were completely monopolised the occupation as well as marketing system.

Economic isolate is rather a hypothetical concept. When community produces its own consumable items, and do not need items produced by others (e.g. Andamanese or some extremely primitive islanders), they are more or less 'isolates'. But most other communities like fisherfolk of Sandhakud village reciprocally depend on others for their daily need.
The new market economy of marine fishery is linked through a long chain of intermediaries like fishermen, middlemen or fish traders, procurers and lastly, exporters. Although the fishing trade itself rises to a peak due to export opportunities yet the terminal fishermen remain at stagnant point due to cunning interference of middlemen to keep them alienated from the marketing system.

People of non-fishermen castes are very much interested to enter into marine fishing trade because of its unexpected rise of price of certain specific varieties of products like 'Prawn' for which it is now termed as 'Pink gold' just like the petroleum products are called as 'liquid gold' (for its ever rising price in the International market).

The remarkable fact is that when production and income is limited in case of traditional group, the rest of the chain is manipulated by the people belonging to other communities. There are also some people within the same community of fishermen, who behave differently to exploit their community members but they are few in numbers.

**IMPACT OF MECHANIZATION ON FISHING:**

The main objectives of the introduction of mechanization of fishing crafts were to raise the productivity of fishermen and thereby to improve their standard of living. First it was introduced by the Indo-Norwegian Project (INP), where a developed country
(Norway) in collaboration with developing country (India), through United Nations. Attempt was made to transfer technique and knowledge of the fishermen to improve resource utilization. The main aim and objective is to raise the productivity of fishermen and automatically it will improve their quality of life. At initial phase, the mechanization of fishing boats and nylon nets were introduced. Firstly all the project authorities tried to motorise the indigenous fishing crafts (wooden boat) in 22 ft. to 25 ft., gradually 32 feet boats were mechanized along with trawl net as main fishing gear. The use of trawl net has increased the catch of prawns which has its increased demand in United States and Japan market. This demand has created a great spurt for mechanized fishing sectors in sea base areas. On the contrary, prawns were caught in estuaries with passive traditional techniques like drift nets, stake nets only through tidal wave. Passive technique means where nets are fixed for certain time and the prawns are caught into them. Now by using trawl net the prawn catch has been enhanced to a great extent in the open sea (because prawns are available in the sand bed of sea, as lowermost demersal crustaceans). Therefore, this technological input along with heavy demand in the international markets has produced a significant response as well as impact on the fish economy of Paradeep Port and Orissa as a whole. Through demonstration of effectiveness of the same were widely accepted. Only the response is less effective amongst the traditional
fisherfolk inhabiting in the adjacent village of Paradeep town. The traditional group do not want to give off their ageold indigenous technology and fishing craft which goes against their social norms. On the other hand, the people other than actual fishermen (by caste) are benefited. Klausen (1968), attempted to show how the factors such as of fishing community social structure, kinship patterns, work ethics have a crucial bearing on adaptation to the technologies brought by INP (Indo-Norwegian Project). As Kurien (1982), has written that for the first time mass upsurages by artisanal fishermen against the 'menance of mechanized fishing'.

Thankappan Asari (1969), deals with averages and aggregates which by themselves can be misleading since they hide the wide dispersion around the mean, because of this the complete picture never emerges. The portrayal of a total unilinear and upward movement of all the participants in the economy neglects the dimensions of some sections (a minority) moving up faster and at the expense of the rest. Again Galtung (1974) who calls it 'excessive modernization'.

The same phenomena repeated amongst the fisherfolk of Paradeep and its adjacent villages. In actual field, the non-caste venturers (not fishermen by caste) have shown keen interest in adopting the techniques, whereas the real fishermen show more divergent attitude towards the new fishing crafts (trawlers) along with new improved techniques. The new entrants (Non-fishermen) in this field gradually
become more motivated towards the process and the result reflected in increased investments in fish catching as well as fish-processing industry. People of various ethnic and occupational groups, even some reputed businessmen switched over to 'Marine Fishing'; though they do not take any active part except recruiting labourers or crews on share or salary basis. Gradually the non-technical people in this field could double their income compared to that of traditional fishermen whose earnings go on wave with reduction in catch. However, the introduction of mechanized boats, nylon nets (specially the trawl net) opened a new vista in the fishing industry. As it needs more man power, more and more young educated unemployed people are attracted towards 'Marine Fishing Trade'.

In the early seventies, overall employment facilities in fishing trade (Marine sector) along with its unexpected income inclined the people towards the trade and its related branches processing, freezing and exporting irrespective of caste, creed and religion which was previously the indigenous traditional occupation of only fishermen. Thus marine fishery industrial sector got an unexpected and spontaneous boost.

After the advent of mechanised boats and developed techniques a new wave of economic progress and socially upward movement has been observed. In this process some sections of the society moved faster at the cost of the
progress of another section (traditional fishermen). It obviously causes the socio-economic disparities amongst the fisherfolk. As a result of which the central and peripheral economic differentiation between modern sector and traditional sector created more dependencies where former is exploiting the latter. Another crucial factor is the centralisation of money within few people by decreasing the income of poor fishermen. It creates a vertical class between advanced technology and traditional method of operation.

Available literature shows the evidences of mechanised fishing boats operated by planning commission of India in 1970. It was the aim of examine the adequacy of administrative set up and physical facilities essential for the implication and promotion of mechanised boat operation throughout the coastal states of India. It also evaluated the functioning capacity of fishermen and assessment was made regarding the relative efficiency of mechanised boats in comparison to non-mechanised crafts. Taking in to account of initial investments, fuel consumption (diesel), depth of operation at sea, time span of fishing, return of investment and returns on operation cost of mechanised fishing boat is profitable than that of non-mechanised boat. It became clear that the traditional fishermen using non-mechanised crafts, solely depend on their hard labour and sincere efforts to get good catch with traditional skill. On the contrary if one will view the same process from a different angle, the
non-mechanised boats need more hard labour but comparatively less catch than mechanised boat as share is equally divided amongst the crews, boat, net owners and operated by man power. Generally, the income of workers (crews) engaged in mechanised boats and their standard of living is better than those who operate non-mechanised boats.

The fish catching capacity is definitely better in mechanised boats where as a low degree of catch is marked in case of non-mechanised boats. It is obvious in former to get more income besides its fuel consumption, machinery expenditure at the initial stage which is not required for non-mechanised boats. If catch decreases both in mechanised and non-mechanised fishing boats, then more loss will have to be borne by the former group as it requires some minimum quantity of catch to meet the daily expenditure mainly due to oil crises. In the mechanised sector, the people are mainly interested on production, procurment, processing and preservation (long term basis) and export.

Fishermen themself are in declining state of economy due to less catch through traditional, non-mechanised fishing craft and technique. By utilising the mechanised boats, trawlnet, the productivity has increased along with unexpected market price of certain specific varieties of marine products, specially prawns. Moreover, overflow of people to port area has reduced the chance of uneducated, economically backward fisherfolk to take active
part in the direct involvement in selling the catch, procurement, export etc. which are now mainly monopolised by rich people. 'The nutritive value of all species of fish/Crustacea are almost the same but the market demand - influenced by economic, social and cultural factors - varies, resulting in different prices for the same unit of different species. The oil sardines is termed the poor man's protein and prawn is the 'pink gold'. For an economic fishing operation therefore the pay-off is visualised in terms of the product of quantum of catch and price against the cost of fishing'. (Kure£n, 1982). The market price is completely under the control of the mechanised sector. Actual assessment is made regarding the changes in value (price of catch) the volume (quantity of catch) of output of both mechanised and non-mechanised sector, where clearcut differentiation is well marked between the two.

The following inferences can be worked out due to introduction of mechanised boats, impact of new township at Paradeep Port along with the entry of multiethnic group of people who are actually not the fishermen by caste :-

1) Fish production has increased at the rate of minimum 6.98 tonnes since two decades (from early seventies to ninety). (Statistics have shown in the table at the end).
2) The mechanised sector, more concentrates on prawn catch by using trawlnet where fishermen use driftnet, gill nets of different varieties (Details described in previous chapters). The value of output has been increased phenomenally due to price rise of certain specific varieties of catch specially export variety of fish (as for example the crustacean like prawn and its export value in the international market).

3) The growing demand and benefit of increased output (both in value and volume) is mainly centralised around the mechanised sector whereas non-mechanised sector experienced a significant decline in value and volume both, as it is added to mechanised sector).

4) Though the price of specific fishes (like prawns) have increased to a considerable extent, the actual fishermen get very negligible amount of income benefit in comparison to actual increase of value of marine fish products. (Specially in the International market). It so happens because the bulk of surplus is utilised by private entreprenuers.

The traditional fishermen sell their catch to the middlemen whereas mechanised boat owners sell the catch to the procurers. From the procurers processed fish specially 'prawns' are purchased by the exporters, then
preserve it in the freezing plants before export. During export process, the payment is availed by the exporters through 'shipment', (i.e. payment from the ship). This entire process of mechanised sector is controlled by the private enterpreneurs but not through Government. So actual benefit is only availed by few individuals not the fisherfolk. Moeover the 'middlemen exploitation' is not entertained in the mechanised sector.

Marine fish market has the worldwide network which attracts the big business man, belonging to higher economic group in to this industry. The result is the phenomenal increase in number of 'joint ventures' in the Bay of Bengal near Paradeep Port by exploiting the economically poor traditional fishermen for feeding the richer metropolitan consumers and their associates. Kurekn (1982) observed the subsequent on the general pattern of way of life of fishermen as individual and community as a whole and the pattern of modus operandi adopted by mechanised sector. He observed that the conflict in marine fishing trade appears as a reaction to mechanisation is largely a phenomenon of seventies. 'In the beginning of the decade, the 'wars at sea' were sporadic and more localised'. This impact makes the traditional fisherfolk more aggressive and reactive though the very aim was something different, basically for the betterment of former group. This adverse impact resulted in reduction of income of fishermen to unbelievable extent which was their caste based occupation.
No legal action against mechanised sector has become fruitful as Government is getting lot of foreign exchange through export of fish supplied by trawler-owners. Inspite of great economic achievement of mechanised sector, the traditional skill is not over looked by social scientist. To make the concept clear, Emmerson (1980) points out, 'it is the intimate familiarity with sea as the hunters need to understand the behaviour of prey in context'.

**IMPACT OF THE ESTABLISHMENT OF CO-OPERATIVE ORGANISATION:**

Co-operative organisation is government recognized public sector institution. The intention is to provide proper help for production, marketing without being utilized by businessmen. It gives protection to sudden loss or need to improve. The socio-economic condition of traditional fishermen. Now when the fishermen and their main source of livelihood is at stake, their emerged co-operative organisation in their own community. These organisation provide useful protection and guideline for getting liberal government Grants and loans with negligible interests. The main function and aim of these co-operative society is to provide the fishing nets, crafts etc. to fisherfolk and also to rescue the product from the clutches of middlemen. These self-made organisations with noble aim are also a failure. Because in this port area (Paradeep) the dominance of rich people (business men) like procurers, established trawler owners, exporters mainly control the market economy. So any Government loan facilities usually availed by them who out number the poor fishermen.
All India level statistics show doubling of marine fish production between 1950 to 1970 (taking the average catch and value) from 6,34,000 tonnes to 12,48,400 tonnes (Kure£un, 1982). Besides this increase in production of both mechanised and non-mechanised sector, where one group is gainer and the real hard-working, skilled fishermen are the looser as far as the economy is concerned. The various diversifications of two sector creates lot of 'regional imbalances' due to impact of their socio-economic variations. The main consequences of such variations lead inter and intra level conflicts amongst traditional and modern sector. Moreover the traditional technology involved in marine fishery, their crafts, nets are the determinants of increase of production (catch) and thus their socio-economic status is not increasing, because money is regarded as key factor of progress. So the poor economic condition of traditional fisherfolk have pushed them backward in the ladder of multifold economy of new marketing system.

The traditional fisherfolk of Paradeep Port coastal villages has the economy, embedded in their socio-cultural matrix. Inspite of several impacts of modernisation the people are still under the rigid social system and cultural restrictions. They combine the adoption of certain modified forms of gear (like Nylon net etc.) with usual persistence of archaic customs and social norms. As for example, starting from construction of fishing boats,
launching process, daily fishing venture, application of traditional beliefs regarding weather forecast, movement of fishes, fishing grounds etc. where they always adopt their traditional approach inspite of several modern techniques available. This shows the evidence about the fact that the fishermen have shown considerable reluctance in adopting modern technology. To some extent, adoption of modern technology has strengthened the confidence of fishermen as well as interest in perpetuating their age old traditional occupation which is in the coherent whorl of their ecosystem.

Mathur (1978) wrote, 'fishing like hunting and food gathering, is one of the most important and oldest of the means of subsistence of mankind. It has survived in its primitive form even to-day and continues to be one of the means of livelihood of man. Sophistication which revolutionised fishing and manual labour has to a great extent been supplanted by mechanical energy. The manufacture of fishing nets from synthetic fibres instead of traditional cotton and hemp fibres is a break through. It is, therefore, interesting to enquire how the different fishing communities in India have reacted to the adoption of modern technology and innovations'.

'Sandhakud' the fisherfolk village have their own knowledge about winds, currents, habitat, behaviour of fish, grounds, waves, tides, phases of moon which guide their technology. They mainly relay on certain stars for their
guidance regarding the direction during navigation which proves their traditionalism. The fishermen, in comparison to other castes are involved in a hazardous technological endeavour which most probably forces them to develop elaborate rituals, supernatural beliefs to overcome the risk of uncertainty occupation. However, till now, they have retained their own culture traits which is mainly encircling the fishing occupation.

Fishing is not only the basis of livelihood of fishermen but also an integrated part of cultural existence. So their culture traits centre around fishing complex. Fishing is their most important economic pursuit. N.Subba Rao (1980) has mentioned that the geographical isolation in which the fishermen have lived for many generations has influenced their values and world-views. Poverty, conservatism, and ignorance are the principal factors which have stood in the way of advancement of the fishermen. They took the sea as an inexhaustible source of wealth where it is defined as 'Mother Goddess', which is to be exploited and used for their subsistence economy. Thus their whole mode and charm of life depends on sea and its productivity. Marine eco-system has developed a man-sea relationship among the fishermen community. Fishing is not merely seasonal occupation for them rather through out the year, they are mostly engaged in the very occupation, though there may be variations in catch. Their intensive social, religious, economic spheres creates a strong feeling of unity
and integrity. Fishing is not only the basis of livelihood but also the cultural focus of fishermen (Mathur, 1978).

One remarkable impact is observed due to modern impact of Paradeep Port township where traditional and modern processes of business exist side by side. This broader aspect of market economy leads the traditional group in to the stangle hold of middlemen as they need more money to complete with mechanised sector production. The modified fish economy results in the change of economic roles and relations. Emphatically saying, the reformation measure due to impact of mechanisation of fishing boat, which was started in positive aspect or even for the benefit of fisherfolk but in reality it has produced negative impact on their traditional social norms. So the ill-effect is very much marked on the fishermen community at large. The rationale behind this economic retardation of traditional fisherfolk is due to practical exploitation by the outsiders, non-technical man, petty fish-traders and others in the recent stage.

This particular trade mechanised 'Marine Fishery' needs huge capital investment; which the traditional fisherfolk cannot afford. On the other hand their great managerial skill put them in leading position. It has been observed that for the development of coastal fisheries, mechanisation of boats and improvement of fishing gears and fishing method seems to be essential. It is possible for the fisherfolk to get help of Government
subsidies and loans, but like in other cases, ignorance and fear of entering a complex transaction with the Govt. or bank, has kept them away.

WORKING SYSTEM OF THE FISHING UNIT:

There is a functional system of traditional fishermen which makes it possible for each fishing group to operate basing on certain principle. Here the crews get advance money from boat and net owners. Mainly kinship obligation binds the members of the fishing unit. Usually the catch is not distributed amongst the owner and crews but after selling, the fish, money is distributed amongst the crews. The Boat and Net owner who sponsor the business of fishing has to provide the boats and nets and certainly get prerogatives over the share-money which is collected from catch. Actually if the same man is boat and net owner, then he will get separate shares for boat and net.

'It is the surprising and notable factor that the traditional fishermen have responded to the increase demand for prawns' (Kalavathy and Tietze). So to increase the prawn catch, they have introduced large number gill nets of specific varieties like Jagavala and Kilumala. Along with prawns, they are also trying to the catch of economically valuable fishes. These fishes basically prawn can be caught mainly by using mainly 'Jagavala' and Kilumala. Again for easy handling, ready availability in the market the traditional fisherfolk mostly use nylon nets which is very light in comparison to cotton nets and also last for longer
period. They are also widely using synthetic fibres and metals for fabrication of yarn ropes, floats, sinkers in gill nets for marine fishing.

New technical facilities has changed the preservation process which indirectly help in enhancing greater catch.

**SUBJUGATION TO MIDDLEMEN:**

In new type of economic system after the mechanisation, the subjugation to middlemen has gained different dimensions. Generally the fishermen, after reaching the shore, after fishing, sortout fishes and then sell their catch to the middlemen and in turn they sell it to the procurers or merchants. They also act as financers to the poor fishermen and take the full advantage of their penury by purchasing the huge catch at a very nominal price. Due to lack of direct contact between fishermen and procurers the actual exploitation starts from the level of middlemen. 'The fishing being under the hegemony of middlemen and the consumes being at their (middlemen's) ransom, it is desirable for the welfare of both the fishermen and the consumers that the fish-trade should be organized entirely on a co-operative basis' (Mukherjee, Mitra, Raychqudhury, 1967).

This proves the subjugation of traditional fisherfolk with middlemen which is not at all entertained in the mechanised sector. It so happens because the mechanised boat owners are educated and wealthy venture\textsuperscript{**}, who deliver
their haul to the procurers directly. The petty middlemen who could manage to thrive on the ignorance and economic bondage of illiterate fishermen, find no place in new set up.

DETAILS OF STRUCTURAL AND FUNCTIONAL ASPECTS OF MECHANISED SECTOR:

Technological input does not mean employment of mechanised boats only it includes the whole process of catching, unloading, preserving and processing for higher market value. All these processes together is 'mechanisation'. An idea about the mechanised fishing will help in having a clear understanding of the process and the possible place of the fishermen in the structure.

Now the average size of trawler (mechanised boat) is varied from 32' to 42' but the basic structure is same. It has a wheel house (cabin) which is usually roofed and the driver sits on the seat near the steering to operate the mechanised boat and through the glass window, he can observe the path of sea. Here also the valuable engine is well protected in the close cabin.

DECK:

The open space of the trawler is called deck where the crews usually sit to operate fishing nets along with other accessories.

WINCH:

It is the last part of trawler containing all important accessories required for fishing operation like
wire-rope, utter boat and net. These are the basic parts of a mechanised boat or trawler.

The mechanised fishing boat or trawlers mainly came to Paradeep Port in the year 1976. The statistical data shows the total number of mechanised boat in Astarang, Paradeep and Balasore are 500 (in operating condition). Now at Paradeep Port only 417 mechanised boats are in operation.

STAFF IN TRAWLER:

In a trawler minimum 4 crews are required along with a driver. In contrast to that of traditional fishing boat, minimum 2 crews are required.

FUNCTION OF DRIVER:

As the designation shows, the driver is to drive the trawler. Besides these driving activities, he is called as 'master' because he has to select the spot for fishing or to ascertain the fishing ground. In some cases also another man is selected for spot selection who may be the owner of boat or even an experienced man in detecting 'fishing ground' in the sea.

WORK OF CREWS:

There requires 4 crews to operate the wire-rope, utter-boat and net in the fishing ground according to the instruction of the master. After each haul they use to sortout all fishes and only prawns are to be
kept in the ice-box as it has got export value and rest of
the catch (termed as B-Class and C-Class according to their
market price) are kept on the deck of the trawler (Deck is
called to back cabin).

After the fishing, the mechanised boat has to
reach the jetty (fishing base) wherefrom the crews bring the
catch to the land area through Bamboo baskets or Nylon bag
for selling. The crews generally sell B-Class, C-Class
fishes in the trawler itself on auction basis. All these
activities are usually performed inside the trawler after
reaching jetty.

MARKETING SYSTEM OF MECHANISED BOAT:

Usually after the auction of B-Class and
C-Class fishes, they bring the entire catch (mainly prawns).
They these catch are to be processed through 'beheading'
process by woman employees. Beheading of prawns are done not
only for longer preservation but also for the requirement of
the exporter. Then it is weighed finally and sold to the
procurers. They sell the processed fish to the exporters who
preserve it in the freezing plants for a longer period in
fresh condition. When ships come to the port, these are
exported.

From this marketing system of mechanised
sector, it is quite evident that it involves many people. So
the system itself becomes complicated due to many people
involvement along with variations of price at different
level. As for example, the price of fish is different at initial stage before processing, then sold it to the procurers by the fish traders again of little higher than previous one. Then the procurers sell it at a bit higher price to the exporters. Lastly the exporters sell out to the international markets again of much more high than the previous stages of market price.

In this entire, process of fish economy, starting from production of catch in both traditional and mechanised sector, the former group are less benefited due to long gap is maintained amongst the fishermen and last selling price of exporters.

The most benefitted group in the entire market economy of marine fishery trade is the exporters who can be counted by fingers i.e. number is very few.

More over a comprehensive look over, all these above facts with a structural reformation as well as modification is due to modern impact and urban influence which gives the trade to a sharp boost. The most glorified example is the prawn export which is now called 'Pink Gold'. Prawns are called 'pink gold' because every year the price increases unexpectedly for which the traditional fishermen are also interested catch more prawns. Due to over-rising price and heavy demand, it is just like gold. As petroleum products are called as 'liquid gold'.
The export facilities provide an outlet for new attraction of various people towards the trade. Gradually they (Non-fishermen group) extend their influence in to the realm of production than procurers and exporters for their better economic condition. Thus slowly and steadily they establish a firm footing in the market economy by ignoring the poor traditional fisherfolk.

IMPACT OF MECHANISATION ON FISHERMEN AND ITS RESPONSE:

In analysing the actual socio-economic condition of fishermen which shows the integrated development Project (like the introduction of mechanised boat) having beset intentions, give rise to the most adverse effect on the traditional group.

First of all the mechanisation of fishing boat was introduced to elevate the productivity in comparison to non-mechanised boats. It, on the other hand gives ample scopes for employment and to enhance the socio-economic condition backward class like fishermen.

In actual field of implementation, it is observed that only very few people get benefited. No doubt the mechanised boats are more efficient than non-mechanised one so far as the depth of operation is concerned, along with time span for catch (details of which have been discussed earlier). The process of mechanisation of fishing crafts, the output of fish increases mainly for export facilities but in Paradeep Port the trade gain its real momentum after 1978.
Due to the financial investment of mechanised boat owners, procurers, exporters, who always exert pressure on the fisherfolk to elevate their own status and income. This trade economy includes the stages like production of catch through fishing, procurement, processing and marketing. It exerts pressure on the economic condition of poor fisherfolk of Sandhakud village.

The social scientists who have studied the comparative account of traditional and mechanised sector are of the opinion that 'Social Control' can be maintained between two groups, through the establishment of co-operative organisations in fishing trade specially in 'Marine Fishery' where heavy flow of money is availed and utilised by only few individuals in particular, to some extent can be utilised by traditional fisherfolk.

In practical field, it is seen that these co-operative organisations having mechanised boats with state subsidies (provided through financial corporation co-operative Banks etc.) are running either at heavy losses or have become inert. Just on the otherhand rich people who have recently involved themselves in fish trade are real gainer from economic point of through liberal Government loans meant for poor traditional group.

TREND AND EFFECT OF MECHANISATION:

In mechanised sector Initial Investment, daily expenditure of mechanised boats is much more than
traditional crafts. The expenditure on giving salary of Workers or Crews (because here the boat owner himself cannot catch fish), fuel consumption etc. which are not required for traditional sector or non-mechanised crafts. The introduction of mechanised boats, nylon nets, one can mark the significant inequality between the mechanised sector and the traditional sector of Paradeep Port and adjacent fishing village. The private owners of mechanised sector is to maximise their own profit as in the initial stage, they have to invest a huge amount of money. This is the transformation of Labour and Capital from centres to periphery. After the introduction of mechanised boats, the development is faster in creating more number of Proletariat (labour group) who are mainly the traditional fishermen. It is because, a large number of fishermen have opted to work as crews in the mechanised boats preferably at Paradeep Port which was thoroughly examined by Vijayan (1980). The traditional fishermen are now prefer to work as crews or even wage labourers in anticipation of assured income (through the fixed salary given to them by trawler owners).

In traditional method of fishing, they may get their income increased or decreased depending on the Volume of Catch. So here the income is not fixed. But working as crews, master, driver in a mechanised boat, their salary is fixed whether there is catch or not. The deficit or loss is usually resisted by the Mechanised Boat Owner but not the employee (fishermen). The other aspect of the system i.e. if
for example, in some days (during peak fishing season) there may be bumper catch but the excess profit again will go to the owner but not the workers. As the entire economic organisation system is different in mechanised sector than the Traditional Sector which may make fishermen economically sound than before but not necessarily elevate their social status. On the contrary, sticking to their own caste-based occupation (traditional crude method) economically they may lose but some of them also prefer to work as such than to become somebody's paid labourer where job is not self-sufficient rather 'Slave in its Approach'. 'The income of workers in mechanised boats as well as their levels of living were found to be better than those operating the non-mechanised crafts' (Kurelun, 1982). He is of the opinion that, the facilities are under utilised, administration is poor, co-operatives are unsatisfactory and the bulk of boats in the public/co-operative sector running at huge losses. The non-mechanised boats provide more employment but yield lower gross catch and value rates compared to the mechanised boats.

The ecology and local conditions of the inhabitants of Sandhakud Village is best suited to carry out their hereditary occupation by the help of non-mechanised fishing crafts. Only draw back is their limitations of space (as it is utilised by mechanised boats). As for example when the fishing craft of non-mechanised type can go up to maximum limit of 10 to 15 Kms. from shore where as the
trawlers (mechanised type) can easily move inside sea up to 30 to 40 Kms. again the Dee-sea Trawlers can also move further more than that. This variation of space limitations automatically results in Catch Differentiations in both sectors. More over the Preservation Technique of Mechanised Sector makes the Market Price more effective than traditional one. Because the Huge Catch availed by the mechanised boats (trawlers) can be fully utilised due to long term preservation in Freezing Plants which cannot be afforded by traditional fishermen. So they are compelled to Sell Their Catch everyday (as dry fish has less market demand). In mechanised sector, the process starts from Sortout of fish, then icing (inside sea) processing (headless), packing and lastly transportation. In the context of new mode of Marketing system, Suryanarayan (1979) has written, 'only limited number of persons across the channels to purchase their products, hence they control the price'. Here in the marine fishery trade, the trawler owners are suffers to some extent because they have resist all the negative aspects, like mishaps due to machinery trouble, sky-touching price of oil, fix-salary of employees etc. even if the catch come down to limited quantity. On the other hand the procurers and exporters do not take the risk of all such happenings. Only the financial help is shouldered by the procurers and exporters where there is no question capital loss, rather they avail all sorts of profit in this trade. So the concentration of power and money is mainly utilised by the new entrants, who are practically
non-technical-man where as the real hard working fishermen remain in unchanged poor condition.

The new trend and effect of mechanisation process in this trade has enhanced the export potential and encourages entrepreneurship. It is possible because mechanised boats through trawlnet mainly catch 'prawn', according to the market demand. Thus the effect and new trends of marine fishery through mechanisation touches the global level.

RESPONSE OF TRADITIONAL FISHERMAN:

The aim of introduction of mechanised boat with developed techniques for fishing in sea was to increase and develop the production (catch). But the reactions of artisanal fishermen are not very positive due to following anticipated factors.

1) The machine sound of mechanised boats usually disturbs the 'Shoal of Fish' from the fishing ground, particularly on the 'Night Fishing', the nets of traditional fishermen are damaged due to 'Trawling Process' of mechanised boats.

2) Again the 'Trawling Operation' causes turbidity of sea and it is the basic tendency of the Shoal of Fish to avoid muddy water and change their path from the Fishing Ground in anticipated danger which result in 'low catch'.
3) The trawl net of mechanised boat touches the bottom of Sea (to get prawn) which may also damage the fish eggs and larvae. During this trawling process, the net also scoop out a lot of Juvenile fishes which results in reduction of fish production on sea itself.

LEVEL OF COMPETITION AND CONFLICTS:

The new circumstances created in the field of market economy of mechanised sector and traditional community, have resulted into various levels of competitions and conflicts between the two groups.

Those are as follows:

(A) COMPETITION FOR SPACE:

Both the groups go up to almost same fishing ground or the mechanised boat also cross the ground of traditional fisherfolk where they usually set their net. During this time, the trawling net of mechanised boat and drift nets of traditional fishermen may result the heavy damage to the nets of later group. Generally this damage of net repairing or substitution is too much expensive for the poor fishermen. Obviously the fishermen are always afraid of the anticipated danger which may be caused by the mechanised boats during the same operational field. Sometimes it may turn in to a severe conflict where both the groups are in a competitive spirit to out field each other.
It is important to note here that traditional fishermen mainly use drift net to catch the pelagic (upper surface dwelling fishes) whereas Trawl Nets operated by trawlers are due to get demersal fishes (specially prawns) which are mainly found on bottom of sea bed.

(B) COMPETITION FOR CATCH:

A lot of variations in catch is found between traditional techniques and modern mechanised boats which result tough competition. It also leads to conflict between two groups. In both traditional and mechanised sector the operation method is different, but in simultaneous operation or nearby Fishing Ground may result more catch through trawl net where developed techniques of mechanised boats than the crude are applied by fishermen of non-mechanised boats. It causes high loss of capital to the fishermen due to decrease of catch in traditional sector.

REVOLT/PROTEST:

First time in the history of marine fishery, a large number of fishermen rose their voice against the anticipated danger due to operation of mechanised fishing craft. This in turn leads to aggressive conflict between two sectors i.e. mechanised versus non-mechanised sector which was really a confrontation of poor and weak against rich and strong. Due to economically well off condition, mechanised sector is progressing with big-strides by neglecting the
former group. Moreover the socio-cultural and regional variations in the intra-sector level (both traditional and mechanised sector) give rise to reduced the inter-personal relationship under a strained condition. So common conflict of occupation (Marine-fishing) turn to be more individualistic.

Marine resources are unlimited which can be fully utilised by knowing its bio-ecological and techno-economic basis of classificatory system. In the year 1977, India declared 200 miles Exclusive Economic Zone (EEZ) over which one can have sovereign rights for exploiting and exploring the resources of sea. This regulatory act is effective in banning the operations of foreign vessels in Indian sea without licence. Again for traditional fisherfolk, the territory is fixed as 12 miles, in the state level (Kuréñ, 1982). Deviating this regulation, generally trawlers from neighbouring states are entering in to Paradeep area which creates a lot of trouble for regional people. The above said act provides power to declare close area for particular fishing zone. It can also ban fishing on any sector. In actual practice, there is no competition between socio-economically different groups rather between labour groups and producing class (fishermen and trawler owners).

EFFECTS OF MECHANISATION ON FISH PRODUCTION:

Different dimensional study of marine fisherfolk shows the real picture of impact analysis of
mechanisation on fish production both in value and volume. Only significant strides are marked in the mechanised sector where adverse impact is on poor fishermen due to decrease in catch. On the contrary, production (Fish) increases and income as well but gradually diswayed from the need of real fishermen. However the rapid strides of mechanisation has resulted in giving rise more fishermen as workers in mechanised boats to earn better. (Details of facts has been described earlier). Due to illiteracy, the traditional fishermen do not know the implications of profit sharing system, so automatically mechanised sector getting the full advantage of their ignorance. Now in addition to mechanised fishing boats, deep-sea fishing trawlers (which has the capacity to stay inside sea for about one month and go for fishing at about 100 Kms.) away from shore. Hence it is Big business trade in Marine fishery (Kuréñ, 1978). This capitalist trend in fish economy and its expansion has proved to be a somewhat failure process in improving the living standard of poor fishermen of Sandhakud Village, though it is just adjacent to developing Paradeep Port town.

By and large the socio-economic variations of traditional and modern sector affects the techno-economic practices of former group. One, progressive approach in case of traditional fishermen is their competitive spirit which was not so much before because now their very existance is at stake due to machine operation practice in fishing method. It is now the duty of Government to declare some
particular Fishing grounds as closed season where Trawling Operation will have to ban completely (for some stipulated period) to protect the destruction of eggs and Juvenile fishes.

IMPACT OF URBAN AGENCIES:

Above discussion has made clear about the mode and nature of modern impacts on the community life of traditional fishermen and different aspects of their life style prone to easy change; like some modification in their technological adaptations, for example the use of nylon nets instead of cotton. The economic organisation process of fisherfolk is mostly prone to further modifications according to recent market trend the urban agencies are also Penetrating more through necessary and unnecessary items which not only produce back-firing in case of young-generations of fishermen community but also create turmoil. Those are cinema, television, intoxicating materials like betel, cigarettes, liquor etc. Due to these modern amenities, the economically poor fishermen are now spending a lot of their hard-earned money, without considering its bad-effect. The town people of Paradeep Port to some extent can afford the same but on the hand it blows the economy of economically backward traditional fishermen. Because they are always in hand to mouth condition in normal condition. So due to outward glamorous appearance of all these urban expensive items have attracted them a lot. So they spend major portion of their income in these
unnecessary items like cinema, hotel dishes, liquor etc. Automatically it creates some sort of deficiencies in fulfillment of their Basic needs. Specially the youngsters are now not even in a condition to accept their strenuous traditional occupation like marine fishing. They rather prefer to be more job-oriented works like working Port official job, even as workers or labourers. It is also marked amongst few members (Young generation level) are also working as labourers (due to lack of educational qualifications) in Paradeep Phosphate Limited (PPL) established in 1986 etc; rather than their own caste-based occupation. Because all the elderly members of the fishermen community are against these attitude of youngsters. The well-to-do family members mainly restrict themselves on getting maximum benefit to lead their livelihood through mechanised mode of fishing.

Besides all these unnecessary items of urban agencies which attracts the fishermen, and gradually enslaves in to all sorts of addictions. The urban people also put them in trouble through different types of exploitations due to their poor economic conditions.

Previously the hard worker and whole day busy fishermen could manage themselves within their limited source of income. As for example previously they were cutting their hairs by the barber in a low cost where as now the young people are spending at least double the amount
than previous expenditure. In Port town due to establishment of market complex has also attracted the poor fishermen through its outward glamour. Thus unnecessary expenditure of urban products have made the economic condition of fishermen to detoriating type.

The positive aspect of urban impact is the development of mechanised sector, establishment of Port, reputed export agencies like Kalinga Marines, freezing plants, processing plants open a large number of job opportunities. Again the unexpected demand of export value of fish encouraged the traditional group to adopt innovative methods for better catch both in value and volume. It also creates the competitive spirit amongst traditional group to exist in the two parallel economy having same Trade, which was not prevalent previously.