

## SIX

### DIFFUSION DYNAMICS AND DIFFUSION AGENCY STRATEGY

In the previous chapter, using the adoption perspective in diffusion research, we examined the various characteristics of the fishermen who adopted the plywood boats. The focus was on individual choice and the socio-economic and psychological variables as well as the spatial features which explain adoption or the lack of it. As we have pointed out in our review of the literature (Chapter Two) such a perspective does not provide sufficient explanation if, as in the case for most contemporary innovations, the innovation is propagated by an entity motivated to bring about rapid and complete diffusion.

The individuals and the institutions involved in the generation and the diffusion of the plywood boats were fully committed to the task of finding a variety of socio-economic and technological solutions to the problems of fishermen in the region. The plywood innovation was the most recent and most successful of their attempts which they were keen to diffuse it among the fishermen.

We had examined briefly in Chapter Four the setting up of the diffusion agency establishments -- in our case the boat yards -- and in Chapter Five the role played by other "propagators" in facilitating the diffusion process. In this chapter, therefore, we will use the market and infrastructure perspective, to focus on some of the key elements of the strategy adopted by the diffusion agency in spreading the innovation. We shall here examine four elements which are particularly relevant to explain the success of our case. These were highlighted in our review of literature and have a significant bearing on the way the future pattern of diffusion process of PWBs may shape up. They include: development of infrastructure, the pricing policy and practice, promotional communications, and market selection and segmentation.

## DEVELOPMENT OF INFRASTRUCTURE

Development of infrastructure is one means of enabling or enhancing the use or adoption of an innovation. It permits the diffusion process to be implemented, maintained and expanded and often channels its spatial form.

There was no dearth of skilled artisanal boat-builders or modern boat-building yards in the region. However, the option of using these skills and facilities to spread the PWB innovation was not seriously considered. The need to provide employment for the youth who were trained in the erstwhile BBTC, Muttom and the desire to keep the replication of the technology well within their control, led BBC, Muttom, and later SIFFS, to plan their own infrastructure for diffusing the innovation.

The prime diffusion agencies of the PWB innovation were the production centres (the boatyards) themselves. The initial product idea and the inventive activity was undertaken at Muttom. Though Muttom was a fishing village, the boat yard was located atop a hill, away from the buzz of fishing activity. As mentioned in Chapter Four, within three years after the first PWB was built in Muttom, two full-fledged boat yards were commissioned at Anjengo and Pallithottam. These were intended to cater to the eco-specific requirements for canoe-type PWBs. The boatyards were located in the heart of these fishing villages and all the activity was keenly observed by the fishermen as the cut-pieces of factory-made plywood slowly took on the form of their traditional canoes -- crescent shaped prow and all! The "Anjengo model" was used mainly by fishermen who formerly used kattumarams and fished from surf-beaten beaches which often required the PWB to be anchored out at sea for several days together. A standard feature of the Anjengo model was therefore the fibre-reinforced plastic (FRP) coating given to the outside of the hull to prevent leakage. This coating was not required, for what came to be known as the "Quilon model", since the fishermen of the villages in the vicinity of Pallithottam were fortunate to be protected from the surf by a natural bay. This natural advantage permitted them to beach their boats after every fishing trip, thus doing away with the need for FRP coating.

The choice of both Anjengo in northern Trivandrum District and Pallihottam in Quilon District for starting boat yards also had more important institutional reasons. Anjengo and its neighbourhood were strategic villages under the Trivandrum District Fishermen's Federation (TDF). The TDF was part of the SIFFS network of fishermen's organisations which were involved in credit programmes and marketing of fish. Some of the most skilled fishermen of Trivandrum District inhabited this village. Also the new artisanal fishermen's trade union which was taking form in Kerala had a strong base in these villages.<sup>1</sup> One of the first kottarkats built in BBC, Muttom was bought by an active trade union member with the intention of using it with an OBM to catch trawlers which transgressed into the inshore waters near the village! The location of the boatyard at Anjengo in the large backyard of the local fishermen's cooperative society office and the fervour of the union members in using the PWBs in their militant actions, gave the boats good publicity.

Pallihottam was situated in a cluster of five villages along a five kilometre coastline around a natural bay just south of Neendakara -- the largest trawler harbour of the region. The Fishermen's Community Development Programme (FCDP), an NGO working among the artisanal fishermen in these villages had formed a network of village organisations to avail access to institutional credit and market fish. This network was called the Fishermen's Welfare Societies (FWS) and affiliated to the SIFFS. The fishermen were also ardent members of the new trade union. In fact half a per cent of the earnings from the sale of their fish was paid to the union. The FCDP had requested Gillet and Gifford to design the plywood canoe (See Chapter Four) which was successfully done. Between 1982 and 1985 the fishermen of the FWS were supplied with plywood canoes from BBC, Muttom and the Anjengo boatyard. Since institutional credit was forthcoming for these fishermen, they were quick to place orders but were frustrated by the long waiting time. This prompted the FCDP to

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<sup>1</sup> The Kerala Swatantra Matsya Thozhilali Federation (KSMTF) formed in 1980 had its origins in the villages around Anjengo. The struggle for a trawler-free zone in the coastal waters was one of their main demands to the government. From experience they realised that legislation passed in support of their demands was insufficient to prevent the ingress of trawlers. The swiftness of the OBM-fitted PWBs was a great attraction for the more militant of the members who were determined to catch trawlers that violated the law.

suggest that the SIFFS should start a boatyard which would be under the immediate financial control of the FWS but under the technical supervision of SIFFS. Since there was a ready market for at least 200 PWBs from the FWS fishermen alone, a decision was taken to locate the boat yard at Pallithottam, in the heart of the area of operation of the FWS. This was seen as a means of consolidating the control of fishermen over the diffusion of the technology. Over the years, the Pallithottam yard catered to the demand of the FWS and became the first to make a PWB to the specifications of the fishermen of Kozhikode District in north Kerala. They also constructed small plywood dinghys for fishing in the backwaters with the use of sails.

With the increased production of PWBs and the rapid spread of motorisation, there was a need to perfect the existing models and optimise on material use. Much of this was aided by feedback from the fishermen adopters. There was also the need for continued R&D for new designs for other areas of Kerala and Tamilnadu. This prompted SIFFS to start a research and production centre where work on outboard motors and the PWBs could be undertaken simultaneously. A suitable site for this was finally located in the coastal village of Veli, a little away from the sea and on the fringes of the backwater canal system. This R&D-cum-production and training centre commenced towards the end of 1989 and commercial production of boats began in 1990. Production was first undertaken on the Anjengo Model basically to reduce the waiting time of the orders pouring into the Anjengo boatyard.

With the stabilisation of production possibilities in Veli, the Anjengo boat yard was handed over to the TDFP to be managed directly by them. TDFP in turn entrusted the day-to-day supervisory function to the care of the four village-level fishermen's organisations around Anjengo. This greatly increased the stake of the local population in the functioning of the boatyard. SIFFS provided technical advice and assistance on some administrative matters. Pricing decisions were coordinated with the Veli boatyard since both produced the same type of models.

By 1988 the demand for PWBs from north Kerala were on the increase. The Pallithottam yard had built 25 PWBs during 1989/90 according to the specifications

of fishermen from Kozhikode and Cannanore District which ended up as carrier boats for the ring-seine operations. The rising demand resulted in a discussion in SIFFS about the possibility of starting a boat yard in the Malabar region. However, although the commercial potential was unquestionable, the general opinion on the destructive nature of ring-seine fishing, for which the PWBs would be used, posed a dilemma.<sup>2</sup> It was decided to wait and observe the situation and start the intervention in the Malabar area with training fishermen to properly use the OBM and diversify their fishing before setting up a boatyard. The consequence of this decision was that the demand for PWBs in this area was slowly catered to by new private boatyards which began to spring up in Malabar. One of the larger ones was established in collaboration with the entrepreneur who very successfully managed a boatyard at Vizhinjam in Trivandrum District. The orders coming to Pallihottam slowly dried up.

Repairs for the boats produced in the SIFFS-related boat yards were initially undertaken in the respective boat yards. Soon this became a major activity and began to hamper the production of boats. In centres like Vizhinjam, Neendakara and the villages bordering Trivandrum and Kanyakumari District, where there was a big concentration of PWBs, no SIFFS-related boatyard existed and this posed a problem for the fishermen who had become dissatisfied with the job done by the private repair yards. In response to this need, SIFFS started two repair centres between 1988 and 1994 in Vizhinjam in Trivandrum District and Neendakara in Quilon District. Repair centres were not only service centres but points of feedback from the fishermen regarding the PWBs performance. This valuable information was then integrated into the R&D work at Veli and BBC, Muttom. Credit was extended to the fishermen for

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<sup>2</sup> Ring-seines were a major endogenous gear adaptation made by the artisanal fishermen in northern and central districts of Kerala following the adoption of OBMs on large plank canoes and dugout canoes (Rajan, 1993). The ring seine was a mini-version of the large purse-seines operated from large mechanised boats. It was a controversial fishing gear considering that like the purse-seine it was "over-efficient" and could result in depletion of pelagic resources if used indiscriminately and in large numbers. Providing plywood boats to sustain this potentially destructive fishing technique would have been a sound commercial proposition for SIFFS but larger environmental concerns prevailed in deciding not to cater to this demand.

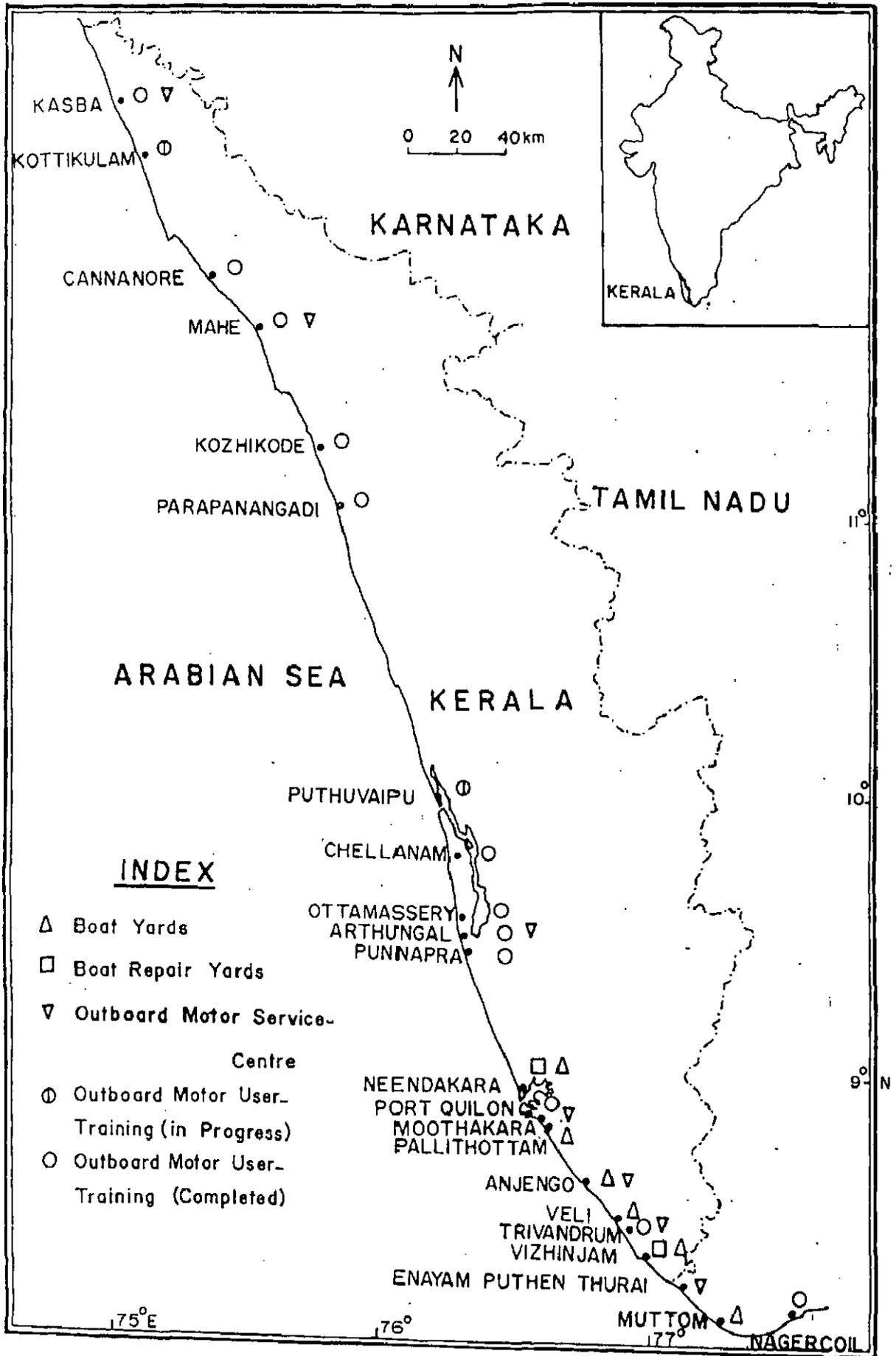
undertaking the repairs. However when substantial default in repayments were noticed this practise was dropped. Using available spare time, the repair centres also embarked on a limited amount of boat building.

We have examined in Chapter Five how the pace of diffusion of the PWB was integrally related to the spread of the complementary innovation of the OBM. The fishermen had become habituated to the use of the elegant and technically superior OBMs imported from Japan. Efforts by SIFFS to experiment with locally manufactured in-board engines (IBE) running on diesel and more sturdy but slower OBMs of non-Japanese origin did not meet with any significant success. Despite their high initial costs, greater running expenses and the difficulty of obtaining spare parts, the speed and ease of operation of the Japanese OBMs, made it difficult to turn fishermen away from them. Realising this, SIFFS considered it pragmatic, in the short run, to conduct OBM-usage training programmes and also to set up OBM service and repair centres to prevent fishermen from being exploited by the monopoly and restrictive trade practices of the importing agents of the OBM. By 1994 they had conducted such training in over twelve centres and had set-up seven OBM servicing centres along the coastline of the region. In the districts of the region where the PWB is yet to spread, these contacts with the fishermen through the OBM-related work provides the basis for a widening of the PWB market.(See Map 6.1).

The present network of boatyards and related infrastructure described above may seem modest achievements. It must be recognised that this gradual response to the changing needs of the market through R&D; the resulting diversity in the product-mix and growing capacity utilisation has resulted in an increase of the number of potential adopters of PWBs over space and time. This reveals an important weakness in the conventional "saturation models" of technology diffusion measured with the sigmoid diffusion curves. They are premised on a measure of diffusion which is a ratio of the *increasing* number present adopters to a *static* population of prospective adopters. As pointed out by Bela Gold,

Map 6.1

INFRASTRUCTURE OF SIFFS HAVING A BEARING ON PLYWOOD BOAT DIFFUSION



it might even be argued that the diffusion level in any period tends to approach reasonably close to the realistic adoption potentials (or saturation) under then prevailing conditions (Gold, 1981:250).

## PRICING

The monetary value associated with an innovation is to some extent intrinsic. There is a feasible range of prices for any particular innovation and the diffusion agency concerned retains considerable discretion over the actual price charged. This price will reflect the long-run objectives of the agency which may include: profit maximisation, cost minimisation, maximising the number of adopters and so forth.

The standard marketing practices, however, suggest a range of pricing strategies for more immediate business objectives which may be different from the long-run choices just mentioned above. These objectives spelt out by Kotler can include the following: (a) market penetration (b) market skimming (c) early cash recovery (d) satisficing<sup>3</sup> and (e) product line promotion (Kotler, 1971:336-7 and 1972:519-21). In the case of market penetration, a relatively low price is established in order to stimulate growth of the market basically to get a larger share of it. With a market skimming objective, the initial price is high so as to mop up a premium from buyers with relatively inelastic demand, after which the price is gradually reduced to attract the more price-elastic segments of the market. For early cash recovery, the price is decided according to the nature of the product and the current market demand so that as much of the investments made as possible can be recouped. With "satisficing", the price achieves a less than maximum rate of return, but one which is satisfactory or conventional given a particular level of investment and risk. Finally, product line promotion

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<sup>3</sup> Firms are said to "satisfice" rather than maximise when they set up for themselves some minimal standards of achievement which they hope will assure viability and an acceptable level of profit. This was first pointed out by Herbert Simon (quoted in Baumol, 1973:332) who argued that such a pricing objective is based on the recognition of the complexity of the calculations and the imperfections of the data which must be employed in any optimality calculation.

pricing is designed to enhance the sales of an entire line rather than of the product itself.

Three of the four SIFFS related boatyards were under the direct control of fishermen's organisations and concerned primarily with providing a quality product to fishermen at a price which covered production costs and provided a reasonable cash margin. Essentially, therefore, the price of the plywood boats were determined largely by the nature of the model;<sup>4</sup> the quantum of increases in the price of the materials used; the wages which were paid to the labour and the interest on borrowed working capital. Having been recipients of grants for their set-up investments and initial administrative expenses, the compulsion for recovery of these costs through the sale of boats was not on their agenda and hence not reflected in their pricing.<sup>5</sup> The sale price of PWBs has also increased at a lower rate than the wage rates of carpenters and the price of plywood -- the two main inputs accounting for about half the cost of production. (See Table 6.1). The annual compound growth rates of prices of the PWBs, wages and price of plywood are 9.6, 13.0 and 11.1 per cent respectively.

Members of the fishermen's organisations under SIFFS who bought the PWB also received a discount of Rs.750 on the ex-yard price. This was made possible by a corpus instituted for this. The purpose of this small subsidy was to compensate for the lack of any government funding in the form of loans or subsidies for the purchase of the PWB.

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<sup>4</sup> The quantum and the nature of the materials used for a model were important determinants of price. The decked GKs were priced the highest, the Anjengo model plywood vallam followed and the Quilon model plywood vallam came next. In 1986, their prices were Rs.22,900, Rs.17,400 and Rs.14,600 respectively. In 1990, they were Rs.29,700, Rs.23,200 and Rs.22,700 respectively.

<sup>5</sup> The major share of these venture capital grants for BBC, Muttom and the two SIFFS yards in Anjengo and Pallithottam came from Intermediate Technology, UK, and amounted to about Rs.1 million between 1981 and 1986. A variety of other funding agencies contributed another Rs 1 million during the same period.

Being the generators of the innovation and the market leaders, it was the SIFFS-related boatyards which were the price-setters for any given model. However, theirs was an inferior "satisficing" strategy which intended to keep prices as low as possible

Table : 6.1

**SALE PRICE OF PLYWOOD BOATS IN COMPARISON TO WAGES AND COST OF PLYWOOD**

Year	Average Sale Price# of SIFFS Plywood Boats (Rs)	Average Daily Wage of Carpenters (Rs)	Average Cost of a Plywood Sheet [8'x4'] (Rs)
1984	14,700	25	360
1985	16,700	27	390
1986	17,400	30	390
1987	19,700	35	460
1988	20,450	35	530
1989	21,700	40	550
1990	23,200	45	600
1991	30,200	60	720
1992	33,200	70	900
1993	34,700	75	940
1994	37,700	90	1010

# The average sale price was arrived at by dividing the total sales turnover of the SIFFS boat yard in Anjengo by the annual production. These therefore provide the trend in the prices of the vallam model. The decked model GKs produced exclusively in BBC Muttom cost on average about 30 percent more due to the larger plywood and labour requirements per boat. There were variations in the sale price of different PWBs vallam models depending on factors such as its length.

*Source:* Records provided by South Indian Federation of Fishermen Societies

for the fishermen adopters.<sup>6</sup> Clearly then the price did not reflect even the true economic cost of the boat considering that the initial set-up investments were not planned to be recouped. Any suggestion which implied a raising of prices, was rejected by the Board of Directors of SIFFS on which the majority was fishermen. In the 1989 Annual Report of the SIFFS, they state that a loss of Rs.47, 000 was incurred on the combined operation of the three boat yards in Anjengo, Vizhinjam and Veli. Of this Rs.32, 000 was an actual cash loss and the remainder, the depreciation provision. The reasons attributed include: inability to raise prices of the boats in 1989 in keeping with the increases in various costs, slight decline in total production, repair charges being low and not enough to cover overhead expenses, and inability to recover the credit due from fishermen for repair jobs thus reducing the working capital funds which forced SIFFS to incur interest costs on borrowed bank credit.

The pricing strategy of the private boatyards quite obviously had to be pegged to the pricing decisions of SIFFS. Their strategy was to quote to the fishermen the same price offered by SIFFS, or a slightly reduced one. But what attracted fishermen most to the private yards was that, compared to SIFFS boatyards, the lead time between placing an order and the delivery of the boat was much shorter. Fishermen were not really able to discern the quality of these boats made by the private boatyards considering that *visually* no perceptible difference could be observed between PWBs made in these yards and those made by SIFFS. Only use at sea, for about 2-3 years, could really highlight any features of bad workmanship and inferior quality of the materials used for construction.

The price-elastic nature of the market, as well as the fact that the "rents" lost by delay in entering a seasonal fishery could be considerable, have also played a major role in creating a demand for boats built by the private boat yards. In the years after 1986 this made a perceptible impact on the market share of the SIFFS-related yards

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<sup>6</sup> Price always relates to a standard of quality, which in the case of the BBC, Muttom and SIFFS boatyards was very high. Given this, there is no doubt that the boats were under-priced.

which dropped from 80 to 63 pre cent between 1986 and 1989 and touched a low of 53 pre cent in 1991.(See Table 6.2).

Table : 6.2

MARKET SHARES OF SIFFS-RELATED AND PRIVATE BOATYARDS (PERCENTAGE)			
Yard	First Purchase		Second Purchase 1984-91
	1982-88	1989-91	
SIFFS-Related	61	47	79
Private Yards	39	53	21

Source : Estimated from Survey Data, 1992

On their part, the private boatyards naturally found it extremely difficult to hold their prices and keep them competitive with the market leaders without resorting to using materials which were below the required specifications for durable use in marine conditions. While such practices did not necessarily imply an inferior quality or badly performing boat, it did have serious implications for the longevity of the boat -- a realisation which, as mentioned above, would dawn on the fishermen only a few years after purchase. The impact of this delayed realisation had its immediate bearing on the fishermen adopters and the private boat yards. Fishermen who made a decision to purchase their second PWB invariably showed a distinct preference for boats made by the SIFFS-related yards.(See Table 6.3 below).

When the adopter made his first purchase it was quick delivery and lower price which were the main criteria, followed rather closely by better quality and proximity of the boatyard to the adopters village. In a sense it was a "bundle of attributes" which were considered before their first purchase. All this changes when the adopter makes the second purchase. The quality of the PWB is undoubtedly the major

consideration -- virtually the only serious consideration. Quicker delivery and price were not factors which were reckoned.

Table : 6.3

**REASONS GIVEN FOR PURCHASE OF PLYWOOD BOATS  
FROM A PARTICULAR YARD  
(PERCENTAGE)**

Reason	Those who have bought only ONE Plywood Boat	Those who have bought a SECOND Plywood Boat
Quick Delivery	40 [1]	15 [3]
Lower Price	35 [2]	3 [4]
Better Quality	32 [3]	83 [1]
Proximity to Yard	27 [4]	17 [2]

Figures in [ ] are the rankings

Source : Survey Data, 1992

The cumulative impact of these decisions by fishermen was that the sustainability of most private boatyards -- particularly the "one-man" yards -- were put in jeopardy. Consequently, as the diffusion process moved into its second decade in the post-1992 period, the indications were that the SIFFS-related yards would increase their market share in the three southern districts of the region almost to a point of near monopoly.

If the current pricing strategy of the SIFFS-related yards persists, given the present nature of the competitors, there is little chance for their survival. Even the largest private unit in Vizhinjam was nearing closure for want of orders in 1992. Some of the units which were set up by carpenters and technicians, who were once with the SIFFS-related yards, stopped boat manufacture and moved into the now growing

niche of undertaking repairs for PWBs. They had to be satisfied with making one or two boats a year.

The implications of this pricing policy, which has swept away the competition, on the diffusion of the boats merits consideration. On the one hand, it could be argued that the emerging "benevolent" monopoly of the SIFFS-related yards is good for the fishermen as a whole since they can all be assured of a good quality PWB even if they have to wait a while.<sup>7</sup> On the other hand, given that the overall demand for the PWB has increased rapidly and the production capacity of SIFFS-related yards is unlikely to increase in commensurate fashion, there will be a growing gap between effective demand and supply. But since SIFFS is in a monopoly position this will not raise prices. The net effect will be a stunted diffusion process and a variety of distortions that go along with it.

One possibility is that given the pace at which plywood prices are rising, the PWBs may soon get to be as costly as fully moulded FRP dory boats which Gillet attempted to make in the mid-1970s. Should this be so, and if fishermen in need of replacements of their crafts opt for such an innovation, the implications for the future of the diffusion of PWBs can be enormous. Given that moulded FRP boats are more "standardised" (a mould is needed for every design) and require more orderly and substantive infrastructure for their construction, the nature of the competition can change. More established boat-building companies, involved in making the larger mechanised boats, could then see an opportunity in the expanding market for beachlanding boats.

## PROMOTIONAL COMMUNICATIONS

Promotional communications play an important role in the diffusion of an innovation. Potential adopters need to be made aware of the existence of the innovation and be provided information about its qualities and characteristics. This communication may

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<sup>7</sup> The lead time in BBC, Muttom in 1994 was 12 months and in Anjengo boatyard 6 months.

be undertaken either directly by the diffusion agency or with the help of other sources or a mix of both. The impact of this information on the adoption decision making process and the resulting patterns of diffusion varies, however, according to its channel, source, content and motivation.

The main *channels* of promotional communications used for spreading the PWB have been the boats themselves. The boats spoke for themselves as it were! The message about the quality and the performance of the boats spread through what Pierre Gillet called the "coconut radio" -- the quick word-of-mouth transmission of news across the coconut palm fringed coastline, inhabited by the close-knit fishing community. The prime channel of communication of the information was thus personal, involving one-to-one correspondence between sender and receiver, enabling the sender to custom tailor the message and react to receiver feedback. Thus, these personal communication channels tended to be more effective in transmitting a complexity of information about the PWB.

The *source* of the information may be the diffusion agency; another type of agency (for example, in our case a development NGO, the OBM dealer, the government fisheries department, a financial institution like a bank giving credit to the fishermen, etc.); a member of the potential adopter's social system; or an adopter. All of these types of sources have been involved in providing information which assisted in the diffusion of the PWB to a certain extent. But the main source was the adopter. We have a case of user or adopter-led diffusion here. Our survey reveals that all the adopters have been asked questions about their PWB by other fishermen. As many as 63 per cent stated that they have provided detailed information about the PWB to fishermen who would be potential adopters. We provide the details of the category of potential adopters who sought information from the present adopters. (See Table 6.4)

Table : 6.4

PERSONS INTERESTED TO KNOW MORE ABOUT PLYWOOD BOATS FROM THE PRESENT ADOPTERS.	
Category	Percentage
Non-Owners of Plywood Boats	60.0
Present Owners of Plywood Boats	44.8
Others	5.2
Place/Location	Percentage
From Adopters Own Village	58.4
From Neighbouring Village	28.4
From Migration Centres	8.0

Source : Survey Data, 1992

Understandably, the communication levels are greater between individuals who are both geographically and socially proximate to one another. Because social networks can be more constrained by geographical distances, diffusion processes which are highly influenced by social-system interaction will tend to exhibit a neighbourhood effect and a clustering of the later adopters, due to their dependence on social interactions. (cf Figure 5.7)

The *contents* of promotional communications may also vary: they may be promotional, neutral or even counter-promotional. Normally one would expect a mixture of the three. The degree of counter-promotional information which will have an adverse impact on the diffusion process will depend, firstly, on the structure of the market -- particularly the nature of the competition; and secondly, in the context of personal channels of communications with present adopters as an important source of information on the extent of the correctness of the message communicated. Misinformation can be provided intentionally, as can be the case when competitors wilfully do so; or it can also be totally unintentional, as when an adopter who has wrong information/impressions, unknowingly spreads the same to potential adopters.

Being aware of this latter possibility in a predominantly adopter-led diffusion process, we sought to test this in the survey by assessing the depth and knowledge of the adopters regarding various dimensions of the PWB innovation. Their awareness was assessed by asking them to state their views about certain pre-designed statements. (See Table 6.5).

Table : 6.5

ASSESSMENT OF AWARENESS ABOUT PLYWOOD BOAT INNOVATION AND TECHNOLOGY		
Statements	True	False
1 The plywood boats were first made by the government	2	98
2 The plywood boat was first imported from Japan	3	97
3 The first plywood boat was made in Muttom boat yard	98	2
4 It takes less wood to make a plywood boat than a plank canoe or dugout	91	9
5 Many foreign technicians were involved in the designing of the plywood boat	82	18
6 Many plywood boats are made in yards controlled by fishermen's organisations	72	28

Source : Survey Data, 1992

It is apparent that there is a very high degree of accuracy between the facts of the case and the awareness of the adopters of the PWB regarding them. This has been an important factor in ensuring that the adopter-awareness about the facts was of high quality thus lowering the chances of unintentional counter-promotional information on their part.

Promotional communication can also be classified according to the *motivation* which initiates its transmission. Potential adopters may obtain information by seeking it or by merely receiving it without solicitation. As we have indicated above, it was clearly the former in our case. The details on the most important point of information solicited by potential adopters, from the present owners of PWBs, are given below in Table 6.6 below. It provides us with a good insight into the factors which are uppermost in the minds of fishermen who may be prospective buyers of PWBs:

Table: 6.6

MOST IMPORTANT INFORMATION  
SOLICITED  
BY POTENTIAL ADOPTERS FROM  
PRESENT OWNERS OF PLYWOOD BOATS

Information Solicited	Frequency
1 Price and other details	60
2 Source of Supply	54
3 Performance	39
4 Technical Details	31
5 Economics of Operation	9
6 Others	2
<b>TOTAL</b>	<b>100 (128)</b>

Figures in () are the actual numbers of enquiries.

Source : Survey Data, 1992

The factors solicited and the priority and importance given to price, source of supply and performance as compared to the economics of operation are worthy of comment.<sup>8</sup> The sensitivity to issues of price and source of supply are matters which we have commented upon earlier in this Chapter and elsewhere and do not require further elaboration here.

During the tenth anniversary celebrations of PWB production by SIFFS held in May 1993, explicit recognition was accorded for the personal example-setting, adopter-led, promotional communications which contributed to the diffusion of the PWBs. We quote from the SIFFS Annual Report of 1993-94:

It was decided to utilise the opportunity to highlight the role played by fishermen themselves in the development and successful dissemination of the new technology. We decided to honour all the pioneering fishermen who took great risks in trying out the plywood boat technology and made major contributions for its further development as well as dissemination among other fishermen. Prizes were announced for fishermen who were the first to introduce plywood boats in their respective zones. Prizes were also given ... to fishermen who have made vital suggestions for R&D. On the day of the function an exhibition of all plywood boat prototypes developed at the SIFFS boatyards as well as member boatyards was organised... The exhibition and function generated a great deal of interest among the fishermen and nearly 1000 participated in the programme. Also conducted as part of the programme was a seminar of expert fishermen representing various regions to discuss future boat building needs. Participants from Alleppey, Mahe and Cuddalore were also present. There was good press coverage for the event.

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<sup>8</sup> This is particularly relevant in the context of the growing number of experimental trials of new craft designs for small-scale fishermen undertaken by international agencies like the FAO in Kerala, Tamilnadu, Andhra Pradesh and Orissa, since the early 1980s. Assessment reports of these experiments gave considerable emphasis on the economics of operation, including calculation of the internal rate of return to show that the boats were indeed viable. However, to the surprise of the technical experts and economists, there was no diffusion of these boats taking place. For one, the initial investment was rarely below Rs.75,000 and the sources of supply were restricted to a few government boat-building yards with no private boat builders or non-profit motivated agencies ever coming forward to produce them.

This seems to be the beginning of a new phase of more direct, promotional activity by SIFFS for its PWBs in particular and for its institutional image as a generator of technologies appropriate for small-scale fishermen in general.

## MARKET SELECTION AND SEGMENTATION

Market selection and segmentation involve the conscious identification of the characteristics of potential adopters and their division into *homogeneous* sub-groups on the basis of those characteristics. This partitioning helps the creation of sub-markets on which the diffusion agency can focus at the exclusion of others. This provides for customising of infrastructure, pricing and promotional communications.

Following Kotler we can identify three segmentation strategies: (i) undifferentiated marketing; (ii) differentiated marketing and (iii) concentrated marketing (Kotler, 1972). It is obvious that, in general, the greater the number of segments the more tailored, effective and expensive will be the marketing.

In our case, the implicit idea of the generators of the technology was to adopt initially an undifferentiated marketing strategy for an inexpensive standard model of the PWB. They had hoped that most of the traditional fishermen in the region using artisanal fishing crafts would be potential adopters of the craft. Soon this seemed a far-fetched dream and the market had to be differentiated -- first to those traditional fishermen who had already adopted the OBM, and secondly, among them, to those who originally used the kattumaram and the dugout canoes. This in turn provided the locational market specificity considering that the main adopters in the first decade were from the three southern districts of the region. We need to emphasise that it was not just a change from an undifferentiated to a differentiated marketing strategy, but also a simultaneous differentiation of the product mix as well. This gave credibility to the shift in marketing strategy. (See Chapter Four Appendix 4.1)

## ORCHESTRATION OF THE STRATEGY

Though we have discussed the individual elements of the strategy separately, in reality it is an integrated and interdependent whole. For example, the development of infrastructure involves an implicit segmentation of the market and this has an immediate bearing on pricing, and to some degree the focus of promotional activity. Similarly, the selection of a particular market will have distinct implications for infrastructural development and price considerations.

In the course of the diffusion process, there has been a gradual change in the manner in which the strategy has been implemented. The considerations and the pressures working internally and externally have also evolved. In the initial years, when the concern was to popularise the technology, the relationship between the individual elements of the strategy were hardly seen. Now with a decade of the diffusion process behind them, the linkages between the individual elements as well as their mutual interdependence points to the need for better orchestration of the strategy.

Our analysis above, of the four aspects of diffusion agency strategy, reveals unambiguously that the features of the supply-side of a technological innovation, play an influential role in determining the course of the diffusion process. Though, for purposes of analysis, we have considered the demand-side (in the previous Chapter Five) and the supply-side (in this Chapter Six) of the diffusion process separately, in reality there is a great overlap between them. We must also point out that the degree and the nature of the overlap change with time. It is not only the individual adopters or the diffusion agency that are affected by this -- the very character of the innovation and the dynamics of the social structure in which the innovation is spreading are influenced. The manner in which these influences unfold themselves at these various realms will be the subject matter of our next chapter.