CHAPTER VII

Summary and Conclusion

Spatial interaction describes the inter-relationship and inter-dependence between geographic areas and it is exhibited on earth's surface in relation to human behaviour and necessities. The present study is basically an interaction study in space which examines the interaction of the state of Manipur with other parts of the country. The spatial interaction made by transport linkages can be studied through the movement of goods, people, vehicles etc. The present study has taken into account the commodity flows - both inflow and outflow - from the Imphal centre to other centres of the country and vice versa in order to analyse the inter-relationship and inter-dependence between Imphal and various centres. The study is based on the data pertaining to commodities which were moved along the National Highway 39 mainly and National Highway 53 during 1986-1995.

7.1 Structural Analysis of Transport Network:

The structural analysis of transport networks forms an important aspect of interaction study. This is done with the help of
the three important elements of a network i.e. vertices, edges and sub-graphs. In the study the network of the North East based on the centres, which have linkages with Imphal, has been studied. From this network various measures describing the transportation network have been derived. These measures indicate that the network is not a complex one with low degree of connectivity and far from attaining maximum circuits. Observation of direct connections among the centres interacted with Imphal reveals that Dimapur has the highest number of direct links, followed by six other centres including Guwahati and Imphal which are hierarchically second in rank. In the third rank there are 12 centres but in the fourth only one centre.

7.2 Spatial and Temporal Analysis of Inflow and Outflow of Commodities:

The study of commodity flow has been analysed in spatial and temporal terms considering both inflow and outflow of commodities to and from the state. Imphal city recorded an average inflow of 92,631 tonnes annually during the period of ten years, 1986-1995. All the 58 items of commodities were
transported through the National Highway 39 and National Highway 53 which is less significant as little commodities moved along this line.

According to the nature of products, the inflow commodities have been grouped into nine categories and their percentage shares have been calculated. Of the total arrival, agricultural and farm products accounted 39.79 percent, construction and building materials 19.10 percent, mixed goods 17.14 percent, manufactured products i.e. edibles, consumables and farm inputs 15.64 percent, mineral products 4.58 percent, manufactured products (non-edibles) 2.47 percent and miscellaneous the remaining percentage. Among the commodities rice, mixed goods and cement contributed the largest shares. The share of rice is about 23 percent to the total freight and thus the largest in volume. Items like potatoes and fertilizers each contributed above 5 percent to the total freight. The distribution of the inflow commodities in space reveals two distinct patterns. First, the arrivals tend to decrease with distance. Light goods arrived Imphal from all parts of the country while heavy goods mostly came from neighbouring centres located in Nagaland,
Assam and Meghalaya. Second, the arrivals tend to specialize with distance. While commodities in many numbers and large amounts arrived at Imphal from neighbouring areas, some items in limited quantities tended to arrive from distant places.

The analysis of seasonal trend of arrivals shows seasonal pattern in the inflow of commodities. Except for 1992 and 1994 the remaining eight years registered arrivals in which winter inflows exceeded summer inflows. Maximum increase over summer inflow occurred in 1987 and 1988. The major reason was that during the months of June, July and August heavy rainfall occurred and especially the Imphal – Dimapur road became difficult for the commodity traffic due to landslides.

Imphal has import linkages with 58 centres of which 28 stations are in the North East. Of the 28 centres, 7 centres i.e., Dimapur, Guwahati, Bokajan, Shillong, Jagiroad, Dhulajyan and Jorhat contributed significantly large quantities during the study period. Commodities received from Dimapur, Guwahati and Bokajan accounted for 5.3, 2.0 and 1.1 lakh tonnes respectively. Outside the North East, the four centres i.e. Kolkata, Delhi, Rajamundri and Ludhiana contributed significantly. Kolkata
contributed above ten thousand. On an average the state received about 86 goods trucks daily each carrying about 10 tonnes of commodities. The commodities were carried by transporters that belonged to the transport agencies, private owners and the government departments.

From the study of commodity inflow, it is clearly observed that the state of Manipur largely depends upon different parts of the country for a number of commodities which are not produced in the state. The state is heavily dependent upon the neighbouring states like Assam and Nagaland. Outside the North East, Imphal centre is dependent on the centres like Kolkata and Delhi mainly for limited commodities.

The state's resources are limited therefore, the total volume of outflow was also considerably low when compared with the inflow. There were only 30,430 tonnes of commodities that moved out of the state to 24 centres carrying 38 items during the study period. On an average 3 goods trucks were moved out of the state to outside centres. Dimapur and Guwahati in the North East were the most important receiving centres having strong spatial linkages with Imphal. Outside the North East, centres such
as Kolkata, Delhi, Hyderabad and Chennai were receiving commodities from Imphal regularly during the study period. It appears that centres located at shorter distances have stronger transport linkages than the distant centres.

The commodities received at Imphal through National Highway 53 in 1995 were only 4,590 tonnes. Silchar contributed above 95 percent of the total arrival along this route. Rice, cooking gas, salt, and cement were brought in large amounts. Outflow through the same route was 2.81 percent of what Imphal exported in that year through National Highway 39. The outflow was mainly received by Silchar, Guwahati, Kolkata and Delhi. Thus, the transport linkage established between Imphal and other centres through the National Highway 53 was considerably weak.

7.3 Distance-decay and Potential Interaction:

The present study incorporated two analyses i.e., distance decay and potential interaction. The correspondence between distance and freight has been measured using distance decay model. The relationships between the commodity groups and distances show negative exponential relationships. These indicate
that volumes of various commodities tend to decline at a specific rate with distances. As the correlation coefficient, which determines the degree of correspondence between distance and freight, is negative for all commodity groups, an inverse relationship is indicated. The potential interaction represents a force underlying the interaction of Imphal with various centres. The analysis shows that Dimapur, Bokajan and Guwahati have emerged as leading centres from where commodities moved into the state in large quantities. Centres such as Kolkata, Delhi, Siliguri, Rajamundri and Ludhiana have also been recognized as potential centres. For the outflow potential interaction, Dimapur, Guwahati and Kolkata have been identified as potential centres.

The analysis of flow patterns of fourteen commodities reveals that centres like Dimapur and Guwahati have established strong spatial linkages with Imphal. The commodities flows were seasonal largely due to the nature of detour roads and most of them showed the existence of distance-decay relationship in their movement. However, certain commodities such as cooking gas and mixed goods do not show the influence of distance in their movements. During the study period commodities were generally
transported favourably during the winter season except for some items like pulses, fertilizer and cooking gas (LPG).

7.4 Commodity Flows and Economic Growth:

Road transport mainly along the National Highway occupies a key position in building up the basic infrastructure required for the economic growth of the state. Among the imported commodities certain essential items such as rice, potatoes, wheat, pulses, flours and fish etc. were imported in large quantities. Inflow of essential commodities like wheat, pulses, etc. shows continuous rise during the study period. The state imported maximum commodities that belonged to the agricultural and farm products indicating state's concern over the insufficiency of food grains. The state also witnessed increased consumption of certain products like coal, bitumen, fertilizer and cement etc. Use of coal and bitumen would indicate industrial and constructional activities. Coal became an important alternative to firewood in most of the brick kilns. Increased consumption of fertilizer indicates more agricultural yields and more lands brought under agriculture. Consumption of constructional commodities – poles,
rods, pipes, tisco, ingot, sheet and cement — was about 14 thousand tonnes in 1986, which rose to about 19 thousand tonnes in 1995, an increase of over 36 percent during that period. Consumptions were high in the late 1980s and early 1990s indicating high constructional activities during that time. The level of state’s economic activities was determined by the commodities like iron, cement, chemical fertilizer etc. Consumption of iron and steel along with cement indicate the extent of constructional activity and capital formation in the economy of the state.

It must be noted that the state registered about 9.3 lakh tonnes of commodities as inflow and about 30.4 thousand tonnes as outflow. This has caused an extreme lopsidedness between inflow and outflow. They should remain more or less in balance, commodities such as agricultural and forest products that the state exported outside were products, which were economically viable. The state required over and above foodstuffs, a number of commodities for its socio-economic development and the state heavily dependent for them upon centres like Dimapur, Guwahati, shillong, Bokajan, Dhuliajan, Kolkata and Delhi.