BANGLADESH UNIVERSITY OF ENGINEERING AND TECHNOLOGY

A N D

UNIVERSITY OF SHEFFIELD, UNITED KINGDOM

INTRA-URBAN CENTRAL PLACES: Centrality Study of Market Centres as a Planning Tool

B y

SABITA SAHA

Dissertation submitted to the Department of Urban and Regional Planning in Partial Fulfilment of the Requirements of the Degree of Master of Urban and Regional Planning. The Dissertation was written under the Supervision of Dr. Hemayet Hossain, Assistant Professor, Department of Urban and Regional Planning, Bangladesh University of Engineering and Technology.

UNDP SPONSORED BUET-SHEFFIELD JOINT MASTER'S DEGREE PROGRAMME.

BUET DACCA NOVEMBER, 1979.

THESIS ACCEPTANCE FORM

DEPARTMENT OF URBAN AND REGIONAL PLANNING
BANGLADESH UNIVERSITY OF ENGINEERING & TECHNOLOGY, DACCA.

On this day, the November 15, 1979 .

the undersigned hereby recommend to the Academic Council that the Thesis entitled INTRA-URBAN CENTRAL PLACES: Centrality Study of Market Centres as a Planning Tool.

submitted by SABITA SAHA.

may be accepted in partial fulfilment of the requirements for the Degree of Master of Urban and Regional Planning.

John R. James
External Examiner

HEM HOSSAIN
Supervisor/~~Member~~

Nayyid Islam
Examiner

Examiner

Examiner

G Rahman
Head of the Department

ACKNOWLEDGEMENT

The author would like to take the opportunity to express her sincere gratitude to Dr. Hemayet Hossain; who acted as a guide and supervisor. His acute analytical insight was instrumental in solving many difficult problems. Hence it was his constant help and guidance that enabled the author to finish the study in its present form.

She expresses her deep sense of gratitude to Mr. Nazrul Islam, Associate Professor, Department of Geography, Dacca University, who encouraged her from the initial stage when the present study was only a faint idea and, later on, helped her constantly by valuable suggestions throughout the progress of the dissertation.

The author also benefited from the intellectual curiosity and insight of Dr. Jadab Chandra Saha, Faculty Member, Bangladesh Institute of Bank Management; Dr. Md.Muniruzzaman Miah, Chairman, Department of Geography, Dacca University; Mr. Golam Rahman, Head, Department of Urban and Regional Planning, BUET, Dacca; and Mr. Ian Mckee, Expert, National Physical Planning Project, Bangladesh.

She is deeply indebted to Professor John R. James and Dr.Charles L. Choguill, University of Sheffield; and Dr. Mobasser Ali, Department of Architecture, BUET for their valuable comments on the draft of the thesis. She likes to extend her sincere thanks to Mr.A.C. Das, Director, Urban Development Directorate and Mr.C.A. Solis, Project Manager, National Physical Planning Project, Bangladesh for their continuous inspiration and encouragements in the preparation of this thesis.

Last but not the least, the author owe a debt of gratitude to those who extended their helpfull hand to her during this study. Miss Ummye Khaleda Begum, Lecturer, Department of Physics, BUET; Abdul Mannaf and Mizanur Rahman, final year students of Geography, Dacca University deserve special thanks for their fruitful

contribution in the research work. The author is also grateful to the Centre for Urban Studies, Department of Geography, Dacca University for assisting in the process of field investigation. A debt of gratitude is owed to the owners of the establishments in the market centres and the related people for their participation and co-operation.

Finally, the author is proud to express that this research work could not have been undertaken without the moral support of all the members of the author's family who have been constant sources of inspiration in the research work.

Special thanks are due to Mr. Kazi Ghulam Akbar who cheerfully preserved through the typing of the final draft of the thesis and to Mr. Rafiqul Islam Chowdhury, Draftsman, Associated Consulting Engineering Ltd., Dacca for cartographic works.

Sabita Saha.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ILLUSTRATIONS

CHAPTER 1

1. INTRODUCTION

1.1 Background of the Study:

Food, clothing and shelter are basic human needs and central place facilities are essential services in providing them. Meeting those basic human needs, in the hierarchy of advanced form of social services, market centres and shopping facilities get the topmost priority. To make the market centres accessible to all, physical planning must play its legitimate role together with socio-economic planning. Prudent physical planning can bring this essential service to the people in a more rational way because the main task of physical planning is to arrange the different activities and facilities in the right location.

In recent years, urban geographers probably have devoted much attention to central place studies. The pioneer work of Walter Christaller and others has been followed by numerous investigations of rural service centres and studies involving more complex, larger centres are not uncommon. Only lately, however, has the scope of central place study been broadened to include service centres within an urban unit[1].

---

1. Lane J. Johnson, "Centrality Within a Metropolis", Economic Geography, vol., 40, No. 4, Oct., 1960, pp 324-336.; Hans Carol, "The Hierarchy of Central Functions Within the City", Annals of the Association of American Geographers, vol., 50, 1960, pp 419-438; Brian J.L. Berry, Commercial Structure and Commercial Blight, Chicago: Department of Geography, University of Chicago, Research Paper No. 85, 1963; James W. Simmons, Toronto's Changing Retail Complex: A Study in Growth and Blight, Department of Geography, University of Western Ontario, Research Paper No. 104, 1966; W.A.V. Clark, and Gerald Rushton, "Models of Intra-Urban Consumer Behavior and Their Implications for Central place Theory", Economic Geography, vol., 46, No., 3, 1970, pp 486-496; A.G.Onokerhoraye, "The Changing Patterns of Retail Outlets in West African Urban Areas: The Case of Benin, Nigeria", Geografiska Annaler, vol. 59 B, No. 1, 1977, pp 28-42;John B. Parr, "Models of the Central Place System: A More Central Approach", Urban Studies, vol. 15, 1978, pp 35-49.

Although the study of central place theory has developed in the western countries the scope of the study is still in its infant stage in the developing countries[2] to adopt this theory in their empirical fields.

Although the study on central place theory has been undertaken both in developed and developing countries no attempt has yet been made to adopt this theory on empirical studies in Bangladesh. The lack of such studies is a constraint in scientific planning of location of central places for the country as a whole. Similarly an absolute gap remains on the intra urban central places or central functions for all urban centres of Bangladesh, including Dacca, the metropolitan city. Location decision for various central functions are being undertaken on a rather apriori bases. A scientific study on hierarchy of any central place function could provide essential and useful background information for planning location, size and type of the same function for the city studied. It is basically with this end in view that a study of the market places (offering retail and wholesale business functions) within Dacca is being undertaken by the present author. In addition the study is expected to test the validity of the central place theory on the intra-urban context as developed by some western urban geographers. The research on intra-urban central places and their centrality within the city in Bangladesh has been found necessary as there has been no work in this particular field of study. The author's interests in this subject matter grew because of its potentialities as a planning tool in Bangladesh.

---

2. United Nations, "Regional Planning Project: FIJI Project Findings and Recommendations", UN, New York, 1977; Brian J,L, Berry and Allen Pred, Central Place Studies: A Bibliography of Theory and Applications, Bibliography Services, Number One, Regional Science Research Institute, Philadelphia, Pennsylvania, 1965.

(6)

1.2 Need of the Study:

Central places or market centres within the city are as old as the city itself. An individual city is a part of a system of cities while the city itself is a system composed of sub-systems or parts within it. Intra-urban central places or market places are thus systems within the city system[3]. To understand the city system it becomes necessary to analyse spatial interaction patterns within parts of the systems. The study of intra-urban central places may satisfy such a need.

The central place theory plays two important roles to spatial system (i) as a framework for understanding the interaction pattern of spatial structure and (ii) as a model for future spatial planning. A basic argument which supports the use of intra-urban central places in planning is a hierarchical system of service centres. This hierarchical system avoids duplication and waste and eventually facilitating administering and allocating resources optimally within an area. This results in optimum utilization of these resources for the better realisation of social benefits.

Specifically, studies on the pattern of central functions of central places and centrality within the city are relevant for the

---

3. Brian J.L. Berry, "Cities as Systems Within Systems of Cities", in Regional Development and Planning, ed. by John Friedmann and William Alonso, MIT Press, Mass. 1964, pp 116-137.

solution of a number of practical planning problems[4] of market centres, such as: (1) helping the retail business man who is seeking a new location; (2) planning new business centres or market centres which are fully integrated in the pattern of expanding sub-urban settlements; (3) establishing integrated and semi-integrated market centres in areas where urban sprawl has already gone beyond well organized expansion; (4) zoning for future expansion of the central places; (5) intelligent planning of major roads leading faster access to core of the city from peripheral or sub-urban zones; (6) laying down principles for the planning of new towns or satellite model towns.

As an example, it is hypothesized that, if population and purchasing power are evenly spaced over the landscape, sales and service centres generally will spring up evenly spaced. The size of the central places for each good and service depend upon the buyers. A seller's trade area must be large enough to keep him in business, yet not so large that peripheral customers are priced out of the market by excessive transportation charges. If population thresholds can be met within customer buying ranges, sellers will appear as closely packed as they can to serve the area. If thresholds cannot be met within range, the good and service will not be available[5]. However, the above theoretical assumption, is subject to test of validity in case of a city like Dacca, in a developing economic perspective.

---

4. John Glasson, An Introduction to Urban Planning, Hutchinson & Co. Ltd., 1974, pp 126-141.

5. Brian J.L. Berry and Frank E. Horton, Geographical Perspectives on Urban Systems With Integrated Readings, Prentice Hall, New Jersey, 1970, pp 209-227.

1.3 Objectives of the Study:

Market centres are the primary elements in gearing up the system of city life. There are different types of market centres viz. retail, wholesale, and mixed. Management of these market centres usually controls the functioning of central places to attract customers. The distributive patterns of these market centres are distinctive from one other from the point of view of the standards of goods and services, physical location, etc. The demand for goods and services increases with the increase of population, income, etc. This would call for opening new market centres or extension of the existing ones at the convenient locations. The location should be determined from the point of view of the community judgement. Apart from the community judgement, there is obviously a need to evolve objective criteria to determine optimal locations for market centres. Although the importance of market centres are a common concern there appears to be a noticiable lack of systematic study of the problem. The present study is an attempt:

(1) to study the intra-urban spatial system in order to find out the relationship among the intra-urban market centres on the basis of size (population served), space (area served) and distance (acreage covered or range of goods and services) More specifically, to find out the hierarchical order of market centres in terms of:

a) total number of retail, wholesale or other commercial establishments of the market centres within the city;

b) variety of goods and services provided by the market centres;

c) complementary region or service or trade area of the market centres;

(ii) to study the insights for planning approaches to urban spatial organization (spatial interaction system).

(iii) to formulate a plan for an integrated development of the market centres on the basis of central place theory.

The study is only a modest approach in studying the problems objectively and finding out the applicable criteria for future location of the market centres and development of the existing ones.

1.4 Scope of the Study:

The study of central places and central place hierarchy is closely inter-related with the central place theory[6]. The study concerned here may be used to distinguish between centres and tributary areas within the urban area for any function or combination of functions, which is common to small communities and has a limited service area. This task is accomplished by noting the locations of functional surpluses and deficits revealed by direct comparison between the distribution of a low-order function and the distribution of the group it serves.

Market centres and their centrality study has been selected for some basic reasons: (i) Market centres are not properly distributed both in terms of locational and hierarchical distribution. (ii) Market centres are greatly overcrowded varying over capacity[7]. (iii) The market centres are growing haphazardly. Thus every highways or even roads and lanes are becoming shopping ribbons.

---

6. John Glasson, An Introduction to Urban Planning, opcit.

7. Khairul Islam Mollah, "Commercial Structure of Dacca City with Special reference to Retailing", Unpublished Master Degree Dissertation, Department of Geography, Dacca University, 1975, p 130.

(iv) The group of functions or services offered by the market centres are not even properly fitted to those market centres. So, the service area or zone of influence are not properly served. (v) New Market centres are to be built up to supplement the existing facilities.

The site upon which the market centre is located or for which it is planned to be located, throws a series of staggering challenges to the community, administrators and planners. However, the planners have recommended on the basis of consideration of many factors effecting the choice of a site for a market centre. These inter-related factors are as follows[8] :-

(1) Accessibility (2) Availability of space (3) Size (4) Shape (5) Topography (6) Acquisition (7) Cost of land (8) Soil condition (9) Sub-surface condition (10) Site preparation (11) Expansibility (12) Flexibility (13) Site development (14) Shopping adaptability (15) Fitting the functions and services (16) Orientation (17) Environment (18) Community use (19) Service area. Of these several factors, the present study is primarily concerned with the functional relationships among the intra-urban market centres in the perspective of size, space and distance and overall spatial inter-action pattern.

The study focuses on some inter-related dimensions of the accessibility problems like market centres, resident distance, mode of transport, time and frequency of visit to the market centres for different necessary goods and services. It also investigates the consuming and commutation behaviour of the customers and their selected market centres for different goods and services. The zone of influence or the service area of the market centres is analysed as a service area for the goods and services offered.

---

8. Margaret Roberts, An Introduction to Town Planning Techniques, Hutchinson and Co. Ltd., 1974 pp 297-325.

The study is based on the statistical information supplied by the managers/owners/salesmen/attendants of the different types of establishments and customers of each type of establishments etc. Finally this study investigates the hierarchical pattern of the market centres within Dacca city in the perspectives of size, space and distance.

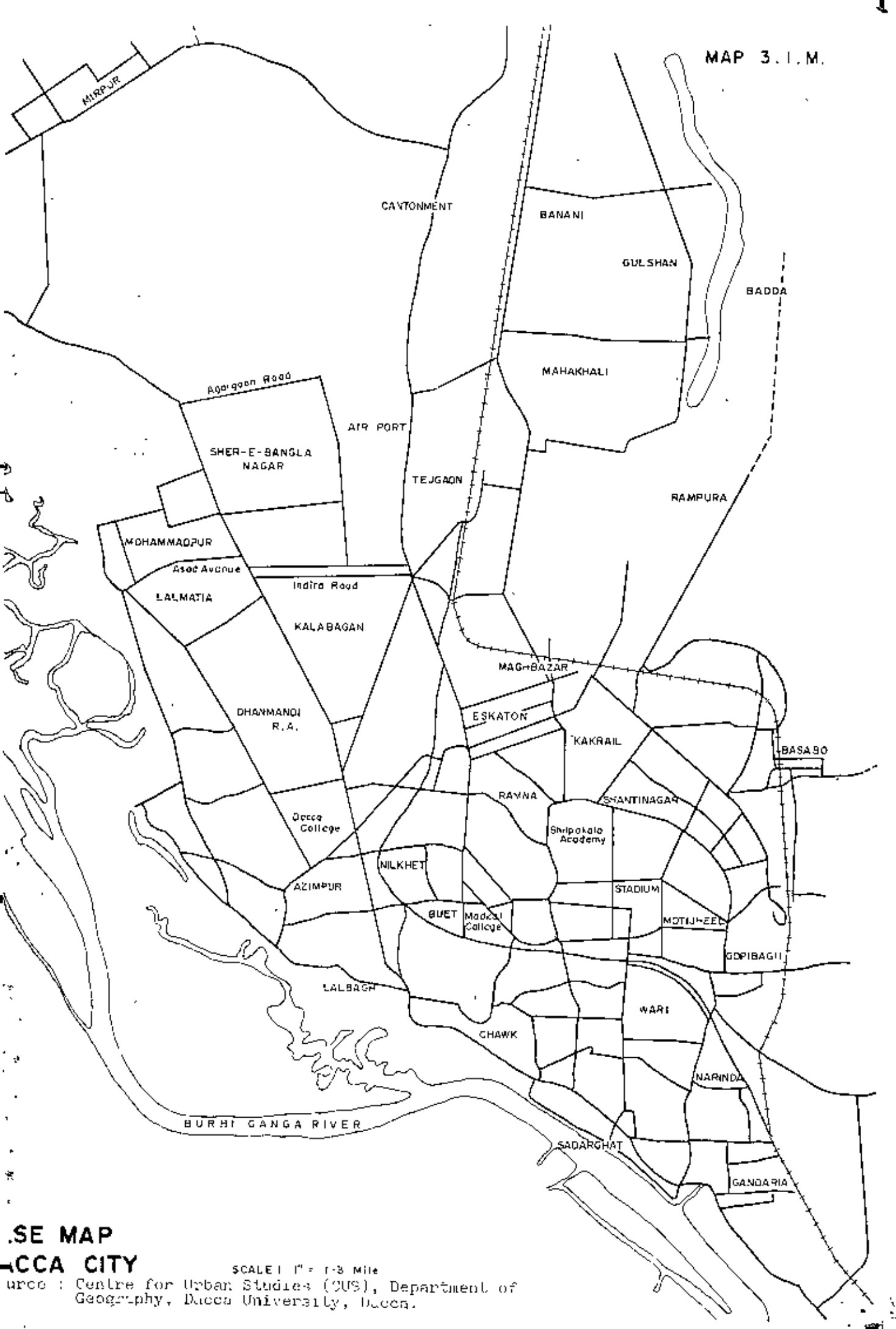
1.5 Study Area:

Dacca has been selected for the purpose of the study. It is a historical city and therefore its growth and development is directly related with the historical phases and events. The history of Dacca city has been traced back to the seventh and eighth centuries. But it began to take the shape of a modern metropolis only after the partition of the erstwhile Pakistan when it assumed the role of the provincial capital of the former East Pakistan. Being the largest city of the region, it became the highest order[9] city in the functional hierarchy.

At present Dacca is the biggest city of the country. It is more or less centrally located. As a capital city it is a diversified and multifunctional city with a total population of 16,04,795 (according to 1974 census). It has an area of 41 square miles which includes three municipalities namely Dacca, Mirpur, and Gulshan-Banani. But in the present study, the study area excludes Mirpur and Gulshan-Banani municipal area. Therefore, the present study lies exclusively within the municipal area of Dacca where the commercial activity along with other urban functions is most highly concentrated.

---

9. M. Atiqullah, and F. Karim, "Growth of Dacca City Population and area (1608-1981)"., Social Science Research Project, Department of Statistics, Dacca University, Dacca, 1965, P.I.



.SE MAP

-CCA CITY

SCALE 1" = 1·3 Mile

urce : Centre for Urban Studies (CUS), Department of Geography, Dacca University, Dacca.

1.6 Terms and Definition:

Central Place Theory is essentially a location theory. The central place locations are generally endowed with a degree of accessibility. It is usually found that some locations are more accessible than others. Therefore, it is found that only the better location criterian helps in providing services to more population. Location decisions should be taken to minimise the frictional effects[10] of distance. Besides, agglomeration of human activities takes the advantages of the economies of scale even if the common locations suffer from the frictional effects of distance significantly.

Each central place has its complementary region whose precise size and shape is affected chiefly by population distribution and transport facilities on the one hand and by the range of goods and services provided by the centre on the other hand. Some elements of central place theory should be properly defined before proceeding forward. Otherwise, researchers and planners may find no interest to go through this study. Central functions, hinterland, threshold population size, range and the hierarchy of central places are some of the major elements of the central place theory. Definition, relationship and consequences of these elements are stated hereunder:

Central Place: Central place is nothing but the location of the central functions[11]. It may be a location of a single central function or group of central functions. It therefore, serves mostly the population of its own surrounding area; the internal service area, and the area adjoining that internal service area.

For convenience of this study, an attempt was made to

---

10. Time, effort and money are some of the major frictional effects of distance.

11. Hans Carol, "The Hierarchy of Central Functions Within The City", Annals of the Association of American Geographers, vol. 50, 1960, pp 419-438.

identify the town's major central places. The only criterion applied in the definition of central places was that each should have at least 20 permanent retail, wholesale or any other commercial establishments. No precise rule was used for delimiting the boundaries of centres, each case being judged subjectively in the field[12]. The boundaries of most central places were delimited by non-commercial land use areas about 40 to 50 yards. This was facilitated by the fact that most commercial developments in the city are at or near street intersections and around market places. Thus, in most areas, commercial development gives way to non-commercial, usually residential land-uses. So, the dispersed establishments of various functions and/or services developed along the road sides has, however, been excluded from the present study. Market centres exclusively dealing with food items that means Kutcha Bazar in local term however, also has been excluded from this study due to their very local nature.

Central Functions or Central Services: Central functions are the outgrowth of personal contact between the central service and its customers. This would call for a close relationship between the residences of the consumers and the location of the service. The more commonly used the central services are, the closer their spacing. The more rarely used the central services are, the greater the number of people necessary to support them, and the wider is their spacing.

Service Area or Hinterland: It is nothing but the complementary

---

12. R.J. Johnston, "The Distribution of An Intrametropolitan Central Place Hierarchy in Melbourne", Australian Geographical Studies, vol. 4, 1966, pp 17-33.

region of a central place[13] Precise size and shape of service area is affected by population distribution, transport facilities and the range of goods and services the centre provides. A variety of technique may be used to delimit the hinterlands of centres, including surveys of consumers, communication patterns and subjective judgement.

Threshold: The threshold for an establishment selling goods and services it the minimum market needed to bring it into existence and to keep it going. Threshold is often discussed in terms of a number of people, but counting people is only a substitute for measuring total effective demand at the establishment.
Range: The range for an establishment selling a good or a service is the average maximum destance people would be willing to travel to purchase it.

Hierarchy: The difference in demand for central services between the more general and the more specialised needs creates a hierarchy of central services. There is no hierarchical order, in non-central or dispersed functions. Classification of market centres in an area into a hierarchy is generally based upon some index of size and/or function. An intensive field survey however, provides data on total sales, employment and number of establishments of the market centres of Dacca city. Sales figure broken down by commodity classifications are given for Dacca city as a whole and the rest of the country. The study therefore, depends on functional characteristics only of shops of a certain type, autonomous and government organizations etc.

The hierarchy of central places and their corresponding service areas are generally based on the hierarchy of central functions. The central place is named according to the level of its highest central functions, thus including all lower ones. And at last, intra-urban studies involve the classification of centres within an urban area into a hierarchical framework.

---

13. E.A.J. Johnson, The Organization of Space in Developing Countries, Harvard University Press, Cambridge, Massachusetts, 1974, p 137.

CHAPTER II

2 CENTRAL PLACE THEORY AND THE PRESENT STUDY

2.1 Central Place Theory - A Review:

Of all the models of spatial structure, central place theory is probably the most researched and well known model. The theory seeks to relate central places to their hinterlands and defines a central place as a settlement providing services for the population of its hinterland. Christaller's central place theory is a statement on the location, size and function of tertiary activities and is a successor to location theories on agricultural landuse by J.H. von Thunen (1826)[1] and industrial activities by Alfred Weber (1909)[2]. Christaller's central place theory first appeared in his book "Die Zentralen Orte in Suddentschland" in 1933. But it was Edward Ullman who made it well known to the English-speaking world through his article[3] "A theory of Location for Cities".

An over-simplified version of Christaller's theory envisages a central goods in a central place for a complementary region. He visualised for his theory the smallest unit of human settlement. Besides, the three terms defined above as central goods, central place and a complementary region, The theory also explains several relationships :

a changes in prices of central goods with change of distance

---

1. J.H. von Thunen, "von Thunen's Isolated State"; translated by Wartenburg, C. M., from "Der isolierte Staat in Beziehung auf Landwristschaft und Nationalokonomie, Rostock (1826)", London: Oxford University Press, 1966.
2. Alfred Weber, "Alfred Weber's Theory of the Location of Industries translated by Friedrich, C.J. from "Uber den Standort der industrien (1909)", University of Chicago Press, Chicago, 1929.
3. Edward L. Ullman, "A Theory of Location of Cities", American Journal of Sociology, vol, 46, 1941, pp 853-864.

from the point of supply.

b Explicit extremisation behaviour in the distribution and consumption of goods e.g. goods are purchased from the closest place.

c Inner and outer limits for the range of distance over which central goods may be sold.

The essential features of the statement of the theory which defined the three terms and the relationships are (Fig.2.1.A):

a Hexagonal market areas for any set of central goods;

b Overlapping sets of hexagons. The hexagons overlap in such a way that larger hexagonal market areas divided into smaller hexagons. The smaller hexagons nest into the larger according to a rule of three.

c Transportation routes serving the system of cities.

The main features of Christaller's central place theory have been summarised by Berry and Pred[4] as follows :

i) The Basic function of a city is to be a "central place" is used because to perform such a function efficiently, a city locates at the centre of minimum aggregate travel of its tributary area i.e. central to the maximum profit area it can commend.

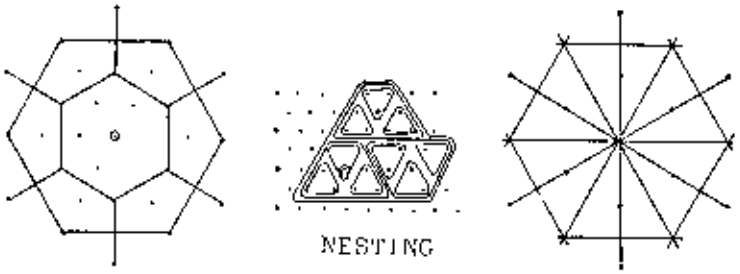
ii) The centrality of a city is a summary measure of the degree to which it is such a service centre; the greater the centrality of a place, the higher is its "order";

---

4. Brian J.L.Berry and Allen Pred, Central Place Studies: A Bibliography Series, Number One, Regional Science Research Institute, Philadelphia, Pennsylvania, 1965, pp 7-10.

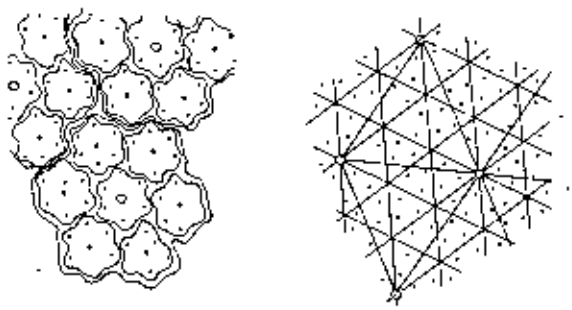
Gig. 2.1.A THE SYSTEM OF CENTRAL PLACES
after the ....

MARKETING PRINCIPLE



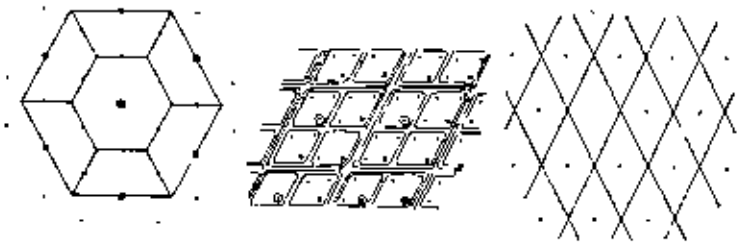
ARRANGEMENT TRANSPORT ROUTES

ADMINISTRATIVE PRINCIPLE



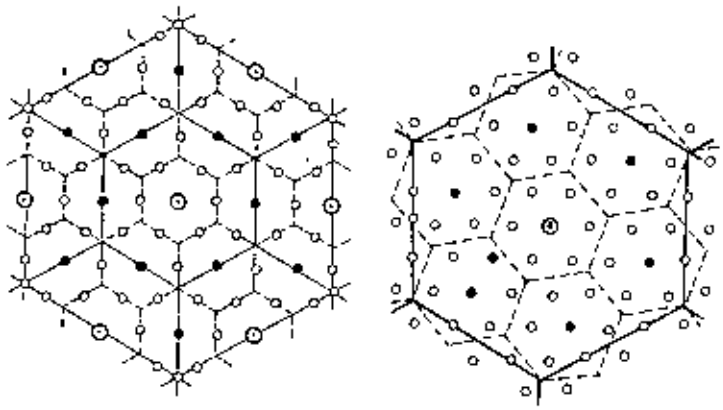
ARRANGEMENT AND NESTING TRANSPORT ROUTES

TRANSPORTATION PRINCIPLE



ARRANGEMENT NESTING TRANSPORT ROUTES

Market regions with homogeneous structure



Regions with equal structure. (2) k=4. Every town dominates three complete towns of next lower rank.

Regions with equal structure. (3) k=7. Every town dominates six complete towns of the next lower rank.

iii) Higher order places offer more goods, have more establishments and business types, larger populations, tributary areas and tributary populations, do greater volume of business, and are more widely spaced than lower order places.

iv) Lower order places provide only low order goods to low order tributary areas, these lower order goods are generally necessities requiring frequent purchasing with little consumer travel. Moreover, lower order goods are provided by establishments with relatively low conditions of entry. Conversely, high order places provide not only low goods, but also high order goods sold by high order establishments with greater conditions of entry.

v) More specifically, central places fall into a hierarchy comprising discrete groups of centres. Centres of each higher order centres plus a group of central functions that differentiates them from and sets them above the lower order.

As a consequence of Christaller's assumptions, every settlement village, town and city in a particular rank of the hierarchy is the same size and has the same activities ascribed to it. In all, the theory deals directly with the particular problems of diagnosing the trade centre viability.

2.1.1 "Post" Christaller development in the Theory:

The next important name associated with the central place models is that of Auguste Losch[5]. Although he took a somewhat different approach in explaining regional hierarchy.

---

5. John Glasson, An Introduction to Regional Planning, Hutchinson & Co. (publishers) Ltd., London, 1974, p 134.

"Christaller visualised an overlay of urban-central market areas descending in size from a very large territory to spatial area so small in scope and population that it was only minimally profitable for anyone to operate a business there or to maintain a professional office. In contrast, Auguste Losch visualized a system of production and marketing centres from exactly the opposite point of view. Instead of beginning, as Christaller did with a metropolitan centre, Losch started his analysis from nucleated agricultural villages distributed in triangular fashion over an agrarian plain". (Fig.2.2.A).

Losch's preoccupation had been with economic aspects and an implication for highway systems came into his models. Credit should goes to Professor A.E. Smailes for the first hierarchical classification of central places on a national scale. His hierarchy for England and Wales was formulated on the basis of certain selected activities, which he considered to be the retail and service attributes of fully-fledged town. These activities were[6]: (a) banks, (b) branches of major chain stroes, (c) secondary schools, (d) hospitals, (e) cinemas, (f) weekly newspaper. The classification: major cities, cities, major towns, towns.

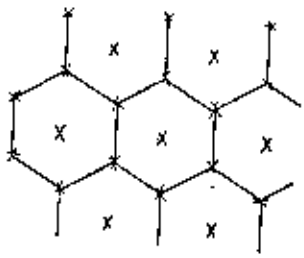
Beckmann[7], however, finds Losch's economic equilibrium conditions rather inadequate. He has recently provided an alternative simple mathematical model of hierarchy of cities, which is a basic corollary of the central place theory. Beckmann postulated a basic layer of rural population distributed with approximately uniform areal density. A fundamental hypothesis of Beckmann is that the size of any city is proportional to the population it serves including that of the city itself.

---

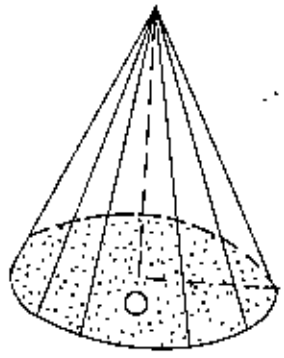
6. A.E. Smailes, "The urban hierarchy in England and Wales", Geography, vol. 29, 1944, pp 41-51; A.E. Smailes and G.Hartley, "Shopping centres in the Greater London area", Institute of British Geographers, Transactions and Papers, vol.29, 1961, pp 201-213.

7. Martin J. Beckmann, "Some Reflections on Losch's Theory of Location", Paper and proceedings of the Regional Science Association, 1955.

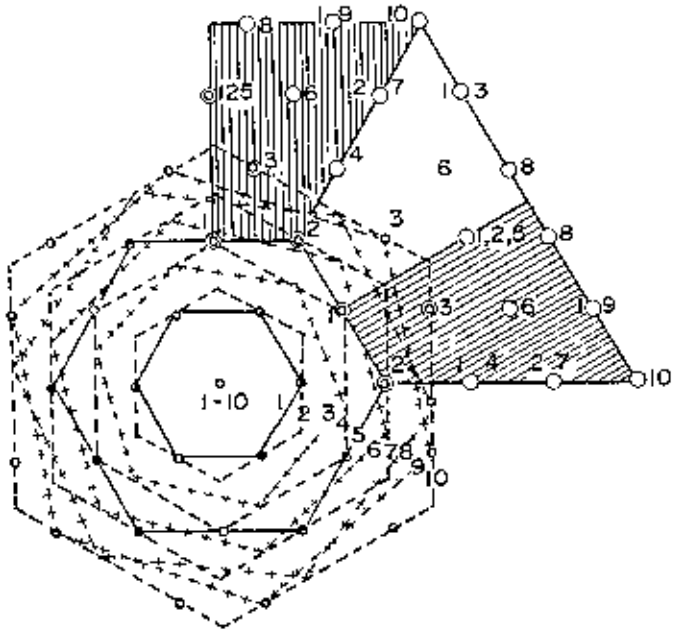
Fig. 2.2.A. COMPARISON OF SYSTEMS OF CENTRAL PLACES



Market areas after Christaller



Losch's demand cone.



The ten smallest economic areas. The sectors containing many towns are hatched. Alternative regional centres are in parentheses. Simple points represent original settlements. Those enclosed in circles are centres of market areas of sizes indicated by the figures.

As a diversion to the so far one way thinking came when Don J. Bogue[8] completely disregarded the hierarchy of cities and maintained that only metropolitan communities completely serve the country. Bogue's Metropolitan communities follow Losch's landscape. He classified the cities into three types: Inter metropolitan which contain major transportation routes between each metropolis; sub-dominant which contain no major transportation routes but at least one major hinterland city, and local, which contains neither.

Edwin N. Thomas tried to revitalize the past models and introduced his "expanded central place" model[9]. He labelled Christaller's pioneering theory as imperfect and asserted that the "fact (in Christaller) that the magnitude of the "typical" distances are dependent on the determination of "typical" population size classes is a serious weakness".

Leslie J. King[10] made a multi-variate analysis of the spacing of urban settlements on the United States. King studied 200 cities throughout the United States with the need in mind to descover the nature of the relationships between the spacing of towns on the one hand and various physical, social and economic factors on the other hand.

---

8. Don J. Bogue, The Structure of the Metropolitan Community, An Arbor, University of Michigan, 1949.
9. Edwin N. Thomas, "Toward an Expanded Central Place Model", Geographical Review, vol. 51, 1961, pp 400-411.
10. Leslie J. King, "A Multivariate Analysis of the Spacing of Urban Settlements in the United States", Annals, A.A.G., June, 1961, pp 222-252.

2.1.2 The New Central Place Connotation:

Central place theory has been subjected to much more radical modifications in the last decade or so. Significant contribution came from economists and sociologists/geographers as well as from planners. It is no longer limited to Christaller's realistic situations. The theory now considers its applicability in showing relations of tertiary activities i.e. commercial or business activities in alternate urban centres and also of retail and service business of shopping centres within cities. The central place has also been promoted to the status of general systems theory of spatial structure of tertiary activities. But the extended theory of tertiary activities which concerns us for the present, was mainly the contribution of Brian Berry and William Garrison[11].

They have introduced a revised central place theory using the concepts of: Threshold (an economic concept): the minimum amount of purchasing power to support the supply of a central good from a central place. The Range of a Good (a spatial concept): the market area of a central place for a central good. It has a lower limit which incorporated the threshold purchasing power for the supply of the good and upper limit beyond which the central place is no longer able to sell the good. Berry studied the functional bases of the central place hierarchy[12]. This study was concerned with the problems of the differentiation of centres into broad classes. In particular it provides original and urgent evidence that larger centres are functionally more complex than smaller centres.

---

11. Brian J.L. Berry and William L. Garrison, "Alternative Explanations of Urban Rank-Size Relationships", Annals, A.A.G., 1958, pp 83-91; and "Recent Development in Central Place Theory", Papers and Proceedings of Regional Science Association, 1958, pp 107-120.

12. Brian J.L. Berry, "The Functional Bases of the Central Place Hierarchy", Economic Geography, vol. 34, No.2, April, 1958, pp 145.

With this increasing functional complexity being accompanied by virtue of the differential provision of central functions there is independence between market centres in the provision of central goods and services. He studied the central place theory and central place hierarchy, using the concepts of range and threshold population. Besides, several studies on central place and their centrality has been done by Berry.

Hans Carol[13] worked on a research project on the hierarchy of central functions within the city. He studied Zurich in Switzerland and made a hierarchy according to service area. The study aimed at a qualitative presentation of the findings rather than at an exact quantitative record of data. The Zurich study did not attempt to include all kinds of business areas, but focuses exclusively on the distribution of truly central functions and their grouping into nucleated business districts. Lane J. Johnson[14] studied on the method of centrality measurement in order to apply this measurement to the Boston Area. The two-fold purpose of this study concerned a method for bringing the centres and tributary areas into view and to apply this method to the Boston Area. A more general study was carried out by W.A.V. Clark and Gerald Ruston[15] who were engaged in the research project of the models of intra-urban consumer behaviour and their implications for central place theory. Many others carried out their studies on central place theory in relation to central place hierarchy and central functions. Such studies are of great importance as they can be of practical use in predicting potential locations and determining ultimately an optimum space land utilisation of any urban centre.

---

13 Hans Carol, "The Hierarchy of Central Functions within the city", Annals, A.A.G., vol. 50, 1966, pp 419-438.

14 Lane J. Johnson, "Centrality within a Metropolis", Economic Geogaphy vol. 40, No. 4, October 1960, pp 324-336

15 W.A.V. Clark and Gerald Ruston, "Models of Intra-Urban Consumer Behaviour and their implications for Central Place Theory", Economic Geography, vol. 46, No. 3, July, 1970, pp 486-496.

2.1.3 Criticism of Central Place Theory:

Considerable attention was given to empirical studies on central place systems in accordance with the central place theory. These studies have been of considerable value in verifying and testing the earlier theoretical postulates although central place theory, itself has remained virtually intact[16]. Inspite of the empirical studies, central place theory, as a model of regional spatial structure, has been subject to numerous criticisms. As the central place theory relates mostly to the service element, it assumes a plain and uniform distribution of natural resources, uniform distribution of population and rational use of the nearest market centres. These aspects are subjected to criticism:

The theory assumes a plain and uniform distribution of natural resources. But in practice, it is absent. As such, the resource localisation may distort the regular hierarchy. Distortion resulting from localisation of the natural resources. Examples of such distortions are available from Smaile's study on Northern England and Wales[17]. The theory also assumes a uniform distribution of pupulation. But this is absent in practice since the factors upon which population density depends, such as, topography, soil fertility and climate, vary markedly from place to place and distorts the regular picture. Patel has shown the difficulty of trying Christaller central place theory in Bangladesh as the population is far from uniform[18]. Similar examples could be found from many regions.

---

16. John B. Parr, and Kenneth G. Denike, "Theoretical Problems in Central Place Analysis", Economic Geography, vol. 46, No. 4, October 1970, pp 568-586.

17. A.E.Smailes, "The Urban Hierarchy in England and Wales", Geography, vol. 29, 1944, pp 41-51.

18. M.M. Patel, "Rural Markets in Rajshahi - East Pakistan", Oriental Geographer, July, 1963, pp 121-140.

Another assumption of this theory is that consumers will act rationally and visit the nearest centre for essential service activity, giving rise to optimal hinterlands. Several factors specially the impact of multi-purpose trips to a centre, may undermine this assumption leading to overlapping market areas. Central place theory has also been citicised from time to time for its apparently static and descriptive approach. It identifies the relationship between centres and hinterlands at one point in time thus ignoring the constant state of change.

Technical criticism of the theory lies with the problems of ranking central places. Actual identification of central places and the choice of oriteria in ranking face dual problems. Different ranking methods (numerical counts of the number of retail shops in a centre, the identification of key facilities and the ranking of the centres according to the number they possessed, potential customer's flow) result in different ranking of central places.

2.1.4 Central Place Theory's Relevance to Planning Spatial Organisation:

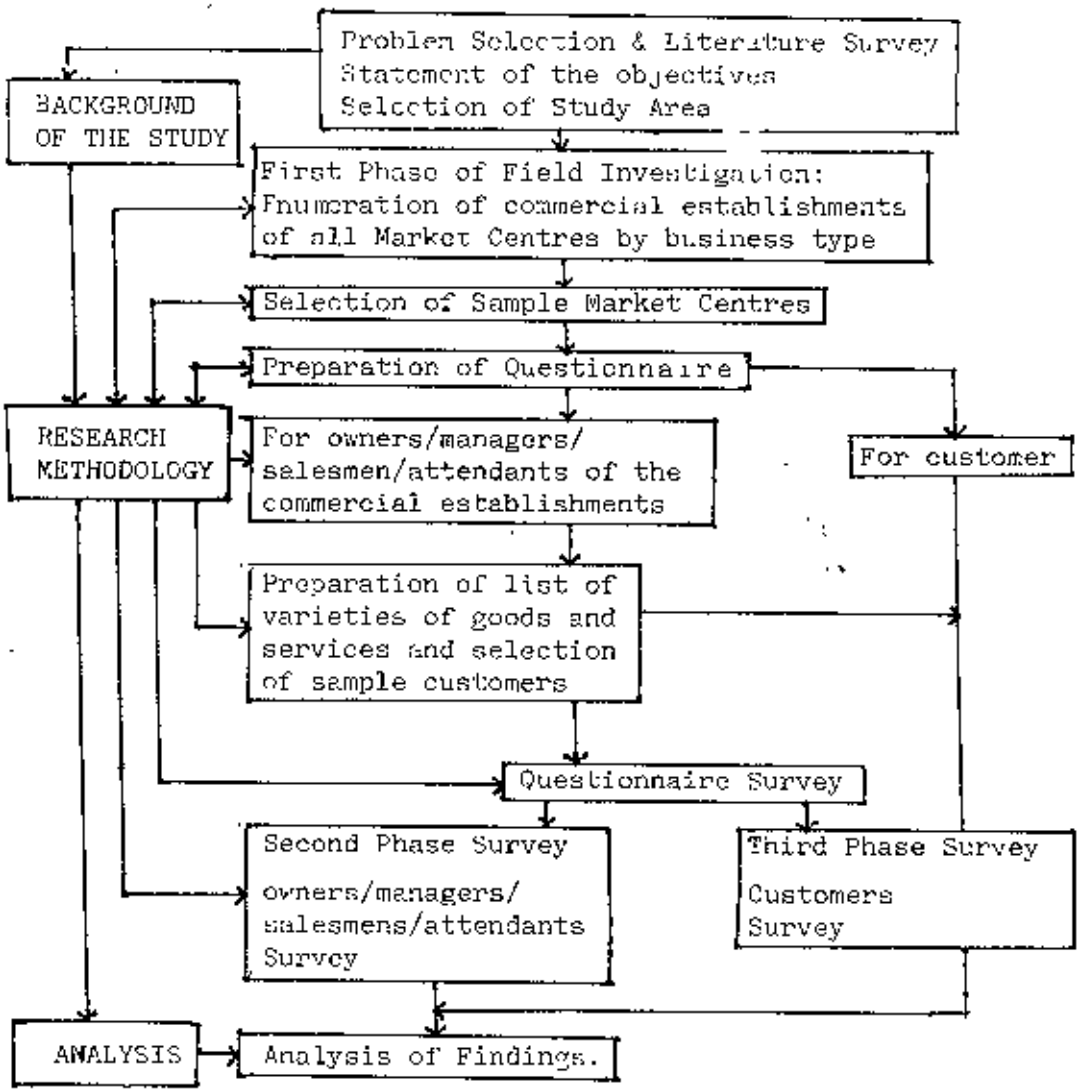
Many studies on central place theory have concluded that central place hierarchy is a fundamental feature of the geographic organisation of economic life. Empirical regularities emphasised by these investigations include (1) a hierarchy of urban centres and market centres within cities; (2) trade areas encompassing similar total demands for centres at any given level of the hierarchy; (3) nesting of lower order trade areas within the trade areas of centres occupying higher levels of the hierarchy; (4) even spacing of centres of the same level where the major economic base of these centres consists of central place functions. Central place theory using the concepts of range and threshold, provides an explanation for these regularities and a clear statement of the relationships between them and the spatial structure which, together, they create.

This kind of study is not of academic interest only; it may help to solve practical locational problems for central services a businessman who has decided on the level of the service for his business should be aware of the fact that the optional locations for his enterprise are of a limited number already defined by the number of existing or potential centres. The city planner who is developing new neighbourhoods will have to bear in mind the importance of a well laid-out street system focusing at a specific centre, while also thinking of the relationship between the population of the future neighbourhood and the size of the corresponding business district. Well established business districts reflect the interest of the customer as well as of the businessmen. As such one enjoys the advantages of a short distance from home to shop, multiple purpose shopping at the same centre, as well as a large choice and keen competition; the other profits by the largest possible number of potential customers.

CHAPTER III

3.1 An overall view of the research design and methodology for normal work procedur in order to accomplish the present study has been presented in the flow chart (Fig.3.1A) The explanation of the various steps of the flow chart follows systematically thereafter.

FLOW CHART OF RESEARCH DESIGN AND METHODOLOGY. (Fig. 3.1.A).



3.2 Methodology of the Study:

The study encompasses the literature survey and field survey. The literature survey includes the published and unpublished materials of the local studies as well as published materials from broad. The survey encompasses purposive sampling procedure to accomplish the task.

3.2.1 Literature Survey:

Survey of literature was undertaken for better understanding of the problem under consideration.

(a) Literature Survey on Local Studies: The survey of all possible local studies was made to trace the development and pattern of market centre system in Dacca City. But there was no such study available on the very problem; the location of market centres and their zone of influence. However, some related studies were found useful[1].

(b) Literature Survey on Studies Abroad: A brief literature survey of some available studies outside Bangladesh was done. The objective of this literature survey was to evaluate the modern techniques in studying the locational pattern of public facilities in general and market centres or commercial central places in particular. The literature survey concerned the studies on locational problems in both oriental and occidental cities. The studies available on oriental cities regarding problem of central commercial functions or centrality study of market centres, however, were very limited. Some journals, periodicals and research monographs and reports available at the local libraries were found useful.

---

1. Khairul Islam Mollah,"Commercial Structure of Dacca City With Special Reference to Retailing", Unpublished Master Degree Dissertation, Department of Geography, Dacca University, Dacca, 1975; Nazrul Islam and Amanatullan Khan, "Business Complex at Nayabazar: A Feasibility Study", Centre for Urban Studies, Department of Geography, Dacca University, Dacca, 1975; Nazrul Islam and Amanatullah Khan,"Socio-Economic Survey" For Malibagh Shopping Complex", Centre for Urban Studies, Department of Geography, Dacca University, Dacca, 1975.

3.2.2 Methodology of the Survey:

To achieve the objectives of the study, several field surveys were conducted as no other available sources could supply the necessary information. The field investigations were conducted in three phases. The first phase concentrates mainly on identifying the market centres, counting the total number of establishments and listing the varities of goods and services of most of the identified market centres (Appendix-1) by direct observations with the help of a group of 10 field investigators*. It is found that there are as many as 41 market centres within Dacca Municipal area. The total number of establishment in the 41 market centres works out to be 11,463. The average number of establishment per market centres is 280. The average number of establishments however, does not reflect the true picture of the market centres. The total number of establishments of these market centres vary from 21 to 1,493 in number in Sher-e-Bangla Nagar and New Market (including Noor Mansion, Gawsia Market and Hawkers' Corner) respectively (Table 3.1).

The second phase of the field investigation concentrates mainly on the questionnaire survey for owners/managers/salesmen/-attendants. The questionnaire was designed to collect information, among others, about the goods and services offered by them. This phase of the field investigation was performed in the following manner:

The information so far collected in the first phase of the field survey was tabulated. The total number of establishments of the market centres was arranged in descending order to stratify them into different categories for the convenience of the second and third phases of the survey. This stratification of the market centres was based mainly on the two studies done by Berry and Carrol.

---

* Some of the market centres were identified in the previous study "Commercial Structure of Dacca City with special Reference to Retailing" Op.Cit.

All the market centres were classified into 4 strata (Table 3.2) viz.

(i) Central Market Centres;

(ii) Regional Market Centres;

(iii) Community Market Centres;

(iv) Neighbourhood and local Market Centres.

The name of the sample market centres, the total number of establishments of the corresponding sample market centres, and the total number of sample establishments are available from the table 3.3 . The market centres are classified initially into strata in accordance with the size of the market centres. Thereafter the sample market centres are selected from the initial strata mainly on the basis of the total number of establishments in each of the market centres i.e. size of the market centres. As the total number of establishments of the different market centres are obtained from the complete ennumeration of all the market centres individually the total number of the selected market centres can easily be found from the list of the complete ennumeration. The total number of the sample establishments is nothing but the total of the every tenth establishments of the individual market centres rather than the 10 percent of the individual market centres.

Central Market Centres, Regional Market Centres, community market centres and neighbourhood and local market centres are the different types of the market centres. The selected market centres are comprised of the centres having the greater number of establishments upto fifth place in the individual market centres. New market, Baitul mukarram, Chawak bazar, Nawabpur and Islampur constitute the central market centres. Mitford road, Moulavi bazar, Naya bazar, Imamganj, and Patuatully constitute the regional market centres. Siddheshwari and Malibagh node,

Farmgate, Green Super market, Mohammadpur nodal area, New Eskaton and Airport road form the community market centres, Bayer Bazar Tannery Corner, Laxmi Bazar, Polwel market, Bashabari Lane and Lalbagh nodal area are the main market centres at the Neighbourhood and Local market centres (Table 3.3).

The total number of establishments and the total number of sample establishments go together. It needs to be mentioned here that the sample establishment is nothing but the total of every tenth establishments of the individual market centre among the various types of the market centres.

It is also found from the table 3.4 that the share of the central market centres among the total market centres is 61 percent whereas that of the regional market centres is 26 percent. The rest confined 13 percent of the total market centres are entrusted with the community market centres and neighbourhood and local market centres.

The classification of the market centres into different classes was done purposively. Similar purposive classification was made by Hans Carrol in his study on Zurich city in Switzerland[2]. The first five market centres from each stratum (arranged in the descending order) were selected for the second phase of the survey. As such the biggest market centres from each stratum became sampling units for the purpose of the second phase of the survey. The total sampling units which cover 50 percent of the total 41 market centres of the

---

2. Hans Carrol, "The Hierarchy of Central Function within the City", Annals of the Association of American Geographer, Vol. 50, 1960, pp 419-438.

Table 3.1 LIST OF ESTABLISHMENTS IN MARKET CENTERS

Name of Market Centre	Total number of establishment.
1. New Market	1493
2. Baitul Mukarram Complex	1057
3. Chawkbazar	1035
4. Nawabpur Road	951
5. Islampur	909
6. Sadarghat	761
7. Mitford Road.	706
8. Moulvibazar	461
9. Nayabazar	372
10. Imamganj	370
11. Patuatully	360
12. North Brook Hall Road	315
13. Kazi Allauddin Road	278
14. Bangla Bazar	231
15. Elephant Road	230
16. Siddheshwari and Malibagh Node	183
17. Farmgate	176
18. Green Super Market	156
19. Mohammadpur Nodal Area	154
20. New Eskaton and Airport Road	154

1. New Market includes Gawsia Market, Noor Manson and Hawkers Corner.
2. Baitul Mukarram complex includes Stadium Market, Banga Bandhu Avenue, and Pamna Bhaban.
3. Siddheshwari and Malibagh Node includes Mouchak Market.
4. New Eskaton and Airport Road includes Johura Market and Bangla Motor area.

21.	Aulad Hossain Lane	106
22.	Mohammadpur Town Hall Market	100
23.	Rayer Bazar Tannery Corner	99
24.	Laxmi Bazar	92
25.	Polwel Market	64
26.	Bashabari Lane	64
27.	Lalbagh Nodal Area	59
28.	Malibagh Node	60
29.	Gulistan Hawkers Market	53
30.	Maghbazar Wireless	53
31.	Maghbazar Node	50
32.	Uttara Market	44
33	Nayan Market	37
34.	Postogola Market	37
35.	Nawabganj and Nilambar Shaha Road.	31
36.	Janata Market	31
37.	Shahbagh Avenue	30
38.	Noor Estate	27
39.	Khurshid Mahal	25
40.	DIT Super Market	24
41.	Sher-e-Bangla Nagar Govt. Market	21
		11,463

Table 3.2 LIST OF MARKET CENTRES AND THEIR ESTABLISHMENTS

Name of Market Centres	Total number of Establishments.
A. Central Market Centres	
1. New Market	1493
2. Baitul Mukarram	1057
3. Chawkbazar	1035
4. Nawabpur Road	951
5. Islampur	909
6. Sadarghat	761
B. Regional Market Centres	
7. Mitford Road	706
8. Moulvibazar	461
9. Nayabazar	372
10. Imamganj	370
11. Patuatully	360
12. North Brook Hall Road	315
13. Kazi Alauddin Road	278
14. Bangla Bazar	231
15. Elephant Road	230
C. Community Market Centres	
16. Siddheshwari and Malibagh node	183
17. Farmgate	176
18. Green Super Market	156
19. Mohammadpur Nodal Area	154
20. New Eskaton and Airport Road	154
21. Aulad Hossain Lane	106
22. Mohammadpur Town Hall Market	100

Contd...P/30

Name of Market Centres	Total number of Establishments.
D. Neighbourhood and Local Market Centres	
23. Bayer Bazar Tannery corner	99
24. Laxmi Bazar	92
25. Polwel Market	64
26. Basabari Lane	64
27. Lalbagh Nodal Area	60
28. Malibagh Node	59
29. Gulistan Hawkers Market	53
30. Maghbazar Wireless	53
31. Maghbazar Node	50
32. Uttara Market	44
33. Nayan Market	37
34. Postogola Market	37
35. Nawabganj and Nilambar Shah Road	31
36. Janata Market	31
37. Shahbagh Avenue	30
38. Noor Estate	27
39. Khurshid Mahal	25
40. DIT Super Market	24
41. Sher-e-Bangla Nagar Govt. Market	21

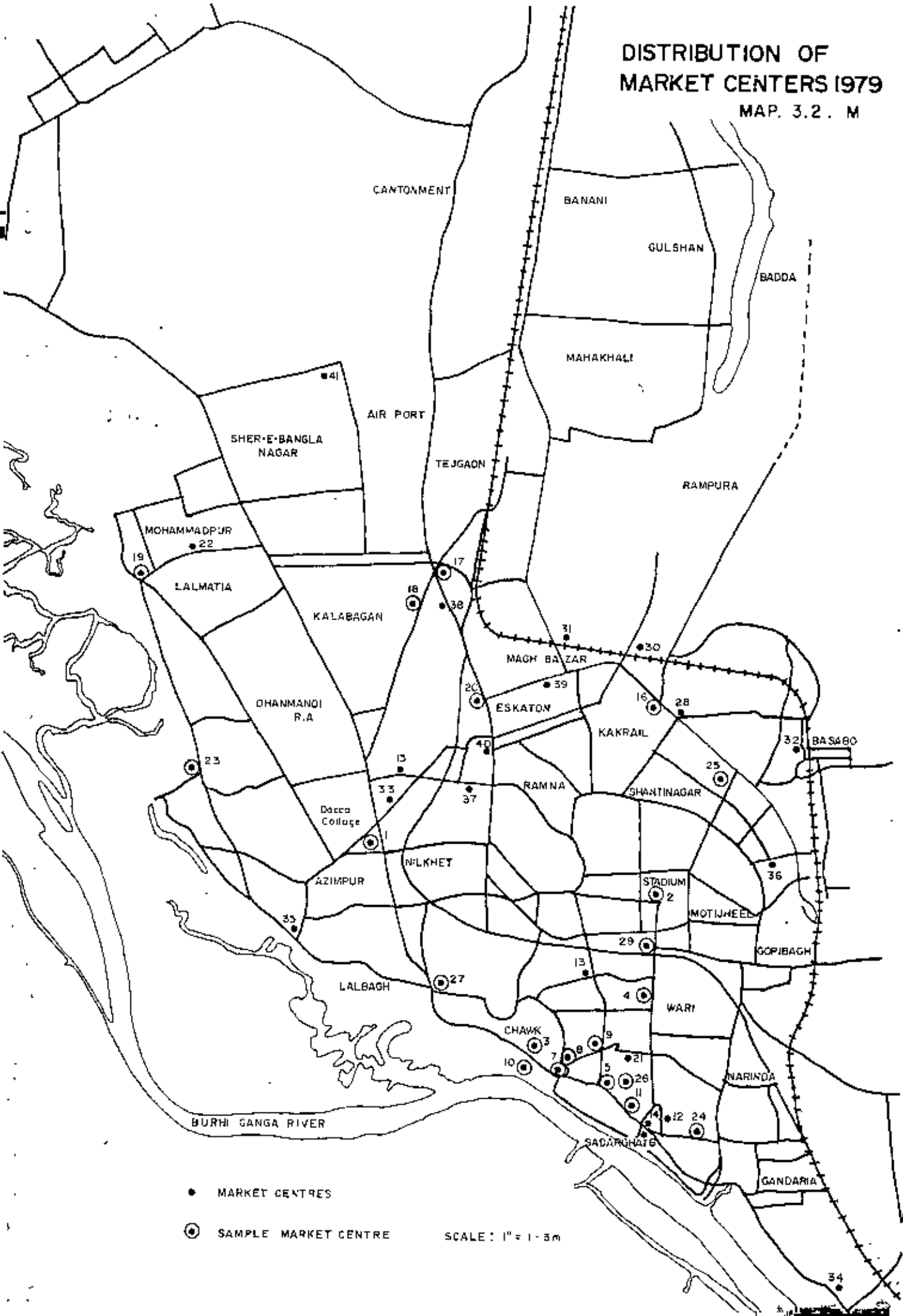

DISTRIBUTION OF
MARKET CENTERS 1979
MAP. 3.2 . M
CANTONMENT
BANANI
GULSHAN
BADDA
MAHAKHALI
AIR PORT
SHER-E-BANGLA NAGAR
TEJGAON
RAMPURA
MOHAMMADPUR
LALMATIA
KALABAGAN
MAGH BAZAR
ESKATON
KAKRAIL
BASABO
DHANMANDI R.A
RAMNA
SHANTINAGAR
Dacca College
NILKHET
AZIMPUR
STADIUM
MOTIJHEEL
GOPIBAGH
LALBAGH
WARI
CHAWK
NARINDA
BURHI GANGA RIVER
SADARGHAT
GANDARIA
MARKET CENTRES
SAMPLE MARKET CENTRE
SCALE : 1" = 1·3m

Table 3.3 LIST OF SAMPLE MARKET CENTRES.

Types of Market Centres	Total number of Establishments	Total number of Sample Establishments
1. Central Market Centres	(5,445)	(542)
i. New Market	1493	149
ii. Baitul Mukarram	1057	105
iii. Chawkbazar	1035	103
iv. Nawabpur Road	951	95
v. Islampur	909	90
2. Regional Market Centres	(2,269)	(226)
i. Mitford Road	706	70
ii. Moulavi Bazar	461	46
iii. Nayabazar	372	37
iv. Imamganj	370	37
v. Patuatully	360	36
3. Community Market Centres	(823)	(80)
i. Siddheshwari and Malibagh node	183	18
ii. Farmgate	176	17
iii. Green Super Market	156	15
iv. Mohammadpur Nodal Area	154	15
v. New Eskaton and Airport Road	154	15
4. Neighbourhood and Local Market Centres	(379)	(36)
i. Rayer Bazar Tannery Corner	99	9
ii. Laxmi Bazar	92	9
iii. Polwel Market	64	6
iv. Basabari Lane	64	6
v. Lalbagh Nodal Area	60	6
Total	8,916	884

Table 3.4 ESTABLISHMENTS IN THE CLASSIFIED MARKET CENTRES

Types of Market Centre	Total No. of Establishments	Total number of Sample Establishment	Percentage of Sample Establishment
i. Central Market Centres	5445	542	61.31
ii. Rational Market Centres	2269	226	25.57
iii. Community Market Centres	823	80	9.05
iv. Neighbourhood and Local Market Centres	379	36	4.07
Total*	8,916	884	100.00

* Every tenth establishment of the different market centres might not be equal to the corresponding 10 percent of sample establishments because the total number of sample establishment is found out from the individual market centre.

Dacca Municipal area works out to be 20. The total number of establishment of these 20 markets centres is 8,916. Starting from the beginning the total of every tenth establishment of each of the 20 market centres included in the samples was taken for the purpose of the owners'/managers'/salesmen'/attendants' survey. Therefore, the total number of sample establishments works out to be 884. The survey for the owners/managers'/salesmen attendants'/ was performed systematically by taking every tenth establishment of each of the market centres. Among others, the peak hours of the peak day of the week was collected from the second phase of the survey to facilitate the third phase of the survey (see Appendix-2).

The third phase of the survey concentrated mainly on a questionnaire survey for the customers of the different types of establishments in the said 20 market centres (see Appendix-3). The types of establishments are numbers in cases of cent percent retail market centres. But the types of establishments are mostly confined to some product specification only in cases of other market centres. Two customers from two establishments of specific type were interviewed in the peak hours of the peak day of the week for the purpose of the collection of the desired information. Therefore, the customers interviewed depended on the types of the establishments present in the market centres, rather than their size (number of establishments) The total number of customers interviewed was 714. They have been studied in the latter stage

3.3 Limitation of the Study:

Admittedly, the objectives of the study in ralation to the multiple dimensions of the real problems are quite modest and limited in scope. Nevertheless, the findings of the study will, hopefully add to the knowledge and practice in planning and development of new market centres and balancing, modernisation, replacement and extension of the existing market centres, according to the public need in the city of Dacca.

The collection of most of the materials was however, performed during the first half of the study period. There are hardly any published or unpublished materials available related to the locational problems of market centres and their zone of influence in Bangladesh. The study was therefore, based on the field investigation. The design of the survey for the accomplishment of the study was made in the first half of the study period. Immediately after the design of the survey, the survey was conducted. Collected information was subsequently tabulated, analysed and interpreted to help to identify the study problems. In get ing reliable information about the present intra-urban market centres and their zone of influence, some of the owners'/managers'/attendants'/ salesmen of different establishments were interviewed. Most of them were illiterate. The illiteracy becomes one of the main causes of the poor returns[3] of information contained in the questionnaire. This, however, limits our study to a great extent.

Non-availability of skilled investigators for a short span of time limited the study to great extent. The author however, tried to acquire best investigators from research organisations but yet their performance in collecting data was not quite satisfactory. The collected information from the survey was tabulated manually by the tabulators in accordance with the format designed by the author. The tables were subsequently analysed and interpreted to achieve our objectives. In this processing a great deal of time was involved.

As the study is based mainly on the intensive field survey it is rather wise to admit that both the sampling and non-sampling errors are included in the study. The presence of non-sampling errors may be much higher than that of the sampling errors mainly because of the nature of the study. The probable sources of the sampling and non-sampling errors are discussed as under:-

---

3. Extracting information from respondents is a very difficult task as they have got their own value judgement.

Sampling errors: Sampling errors are introduced in the study by the sampling itself. Sampling errors are the difference between the estimated values and the true values of the characteristics, i.e., the difference between the sample results and the results of the complete count. The true values of the characteristics of the complete count remains the same although the estimated values may be different for samples from the sample population if it is done repeatedly. The latter phenomenon is known as sampling fluctuations. In a purposive sampling the magnitude of sampling errors are impossible to obtain as the sampling is not based on probability .

Non-sampling Errors: A complete enumeration provides the true values of the characteristics. Thus there will be no sampling fluctuations although there will remain the element of non-sampling errors. Non-sampling error arises both in sample survey and complete census. Non-sampling errors are introduced by enumerators, tabulators and the like personnel working in these surveys. It clearly indicates that non-sampling error arises out of a host of causes such as initial design of the survey through questionnaire framing, field operations, processing, tabulation, presentation and interpretation. Besides, non-sampling errors may be introduced by non-response or the respondents.

Some of the non-sampling errors can be reduced by careful Planning and execution of the survey. An attempt is however, made to keep the non-sampling errors to a minimum. Recruitment of qualified and experienced personnel and thereafter intensive training helps in reducing non-sampling errors to a great extent. The individual investigator exercises his judgement in selecting the sample keeping in view the characteristics under investigation. This element of judgement automatically brings in the chance of personnel bias in the selection of sampling.

---

4. The most commonly used device to estimate the extent of sampling fluctuation is the standard errors. The estimate is used only when the sampling is based only on probability.

Clear knowledge about the characteristics and judgement of the personnel help reducing the sampling errors to a certain extent. Thus the errors, sampling and non-sampling relating to the study have been reduced to the practicable minimum.

CHAPTER IV

4. STUDY AREA AND ITS CENTRAL PLACES

In considering the effectiveness of the existing market centres of the Dacca municipal area, one must take into consideration those factors which directly or indirectly influence the proper and effective utilisation of the existing market centres. Some of the important factors have been taken into consideration for the present study. They are viz. floor location of commercial establishments, types of the commercial establishments, occupancy type of the establishments, size and rent structure of establishments, investment and employment position of the establishments, and buying and selling of goods and services by the establishments of the market centres under study.

Besides, the general characteristics of the market centres are given importance in this section. Therefore, the general characteristics of the central places has been analysed from the point of view of the different characteristics.

All the above mentioned factors affecting the effectiveness of the existing market centres have been elaborately discussed below mainly because of their intimate relationship with the market centres.

4.1 Floor Location of the Commercial Establishments :

Information sheets of the second phase survey differentiated between ground floor and upper floor building uses of the market centres. Upper floor includes the first and the second floor only as there is no market centres available at third floor.

Table - 4.1.1 TYPES OF FLOOR LOCATION OF THE COMMERCIAL ESTABLISHMENTS.

Types of Floor Location	Number of Establishments	Percentage
Ground floor	832	94.12
First floor	34	3.85
Second floor	1	0.11
No response	17	1.92
TOTAL =	884	100.00

Table shows that more than 94 percent of the total establishments are located at the ground floor of the market centres. Only an insignificant proportion of the total establishments is found in the second floor. In 12 out of the 20 market centres, all the establishments are found located at the ground floor. In other 8 marketcentres some of the establishments are found in the first floor although small in numbers.

Table - 4.1.2 INTENSITY OF GROUND FLOOR LOCATION IN THE MARKET CENTRES

Ground floor location (Percentage)	Number of Market centres	Name of the market centrs
Below 20	-	-
20 - 60	2	Islampur, Greensuper Market
60 - 100	6	New Market, Mitford Rd., Farm Gate, Nawabpur, Baitu Mukarram, Chawk Bazar,

Minimum percentage figures at ground floor location however, indicate that floor location of maximum establishments of those market centres are located at the first and or second floor. The table, however, indicates that lowest number of establishments are located on the ground floor at Green Super Market and Islampur.

4.2 Building Structure Available in the Market Centres:

Market centres under study possess single, double and multi-storied buildings at their capacity. As such establishments could be situated even at the upper floor of buildings available at the market centres.

Table - 4.2.1 BUILDING STRUCTURE AVAILABLE AT THE MARKET CENTRES

Types of Buildings	Number of Establishments	Percentage
Single Storied	410	46.38
Double Storied	259	29.30
Multi - storied	215	24.32
No response	-	-
TOTAL	884	100.00

The Table shows that about 46 percent of the total establishments are situated in single storied buildings of the market centres. The percentage of establishments situated in the double and multi-storied buildings are not insignificant.

The survey reveals that all the establishments of the 9 market centres are situated in the single storied buildings whereas all establishments of the 1 market centre (Green Super Market) are in the multi-storied building. In all the rest 10 market centres, there are establishments with different combinations of the different types of buildings. The share of single storied building in those 10 market centres can be found out as under :

Table - 4.2.2 INTENSITY OF SINGLE STORIED BUILDING

Single Storied (In Percentage)	Number of Market Centres	Name of the Market Centres
Below 20	2	Baitul Mukarram, Siddeswari & Malibagh
20 - 60	6	Mitford Rd, Patuatuly, Islampur, Chawkbazar, Nawabpur and New Market
60 - 100	2	New Eskaton and Airport Rd., Imamganj.

The minimum percentage of single storied building indicates that there are a maximum number of double and or multi-storied buildings in those market centres. They are found mostly at the Baitul Mukarram, Siddeswari and Malibagh node.

4.3 Set up of Establishments in the Passage of Time:

Market centres especially in the Dacca city have been growing with the passage of time. It has been growing either in the form of new market centres or in the form of extension of the existing ones. Extension of the existing market centres helps in increasing the size of establishments to cope with the changing need in the passage of time. Establishments grown in the passage of time has been shown as under:

Table - 4.3.1 SET UP OF ESTABLISHMENTS IN THE PASSAGE OF TIME

Year of establishment	Number of Establishments	Percentage
Upto 1947	8	0.90
1948-1970	340	38.46
1971-1979	498	56.34
No response	38	4.30
TOTAL	884	100.00

About 56 percent of the establishments were established immediately after the emergence of Bangladesh although 38 percent of the establishments were established during the Pakistan period. It needs to be mentioned that about 1 percent of the esteblishments were found which were established during the British period. These old establishments are found mostly in the old parts of the Dacca city, viz., Imamganj, Moulavi Bazar, Chawk Bazar, Mitford Road and Nawabpur Road. The remaining 15 market centres were found at the time of partition of the erstwhile Pakistan.

A major proportion of the establishments were established after the emergence of Bangladesh mainly because of the opening of new market centres, extension of the existing ones, change of the ownership pattern to the Bangladeshi owners from the non-Bangladeshi owners. The names of the new market centres opened after the emergence of Bangladesh are Green Super Market, New Eskaton and Airport Road. The extension and replacement of a number of establishments took place in most of the market centres excluding Laxmi Bazar. Significant extension and replacement took place at Siddeswari and Malibagh, Mitford Rd, Mohammadpur, Farm Gate, Polwell market, Moulavi Bazar etc.

4.4 Structure of Market Centres in Terms of Functional Entities:

The business types have been classified in accordance with the functional entities. The information sheets have been summarised and tabulated in the following manner. Single functional entities covering even 1 per cent of the total establishments are included in the table.

Table - 4.4.1 TYPES AND NUMBER OF COMMERCIAL ESTABLISHMENTS IN THE 20 MARKET CENTRES

	Types of Establishments	Number of Establishments	Percentage
1.	Saree & Cloth	112	12.67
2.	Medicine/drugs	76	8.60
3.	Variety Store*	57	66.45
4.	Garments	55	6.22
5.	Tailors	44	4.98
6.	Bakery & Confectionery	37	4.19
7.	Shoes	37	4.19
8.	Stationery	34	3.85
9.	Grocery	32	3.62
10.	Hardware	32	3.62
11.	Restaurants	26	2.94
12.	Watch & its repairing	21	2.38
13.	Crockery	21	2.38
14.	Electronics	20	2.26
15.	Sweetmeat	19	2.15
16.	Electrical goods	18	2.04
17.	Panbiri **	15	1.70
18.	Bedding	12	1.36
19.	Dry Cleaners	11	1.24
20.	Barber Shops	9	0.02
21.	Books	8	0.90
22.	Others	188	21.27
		884	100.00

Many types of establishments are found in different market centres. About 80 per cent of the total establishments are represented by the above mentioned 21 types of establishments wherein only 5 types of establishments account for 50 per cent. The 5 types of establishments are clothing (Saree & Cloth), medicine, variety store, garments and tailors.

* Variety store sells cosmatics, toys, antiques, gifts, fancy goods etc.

** Panbiri as a local term consist of two things - one 'Pan' means betal leaves and 'biri' means tobacco.

About 70 percent of the clothing establishments are found at New Market and Islampur whereas 76 percent of the medicine establishments are found at Mitford Road. About 60 percent of the variety stores are found at Chawk Bazar and Baitul Mukarram whereas 78 percent of the garments establishments are found at Chawk Bazar and New Market. New Market and Baitul Mukarram account for about 60 percent of the total tailoring establishments.

4.5 Trade Types of Establishments :

Establishments of 20 market centres are classified in accordance with the types of transactions. The types of transaction may be retail, wholesale and mixed in character. Direct transactions between sellers and consumers are known as retail trade type of establishments. Wholesale trade type of establishments is concerned with the direct transaction between the whole salers and retailers. A seller may perform the direct transaction both with the retailer and consumers at the same time. This type of establishments poses a mixed character in transactions and termed as mixed trade type establishment in the present study.

Table - 4.5.1 TRADE TYPES OF ESTABLISHMENTS

Types of Trade	Number of Establishments	Percentage
Retail	544	61.54
Wholesale	231	26.13
Mixed	89	10.07
No response	20	2.26
TOTAL =	884	100.00

The Table shows that about 61 percent of the establishments are exclusively retail in types. About 10 percent of the establishments

remains retail and whole sale together. The percentage of wholesale establishments worked out to be 26 percent although there is no market which is exclusively wholesale in character.

The survey reveals that there are 6 market centres exclusively retail in type. The remaining 14 market centres include all types of establishments e.g., retail, wholesale and mixed. A certain proportion of establishments in these 14 market centres may be classified as retail. Intensity of retail type of establishments among these market centres could be estimated from the table given below:

Table - 4.5.2 INTENSITY OF RETAIL TYPES OF ESTABLISHMENTS

Retail (In Percent)	Number of Market Centre	Name of Market Centres
Below 20	3	Mitford Road, Chawk Bazar, Imamganj.
20 - 60	5	Islampur, Bashabari Lane, Nawabpur, Patatully, Naya Bazar & Moulavi Bazar.
60 - 100	6	Baitul Mukarram, New Market, Farm Gate, New Eskaton & Airport Road, Rayer Bazar Tannery Corner.

The minimum percentage of retail establishments in market centres indicates that there are a maximum number of whole sale establishments in those market centres. Therefore, the maximum number of whole sale establishments are found at Mitford, Chawkbazar and Imamganj.

4.6 Types of occupancy of the Establishments:

Types of occupancy may be classified into rental and owned. The owners of establishments pay a certain amount of rent for the establishment of premises if they are not owned by the owner of the establishment. Types of occupancy of the establishments in the market centres are given hereunder :

Table - 4.6.1 TYPES OF OCCUPANCY OF THE ESTABLISHMENTS

Types of Occupancy	Number of Establishments	Percentage
Rental	715	80.88
Owned	152	17.20
No response	17	1.92
	884	100.00

About 81 percent of the establishments in the market centres are rented whereas 17 percent of the establishments are owned by the owner of the establishments.

The survey reveals that all establishments of the 8 market centres are exclusively rental. Some of the establishments of the remaining 12 market centres are rental whereas the others are owned. The proportionate share of the establishments in the rental group can be found out as under:

Table - 4.6.2 INTENSITY OF RENTAL TYPES OF ESTABLISHMENTS

Rental (In percentage)	Number of Market centres	Name of the market centre
Below 20	-	
20 - 60	3	Chawk Bazar, Imamganj & Payer Bazar Tannery Corner.
60 - 100	9	Islampur, Naya Bazar, Lalbagh, New Market, Moulav Bazar, Mohammad pur, Nawabpur, Farm Gate and Mitford Road

The lower percentage of rental cases in the market centres indicates that the maximum number of establishments in these market centres are owned by the owner of the establishments. Therefore it can be easily concluded that the maximum number of establishments of Chawk Bazar, Imamganj and Raver Bazar Tannery Corner are owned by the owner of the establishments.

4.7 Size of Establishments:

The size of the establishments depends on the nature of business types, availability of space at a given time, etc. The size of establishments vary even in the same market centres. The number of establishments within various size groups are tabulated in the following manner.

Table 4.7.1 SIZE OF ESTABLISHMENTS

Size in Square feet	Number of Establishments	Percentage
Below 250*	626	70.81
250 - 500	161	18.21
500 and Above	80	9.05
No response	17	1.92
TOTAL	884	100.00

The Table shows that the size of establishments of more than 70 percent of the establishments is below 250 square feet*. It reveals from the survey that no establishments in 6 market centres have a size of more than or equal to 500 square feet. All of the size of establishments of these 6 market centres are below 500 square feet. It needs to be mentioned that all establishments of 2 market centres namely Lalbagh and Chawk Bazar have a size of less than 250 square feet. On the other hand, proportionately large size of establishments are found at Baitul Mukarram, Green Super Market, Nawabpur, Imamgonj and Patuatully. About 83 percent of the total large size of establishments lies in these 6 market centres wherein Baitul Mukarram alone accounts for 33 percent of the total large-sized establishments.

* About 50.80 percent of the establishments have an area below 100 square feet.

4.8 Rent Structure of the Establishments

The monthly rent of the rented establishments were computed. The probable monthly rent of the owned establishments have also been taken into consideration. Thus the rents of the total establishments are tabulated excluding the "no response" information.

Table - 4.8.1 RENT STRUCTURE OF THE ESTABLISHMENT

Size of Rent (monthly) (in Tk.)	Number of Establishments	Percentage
Below 250	376	42.53
250 - 500	285	32.23
500 and Above	197	22.29
No response	26	2.94
TOTAL	884	100.00

Cases of "No response" information regarding rent worked out to be about 3 percent of the total sample establishments. The table reveals that about 42 percent of the total sample establishments fall in the rent group below Tk. 250. On the other extreme, about 22 percent of the sample establishment fall in the rent group of Tk 500 and above.

It is found from the survey returns that all establishments in 5 market centres do not fall on rent group of Tk 500 and above wherein all establishments in 1 market centre do not fall in rent group of even Tk 250-500. The name of the market centre is Nalbagh . On the other extreme, a large portion of the total establishments falls in the large rent group. The establishments of 5 market centres account for 85 percent of the total establishments of all the market centres in the large size rent group. The maximum number of establishments of Baitul Mukarram, New Market, Nawabpur, Imamganj and Farm Gate cover about 85 percent of the total establishments wherein Baitul Mukarram alone covers 41 percent.

4.9 Size of Investments in the Market Centres:

The collection of information relating to investment is a very difficult task. Most of the persons of the establishments feel irritated in answering this question because most of them probably maintain different systems of accounts for different purposes. About 20 percent of the establishments did not furnish us the information regarding investment. Some of them furnished all other information as in the questionnaire except the investment profile.

Table - 4.9.1 SIZE OF INVESTMENT IN THE MARKET CENTRES

Size of Investment (in Tk.)	Number of Establishments	Percentage
Below 10,000	172	19.46
10,000 - 50,000	302	34.16
50,000 & Above	235	26.58
Not Available	175	19.80
TOTAL	884	100.00

It is found from the table that about 20 percent of the investment of the establishments fell in the lowest investment group of below Tk 10,000 whereas about 27 percent of the establishment, fell in the highest investment group of Tk 50,000 & above.

Survey return reveals that no establishments from 3 market centres (Lalbagh, Bashabari and Rayer Bazar Tannery Corner) have largest investment of the investment group Tk 50,000 and above. It needs to be mentioned that no establishments of Lalbagh centre have even investment size group of Tk 10,000 - 50,000. It also reveals that establishments of the 6 market centres (Baitul Makarram, Nawabpur, New Market, Mitford Road, Islampur and Patuatully) account for 80 percent of total establishments having the largest investments of Tk 50,000 and above. It needs to be mentioned that no establishment of Green Super Markets, and New Eskaton and Airport road has lowest investment of Tk 10,000 and below.

4.10 Employment pattern in the Establishments

Size of employment varies with different types, size, etc. even in the same market centre. Average size of employment in all sample establishments of 20 market centres are shown below:

Table - 4.10.1 EMPLOYMENT PATTERN IN THE MARKET CENTRES

Employment Pattern.	Total Number of Establishments	Percentage
Family Labour only	203	22.96
1 - 2	353	39.93
3 - 6	252	28.51
7 & Above	58	6.56
No response	18	2.04
TOTAL	884	100.00

From the table it reveals that about 23 percent of the establishments did not employ any labour. They are running their establishments exclusively by family labour. In 40 percent of the total establishments there are 1 to 2 employees . Labour employment of 7 and above are also found in about 7 percent of the total establishments in these market centres.

The survey returns indicate that there are family labours in some establishments of the given market centres.It is found that in all establishments of 6 market centres there is employed labour.In the rest of the market centres there are some establishments which are run only by the family labour.

4.11 Self-Employment pattern in Establishments

The size of self-employment of family labour depended exclusively on the availability of gainful employment of family labour in the establishment on the one hand and employment generating capacity of the establishment on the other. The types of self-employment have been tabulated as under:

Table 4.11.1 SELF EMPLOYMENT IN ESTABLISHMENTS

Self - Employment (in number)	Total number of Establishments	Percentage
No self-employment	62	7.01
1	496	56.11
2 - 3	269	30.43
4 and above	39	4.41
No response	18	2.04
Total	884	100.00

It is here found that 7 percent of the extablishments are run entirely with hired labours. The owner partially manage the establishments wherein the reliable employed labours work for the owner. Self employment of only one family labour i.e., the owner is found managing the establishments of 56 percent of the total establishments 4 and more family member employees are found only in 4 percent of the establishments.

4.12 Purchasing of goods and services by the Establishments

The buying of goods and services from different places and selling them from their own establishments to different customers of the country and even abroad are the two main activities performed by establishments of the market centres. The table below gives an indication of the buying places of the goods and services they sell.

Table 4.12.1 BUYING OF THE GOODS AND SERVICES BY THE ESTABLISHMENTS

Buying Place	Total number of Establishments	Percentage
Within Dacca Municipal Area	572	64.71
Outside the Municipal area but within the district	100	11.31
Outside District	160	18.10
Abroad	30	3.39
No response	22	2.49
Total	884	100.00

The Table shows that about 65 percent of the establishments acquire their goods and services exclusively from the Dacca Municipal area whereas the same from abroad works out to 3 percent. About 29 percent of the establishments acquire goods and services from outside the Dacca Municipal area and outside the Dacca District.

The survey reveals that the maximum proportion of the goods and services are acquired from Mitford Road, Chawk Bazar, Imamganj for reselling purposes.

4.13 Selling of goods and services by the Establishments

Customers of different areas are purchasing the goods and services offered by establishments of different market centres. The selling of goods and services to the customers according to the answers of the owners/managers/attendants/salesmen of different places are noted as under. The terms local, All Dacca and All Bangladesh have been termed by themselves.

Table 4.13.1 SELLING OF GOODS AND SERVICES

	Number of Establishments	Percentage
Local	336	38.01
All Dacca	202	22.85
All Bangladesh	319	36.09
Others	27	3.05
Total	884	100.00

The table shows that 38 percent of the establishment of the 20 market centres have been selling their goods and services at the local level. Selling of goods and services by 23 and 36 percent of the total establishments is being performed to All Dacca and All Bangladesh respectively.

CHAPTER V

5. HIERARCHICAL CLASSIFICATION OF CENTRAL PLACES.

The hierarchical classification of central places of the Dacca City may be attempted in accordance with the service area, variety of goods and services and the total number of commercial establishments of the market centres. The analyses about the hierarchical classification of market centres of Dacca City are limited to only 11 centres among the 20 sample market centres in this study because the scope of the thesis permits to include only the intra-urban market centres. This study is, therefore, limited to only 11 intra-urban market centres, which have been found to be pure retail nucleations. The other market centres are wholesale in nature. The wholesale market centres serve the consumers all over Bangladesh i.e., consumers are found coming from every district of Bangladesh. These wholesale centers may be termed as specilised centres . The Chawkbazar, Nawabpur Road, Islampur Road, Mitford Road, Moulvi Bazar, Nayabazar, Imamgonj, Patuatully and Bashabari lane fall under the group of specialised centres.

Almost all the retail centres in the city of Dacca depend upon the wholesale or specialised centres. The analyses of the hierarchical classifications of the market centres, therefore, concentrates only on the 11 pure retail market centres. New Market, Baitul Mukarram Complex, Green Super Market, Farmgate, Siddeswari and Malibagh Node, New Eskaton and Airport Road, Polwell Market, Bayer Bazar Tannery corner, Lalbagh Node, Mohammadpur Nodal Area and Laxmi Bazar constitute the pure retail market centres of the Dacca City. The retail market centres of the Dacca City are characterised by the following land use features :

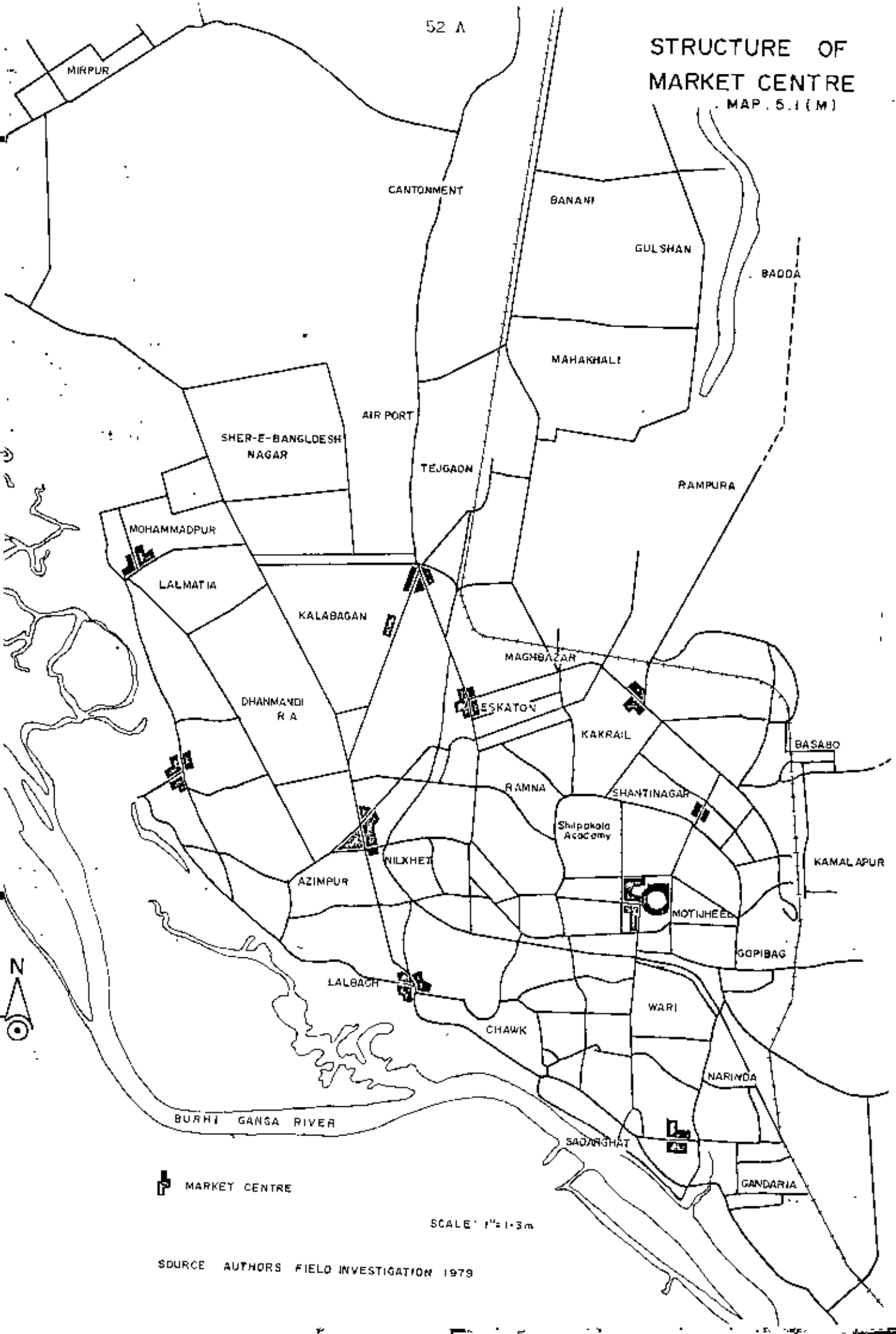
i. There is a central core market;
(such as in the case of New Market Retail Centres, the central market is the planned Government New Market)

ii. There is one or more subsidiary retail concentration around the central core;
(such as in the above case,Gausia Market, Noor Mansion,Hawkers Corners etc. are the subsidiary to the central core market)

iii. There is one or more major thoroughfares run through these retail market centres separating the central core market and the subsidiary market. (such as in the above case, Mirpur Road and Old Elephant Road cut through the central core and the subsidiary market).

STRUCTURE OF MARKET CENTRE

MAP. 5.1 (M)



SOURCE AUTHORS FIELD INVESTIGATION 1979

5.1 THE MODEL : HIERARCHICAL CLASSIFICATION OF CENTRAL PLACES

The most comprehensive study on classification of intra-urban central places was undertaken by Berry[1] and Carol[2] who had developed theoretical support for the various classes of commmercial market centres for hierarchical classification . Besides, they differentiated between contrasting classes of compact retail nucleations or centres, linear dispersal in ribbon developments and specialized functional areas. They have, however, showed that the only retail centres alone may be classified into a hierarchical order in accordance with the description of settlement in the central place.theory. The retail centres serve predominantly localized nearby trade areas whilst specialized centres attract a selected group of special purpose motivated consumers who will seek them out in whatever location to achieve the maximum advantage of comparative shopping or to get benefit from the increased range of services where the large scale aggregation is available. There are problems in trying to relate these concepts to the structure of retail centres in Bangladeshi cities. The development of the structure of commercial activities in Dacca city is largely emerging after the liberation in 1971. The structure of the market centre for the commercial activities of the cities in Bangladesh are not so developed as in the Western cities like Chicago and Zurich in America and Europe respectively. Therefore, it may not be possible to recognize the hierarchical classification of American and European centres in toto (identified by Berry and Control) to Dacca's retail market centres at this stage . Besides, the present low-level of hierarchical scale for centres of Dacca city do not fit for scale for the centres of Chicago and Zurich. Yet an attempt has been made to relate their hierarchical classification to the present study.

---

1. Brian J.L. Berry, Commercial Structure and Commmercial Blight: Chicago, University of Chicago Press, 1963, P. 24.
2. Hans Carol, Opcit, p. 422.

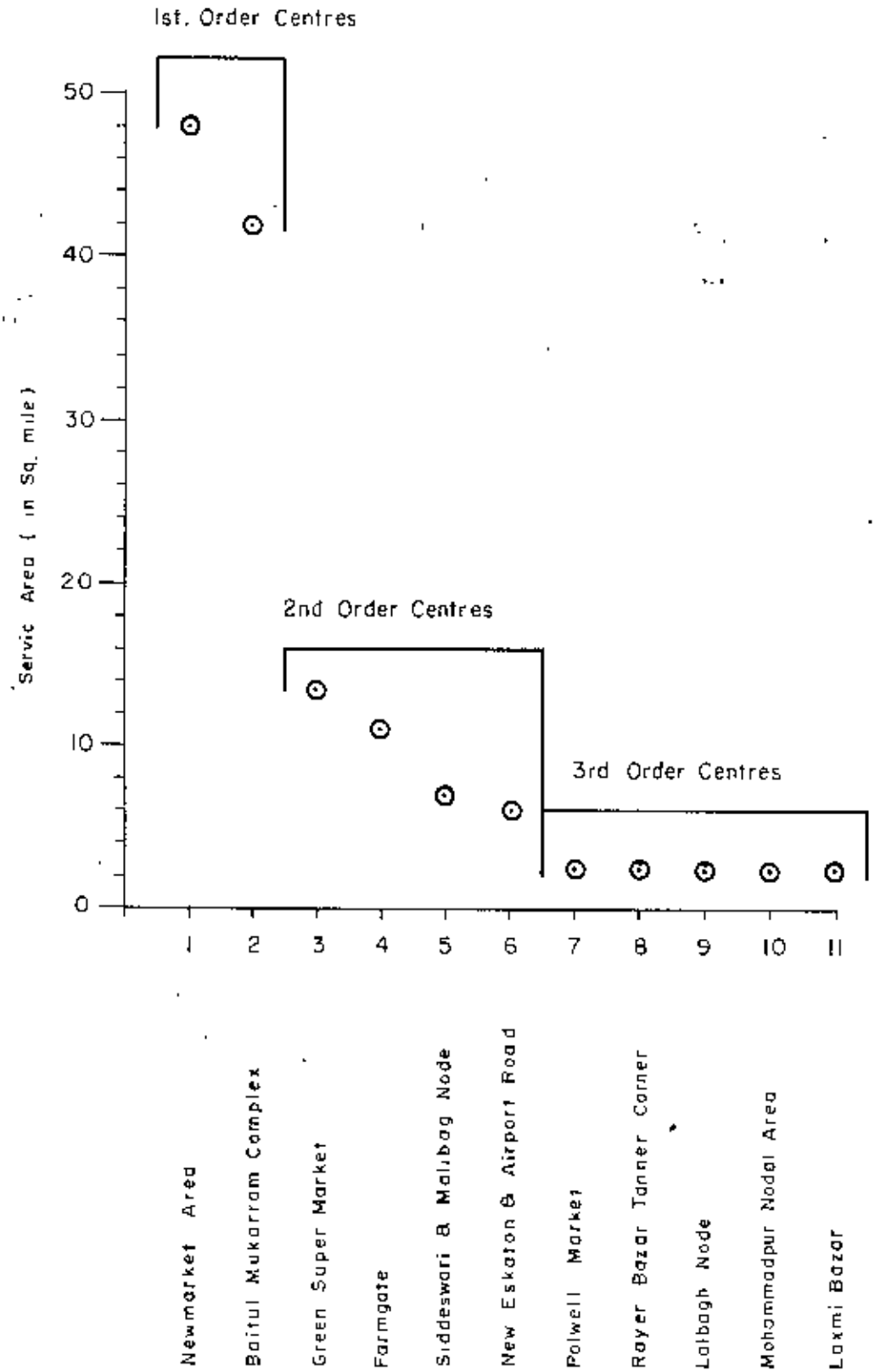
A model relating to the hierarchical classification of the pure retail market centres has been put forward by the present author in accordance with the hierarchical model developed by Berry J.L. Brian and Hans Carol. The retail market centres of the Dacca City has been classified into the first, second and third hierarchical order centres. This classification depends mostly on the zone of influence or service area. The first order centre or central market centre serves the whole city and its surrounding areas or atleast 75 percent of the city area. The second hierarchical order centre or the regional market centre mainly covers a parti ular section of the city composed of one or more community areas. The area covered does not exceed more than one-third of the whole city. The third order or the lowest hierarchical order centre is the local and neighbourhood market centre which serves primarily one or more locality or neighbourhood. The area served is not more than 10 percent of the city area.

There are two distinct hierarchical order, namely, lowest and low order centres in the scale for American and Zurich cities. But in Bangladesh such a significant difference is not available between local (lowest order) centre and neighbourhood (low order) centre. None of the centres, in Bangladesh, serves only one locality or only one neighbourhood. But only the cluster stores or corner shops serve individually their own locality or neighbourhood. That is why the local centre and neighbourhood centre have been classified in the same hierarchical order in the presented hierarchical model. The regional market centre has been classified as second hierarchical order in the similar pattern as presented by Carol whereas that of first order centre is classified in the similar pattern as presented by carol.(Fig.5.1.1.A).

Fig. 5.1.1A THE HIERARCHY OF CENTRAL PLACES

General Hierarchy	Special Hierarchies for Intra-Urban Central Places		
	Berry Scale for Centres of American Cities	Carol Scale for centres of Zurich	Sabita Scale for centres of Dacc
1. Lowest order	Local Centre	Local Business District	Local and Neighbourhood Market Centre
2. Low order	Neighbourhood Centre	Neighbourhood Business District	
3. Middle order	Community Centre	Regional Business District	Regional Market Centre
4. High order	Regional Centre		
5. Higher order	Metropolitan Centre	Central Business District	Central Market centre
6. Highest order	Super Metropolitan Centre	-	-

FIG. 5.2.1 A. HIERARCHY OF CENTRAL PLACES



5.2 Hierarchy of Central Place in Terms of Service Area

This part of the present study analyses the service area (1). The service areas are the areas or localities having direct commercial or business contact of varying degrees.

The commercial centres or the market centres are divided into three hierarchical groups in accordance with their service area. This classification is put forth in accordance with the aforementioned model (Fig - 5.1.1.A) . It is found from the results of the survey that the 11 market centres draw their customers from three distinct distance groups in between the intra-urban Dacca city. Among these hierarchical groups, the between - group differences are larger than the within-group variance. The three groups may be distinguished from the following figure (Fig.5.2.1A). In order to test the hierarchical groups of the centres interms of service area an analysis of distance and location of the consumers place of residence from the market centres was carried out for the variety of goods and services. The places of residence of the customers in relation to the market centres were plotted on the base map(map 5.2.1m An isopleth line has been drawn by joining the plotted dots on the same base map and the service area has been calculated into square mile. This would , however, helps in allocating the number of market centres within each level of centre which is shown below :

Classification of Market Centres:

Order of the Group of Market Centres	Name of the Group of Market Centres	Number of Centres	Name of the Market Centres
Ist order	Central Market Centre	2	1. New Market 2. Baitul Mukarram Complex
2nd order	Regional Market Centres	4	3. Green Supper Market 4. Farmgate 5. Siddeswari and Malibagh Node 6. New Eskaton and Airport Road

(1) The term service area, catchment area, hinterland and zone of influence have been used synonymously in the present study.

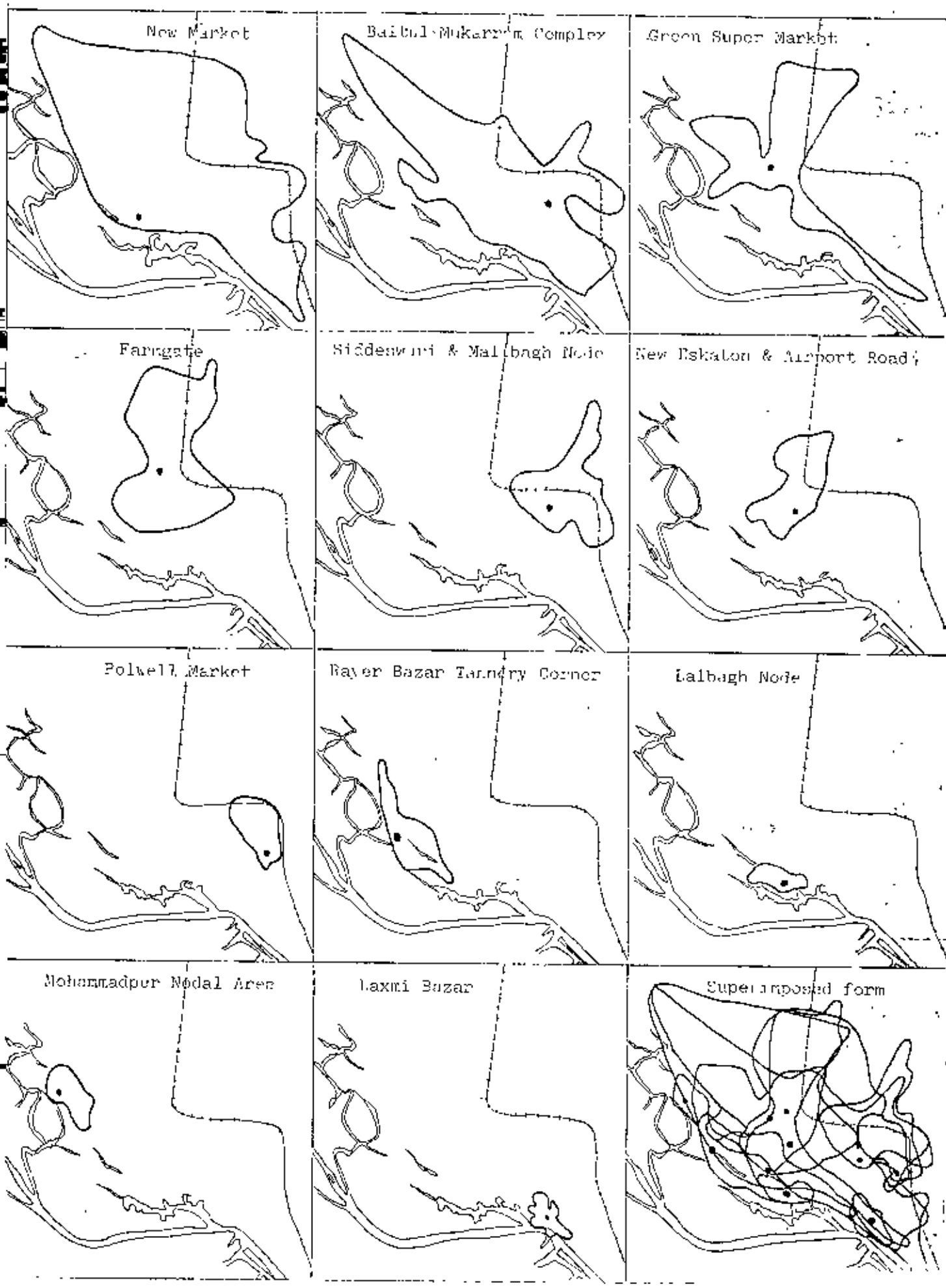
Order of the group of Market Centres	Name of the group of Market Centres	Number of Centres	Name of the Market Centres
3rd order	Local and Neighbourhood Market Centre	5	7. Polwell Market 8. Rayer Bazar Tannery Corner 9. Lalbagh Node 10. Mohammadpur Nodal Area 11. Laxmi Bazar

The above mentioned market centres have been classified as the first, second and third hierarchical order in terms of their service area. Almost all of these market centres are comprised of the original market places and their satellite retail concentrations.

Table 5.2.1. HIERARCHY OF CENTRAL PLACES INTERMS OF SERVICE AREA

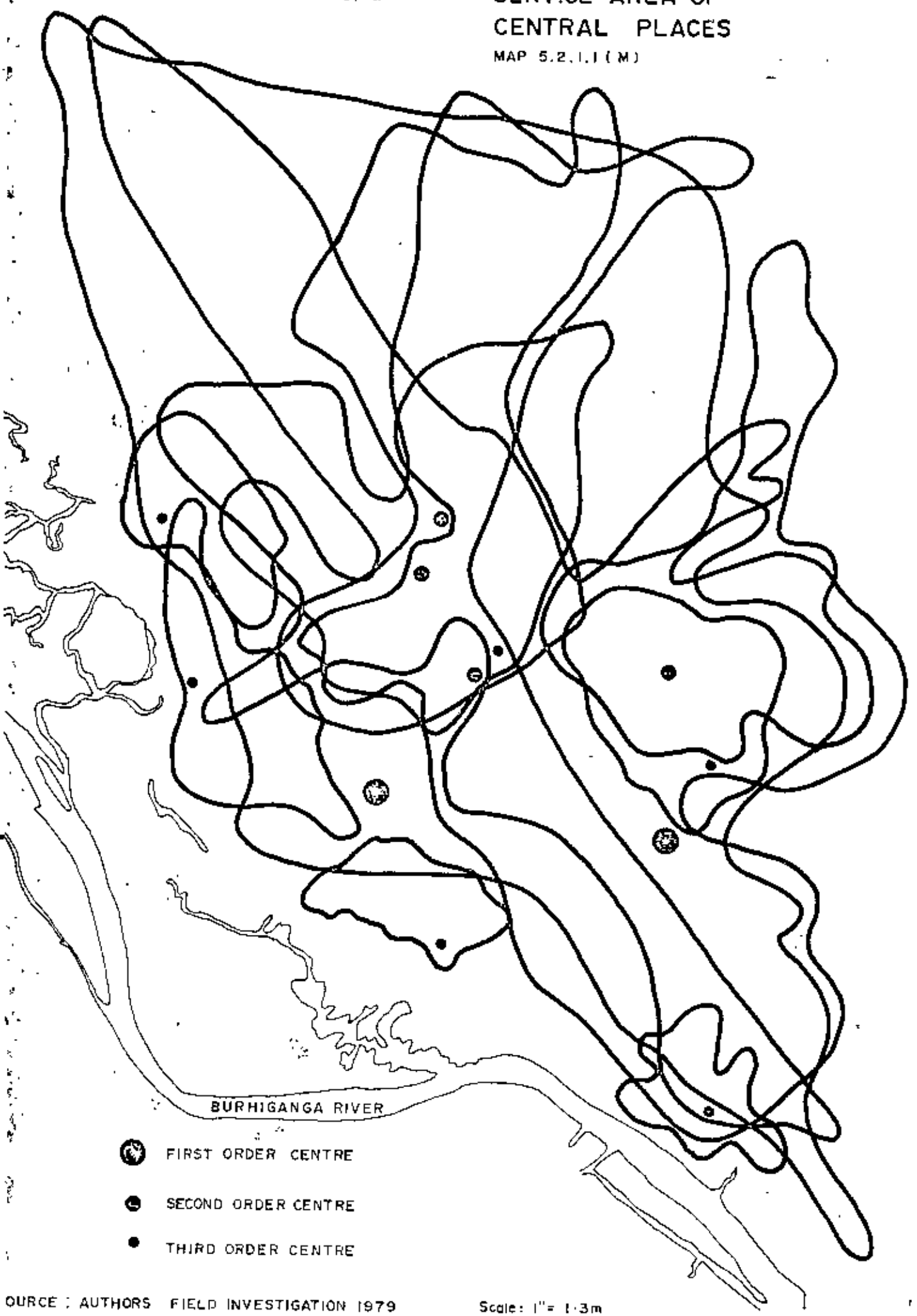
Market centres (in serial number)	Area Served (in Sq. miles)	Ranks in relation to the area served.
1. Central Market Centres or First Order Centres		
1. New Market	48.5	1
2. Bait-ul Mukarram Complex	42.0	2
II. Regional Market Centres or Second Order Centres		
3. Green Super Market	13.2	3
4. Farm Gate	11.5	4
5. Siddeswari and Kalibagh Node	7.0	5
6. New Eskaton and Airport Road	6.0	6
III. Local and Neighbourhood Market Centres or Third Order Centres		
7. Polwell Market	3.5	7
8. Rayer Bazar Tannery Corner	2.7	8
9. Lalbagh Node	1.5	9
10. Mohammadpur Nodal Area	1.3	10
11. Laxmi Bazar	1.2	11

MAP. 5.2.1.3. SERVICE AREA OF CENTRAL PLACES



SERVICE AREA OF CENTRAL PLACES

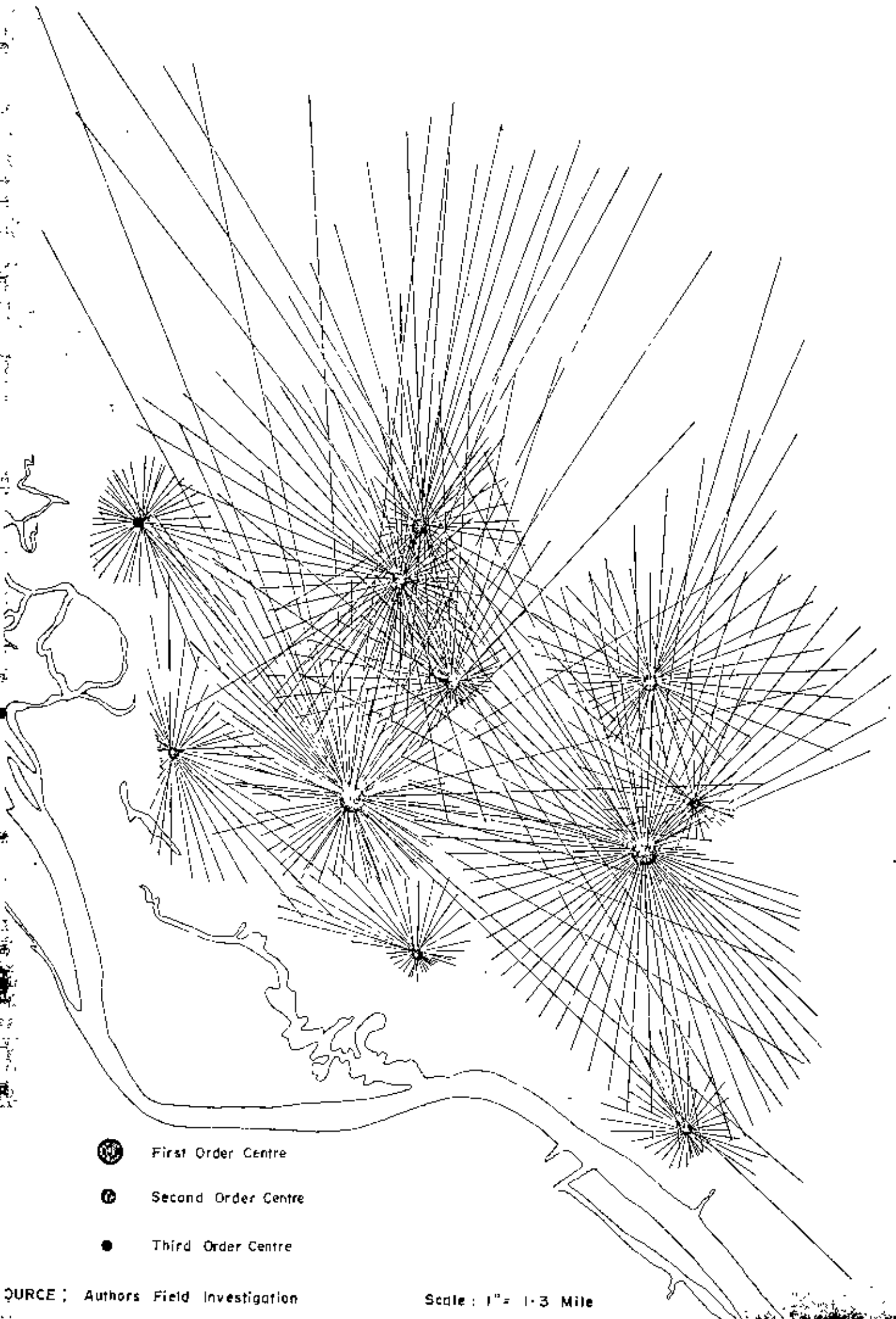
MAP 5.2.1.1 (M)



OURCE : AUTHORS FIELD INVESTIGATION 1979

Scale: 1"= 1·3m

MAP. 5.2.1.2. SERVICE AREA: CENTRAL PLACES



SOURCE ; Authors Field Investigation

Scale : 1"= 1·3 Mile

Here is an account of the service area for the different hierarchical order of the retail market centres of Dacca City. The total area of the city is about 41 square miles. Although the area of Dacca city is 41 square miles some of the market centres cover even 48 square miles as their range of goods and services. The lowest service area is covered by Laxmi Bazar which is nearly three percent of the total area of the city.

2.1 Central Market Centres:

In the model of hierarchical classification, it is assumed that the first order centre or central market centre serves the whole city and its surrounding areas or at least 75 per cent of the total area of the city. The service area of only the New Market and Baitul Mukarram Complex worked out to be 48.5 square miles and 42.0 square miles respectively. These statistics indicate that both of the two market centres serve more than the total area of the Dacca city and thereby they fulfill the pre-conditions to be the first order market centre.

The service area (Map-5.2.1.1M) of New Market may be classified into three groups : (i) Primary zone of influences ; (ii) Secondary zone of influences and (iii) Peripheral zone of influences. The primary zone of influences of the New Market consists of mainly four localities i.e., Old and New Elephant Road, Dhanmondi , Azimpur and Nilkhet. The people of these localities depend mostly on New Market for maximum variety of goods and services. There are four other localities like Lalmatia, Mohammadpur, Eskaton,and Palasi from which a certain percentage of customers come to the New Market. All these four localities constitute the secondary zone of influences of New Market on which the people of these four localities are dependent on certain types of goods and services only. The population of these localities therefore, depend on other market centres for other goods and services. The peripheral zone of influences of this first order centre is the surrounding area of the city like Mirpur, Gulshan, Banani, Mother Tek ans Shyampur etc. The people of these localities having minimum dependencies for some variety of goods and services to New Market.

MAP 5.2.2.M SERVICE AREA OF NEW MARKET

Baitul Mukarram Complex consists of four shopping precincts such as Stadium Arcade, Ramna Bhaban, Bangabandhu Avenue and Baitul Mukarram. It is a big shopping complex which serves 42 square miles of the greater Dacca. This is a very convenient and accessible centre to all sorts of people for several type of functions. It does not have such distinct primary and secondary service zone like New Market centre. It is evident from the map of service area that this market centre serves almost all the greater Dacca including Gandaria to Mirpur at the longest distance. Some people visit Baitul Mukarram Complex very regularly because of its central location. Besides, it is located nearby the main office area such as Motijheel and Dilkusha Commercial Area.

.2.2 Regional Market Centres

Green Super Market, Farmgate, Siddeswari and Malibagh Node, and New Eskaton and Airport Road Market centres fulfil the pre-condition to be the second hierarchical order of the central places. The service area of these market centres ranges from 13.2 square miles (i.e. 32.2 per cent of the total city area) at Green Super Market to 6 square miles (i.e. 15.0 percent of the total city area) at New Eskaton and Airport Road. Green Super Market is the biggest regional market centre which serves a large area of 13.2 square miles including Gulshan and Banani model towns. Farmgate is also a big retail market centre which serves primarily Tejgaon, Nakhalpara, Manipuripara, Tejkunipara, etc. The total served area of this market centre is nearly 12 square miles which covers 28 per cent of the whole city area. The percentage of area covered by Siddeswari and Malibagh Node is 17 per cent of the total city area whereas that of the New Eskaton and Airport Road worked out to be nearly 15 per cent of the total city area.

.2.3 Local and Neighbourhood Market Centres

The service area of these category of market centres ranges from 8.51 per cent at Polwell Market to 3 per cent at Laxmi Bazar of the total city area.

Since both the percentage figures do not exceed 10 percent all the retail market centres thereby they fall in the local and neighbourhood market centres or third order centres. Polwell Market, Rayer Bazar Tannery Corner, Lalbagh Node, Mohammadpur Nodal Area and Laxmi Bazar are thus constituting the Local and Neighbourhood Market Centres.

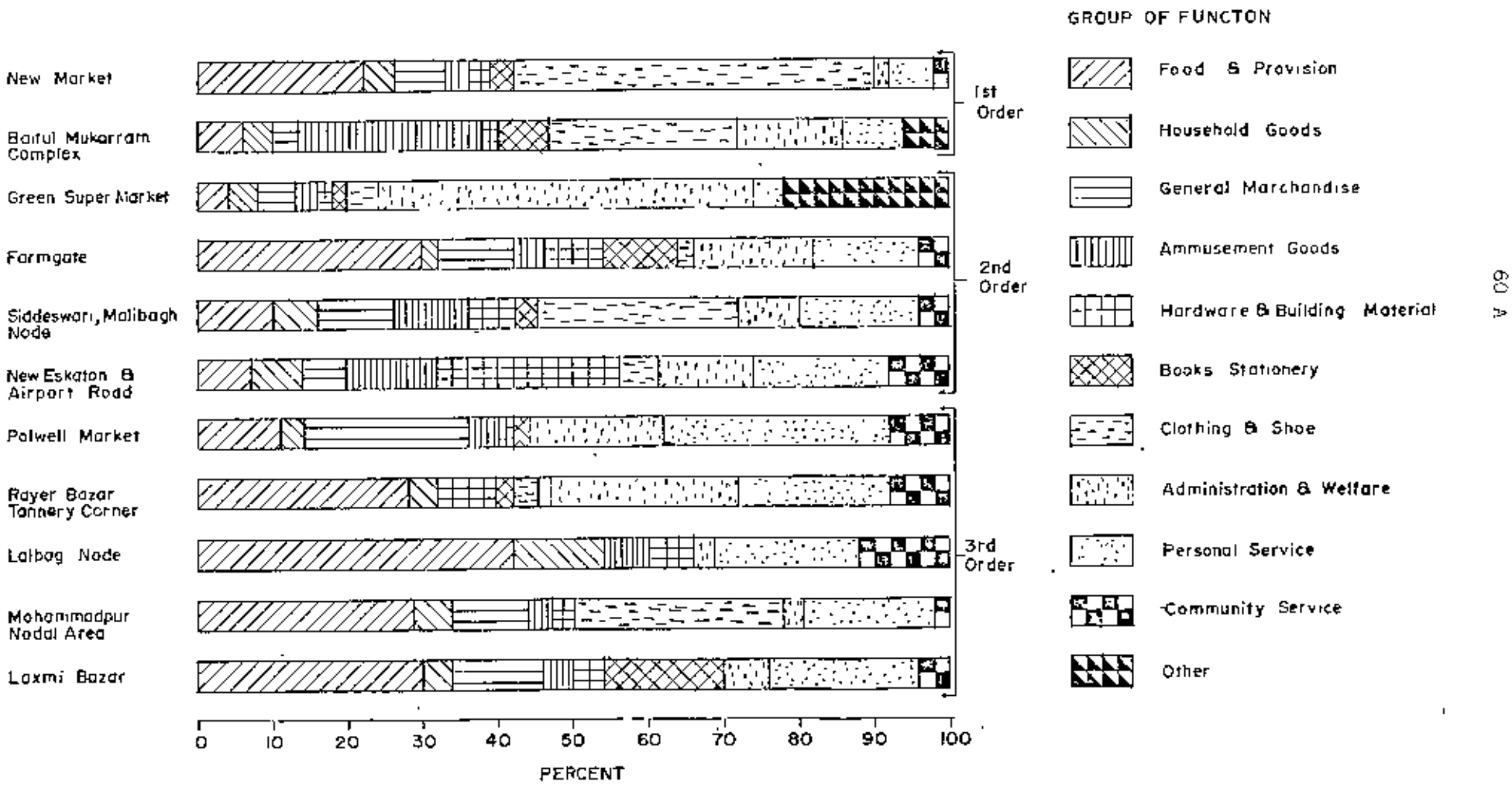
5.3 Hierarchy of Central Place in terms of variety of goods and services

There are 55 varieties of goods and services in the 11 market centres under the present study. Total number of variety in the individual market centre varies from 17 at the Polwell Market to 41 at New Market. There are various types of commercial establishments offering various types of goods and services to the community. In fact, 55 varieties of goods and services are offered by the different hierarchical order centres. No market centre provides all of these 55 varieties of goods and services. The following table is given to show the business types of the different order centres.

Table 5.3.1 VARIETY OF GOODS AND SERVICES

Market centres with ranks in relation to service area	No.of variety of goods and services	Ranks in relation to variety of goods and services
I. Central Market Centre		
1. New Market	41	1
2. Baitul Mukarram Complex	35	2
II Regional Market Centre		
3. Green Super Market	26	4
4. Farmgate	29	3
5. Siddeswari and Malibagh Node	22	6.5
6. New Eskaton and Airport Road	25	5
III Local and Neighbourhood Market Centre		
7. Polwell Market	17	11
8. Rayer Bazar Tannery Corner	18	10
9. Lalbagh Node	20	9
10. Mohammedpur Nodal Area	21	8
11. Laxmi Bazar	22	6.5
Total number of variety	55	

FIG. 5.3.1A VARIETY OF GOODS & SERVICES



The table reveals that the ranks or hierarchical orders of the only three retail market centres (New Market, Baitul Mukarram Complex and Lalbagh Node) in terms of the variety of goods and services are in the same line with the ranks of the centres in terms of the service area. In the case of other eight retail market centres the ranks, however, have found deviated. Even though there is a deviation in most of the cases some degree of relationship between the ranks of the retail centres in terms of service area and the variety of goods and services may exist.

5.4 Hierarchy of Central Place in terms of Commercial Establishment

An attempt has already been made in order to find out the hierarchy of retail market centres of the Dacca city in accordance with the area served by these centres. The ranks of the retail market centres have been shown in the form of serial number. They have also been grouped into 3 classes, viz. Central Market Centres, Regional Market Centres and Local and Neighbourhood Market Centres. There are 2, 4 and 5 retail market centres in the Central Market Centre, Regional Market Centre and Local and Neighbourhood Market Centre in number respectively. This sub-section deals mainly with the number of commercial establishments of the retail market centres in order to show the hierarchical order of the retail centres in terms of the total number of commercial establishments in these centres. The total number of establishments of the 11 retail centres are worked out to be 3,689 ranging from 60 in Lalbagh Node and 1,493 in New Market. The number of commercial establishments of the retail market centres has been tabulated and ranked along with the hierarchical order of the retail market centres in terms of service area in order to find the differences of the ranks from the point of view of the aforesaid two criteria, service area and the total number of commercial establishment of the centres.

Table 5.4.1 HIERARCHY OF CENTRAL PLACE IN TERMS OF COMMERCIAL ESTABLISHMENTS.

Market centres with Ranks in relation to service area		Total number of establishment	Ranks in relation to the number of establishments
I	Central Market Centre		
1.	New Market	1493	1
2.	Baitul Mukarram Complex	1057	2
II	Regional Market Centre		
3.	Green Super Market	156	5
4.	Farmgate	176	4
5.	Siddeswari and Malibagh Node	183	3
6.	New Eskaton and Airport Road	154	7
III	Local and Neighbourhood Market Centre		
7.	Polwell Market	64	10
8.	Rayer Bazar Tannery Corner	99	8
9.	Lalbagh Node	60	11
10.	Mohammedpur Nodal Area	154	6
11.	Laxmi Bazar	92	9
	Total	3688	

The table, however, reveals that the rank or hierarchical order of only four retail market centres (New Market, Baitul Mukarram Complex, Farmgate and Rayer Bazar Tannery corner) in terms of total number of establishment are in the same line with the ranks of these market centres in terms of service area. In the case of the other seven retail market centres the ranks, however, have been found to have deviated, i.e., the ranks in terms of service area and total number of establishments showed different pictures. There might have some correlation between the ranks of the retail market centres in terms of service area and total number of establishments although they have showed different ranks in most of the cases.

5.5 RELATIONSHIP AMONG THE THREE HIERARCHICAL CLASSIFICATIONS OF CENTRAL PLACES

The hierarchy of the market centres in terms of service area, variety of goods and services and the total number of commercial establishments poses a different picture in all the market centres except New Market and Baitul Mukarram Complex.

The New Market and Baitul Mukarram Complex have ranked 1st and 2nd respectively in terms of hierarchical order from the point of view of the service area, variety of goods and services and the total number of commercial establishments. The rest of the market centres pose different ranks from the point of view of aforesaid three criteria. Although they pose different ranks they may also be related in some degree. The ranking method is found useful even in case of characteristics which are capable of quantitative measurement. When the original data are transformed in ranks, the only way to find association for such series of data is the rank correlation. For the present study, in determining the hierarchy of the central places, the method of rank correlation has been applied. Rank correlation has got the exclusive advantage of having applicability in the case of variables which cannot be subjected to definite quantitative measurement but can only be classed or ranked. The rank correlation is also easy to compute and is useful when an approximate idea about the relationship between two variables is desired.

All the market centres have been ranked in accordance with the service area, variety of goods and services and the total number of commercial establishments. In ranking, highest score or highest item gets the first rank, the next highest score or next highest item gets the second rank, etc. This type of simple scoring is not possible if two or more cases have the same value or same score. In such situations, all items falling in the same tie are assigned to arrange of ranks that would otherwise have been assignable to them. The average of the items of the assigned ranks in the same tie have been used as ranks for all the items. Therefore, the ranks of all the items falling in the same tie are found same.

Table 5.5.1 RANK CORRELATION OF CENTRAL PLACES

	Name of Centres	RANKS* R_1	R_2	R_3	Sum of squares of the difference between each pair of ranks. $D^2_{1\,2}$	$D^2_{1\,3}$	$D^2_{2\,3}$	Average of the Ranks.	Average of the class Ranks.
I	Central Market Centre								1.5
	1. New Market	1	1	1	0	0	0	1	
	2. Baitul Mukarram Complex	2	2	2	0	0	0	2	
II	Regional Market Centre								4.63
	3. Green Super Market	3	4	5	1	4	1	4	
	4. Farmgate	4	3	4	1	0	1	3.67	
	5. Siddeswari and Malibagh Node	5	6.5	3	2.25	4	12.25	4.83	
	6. New Eskaton and Airport Road	6	5	7	1	1	4	6	
III	Local and Neighbourhood Market Centre								8.9
	7. Polwell Market	7	11	10	16	9	1	9.33	
	8. Bayer Bazar Tannery corner	8	10	8	4	0	4	8.67	
	9. Lalbagh Node	9	9	11	0	4	4	9.67	
	10. Mohammedpur Nodal area	10	8	6	4	16	4	8	
	11. Laxmi Bazar	11	6.5	9	20.25	4	6.25	8.83	
	Total				49.50	42.0	37.50		

* R_1 is the rankings in terms of the service area.

R_2 is the rankings in terms of the variety of goods and services.

R_3 is the rankings in terms of the total number of commercial establishments.

Rank correlation between two criteria can be computed, As there are three different criteria, the combination of two criteria ($^{3}C_{2} = 3$) helps in finding out the three different rank correlation. These three different rank correlation is shown below:

i) service area and variety of goods and services ($P_{1\ 2}$)

ii) service area and the total number of commercial establishments ($P_{1\ 3}$)

iii) variety of goods and services and the total number of commercial establishments ($P_{2\ 3}$)

The coefficient* of rank correlation ($P_{1\ 2}$) can be found out by computing the value of the variables one of which is shown below:

$$P_{1\ 2} = 1 - \frac{6 \times 49.5}{11\ (124-1)}$$

$$= 1 - 0.225$$

$$= 0.975$$

Similarly the value $P_{1\ 3}$ and $P_{2\ 3}$ have been found out which are equal to 0.809 and 0.830 respectively.

Spearman's rank correlation between the service area and the variety of goods and services works out to be 0.975. This statistic indicates that there is a positive relationship between the two variables which is found to be statistically significant. As the rank correlation is statistically significant the ranking on the basis of service area of the centres has been supported positively by the hierarchy on the basis of the variety of goods and services to a great extent.

Similarly, Spearman's rank correlation between the service area and the total number of commercial establishments is found out to be 0.809 . The statistic indicates that there is also a significant

---

* Spearman's coefficient of rank is denoted by the symbol P a Greek (letter 'rho') and the formula for computation is $P = 1 - \frac{6\ \sum D^2}{n(n^2-1)}$

where P = Coefficient of rank Correlation;
D = Difference between each pair of ranks;
n = number of paired items.

positive correlation between the hierarchical order in accordance with the service area and the total number of commercial establishments in the market centres. As there exists a significant positive correlation between these two variables, it could easily be concluded that the hierarchical order of the retail market centres on the basis of service area and the total number of commercial establishments of the centres are statistically good. In the similar way, the rank correlation between the variety of goods and services and the total number of commercial establishments works out to be 0.830. This statistic however, also indicates that there is a positive correlation which is also found statistically significant. The hierarchy of market in terms of the variety of goods and services and the total number of commercial establishments does exist. In sum, the hierarchy of the central places in terms of service area has a direct positive relationship with the hierarchy in terms of variety of goods and services and the total number of commercial establishments of the market centres. This however, indicates that the service area of a retail market centre becomes greater if more variety of goods and services are provided by the larger number of commercial establishments of that market centre.

5.6 Validity of the Hierarchical Groupings

In order to facilitate this study, a three tier hierarchical groupings of the market centres were assumed on the basis of total number of commercial establishments and personal knowledge of the author.

Least square regression model was used to find out the validity of this assumption. The regression model was constructed (Appendix - 6) on the basis of the 11 paired items of service area and the total number of commercial establishments in order to predict the service area. The estimated value for the market centres were used mainly due to the fact that data could not be collected by direct field investigation because of resource constraints.

Hierarchical grouping of the 41 market centres thus obtained is found more or less similar to the one assumed previously. The conclusion is derived from a regression model constructed only with 11 paired cases which is rather weak statistically. The model however, showed better stability in estimating for the higher order centres. It is expected that this model will not deviate significantly when it is established for adequate number of centres.

CHAPTER VI

6. SUMMARY AND CONCLUSIONS

6.1. Major findings of the Survey.

There are many commercial establishments in market centres varying from 60 at Lalbagh Node to 1493 at New Market. Most of the commercial establishments offer various goods and service facilities mostly to the nearby population. There are also some establishments which offer goods and services to the population residing far away from the market centres. The number of such establishments is concentrated mostly to few market centres.

Some of the goods and service facilities are available in some market centres and not available in others.Establishments offering goods and services in market centres vary from 17 varieties of goods and service at Polwell Market to 41 varieties at New Market .Non-availability of some of the goods and service facilities at Polwell the people of that place have to look forward for other market centres preferably nearer market centres.

The percent of the establishments in the market centres situated at the single storied building is found significantly lower than the percentage of establishments located at the ground floor because the ground floor of the multi-storied buildings is used for the same purpose. A very large percentage of the upper floor of the multi-storied buildings of market centres are found used for other purposes rather than for commercial use.

On the upper floors, business activity is negligible is these market centres. Most of the establishments located at the upper floor business related activities such as office functions, personal and professional services, industrial functions of the cottage types (tailoring, handicrafts, etc), storage functions etc. These business related activities facilitate to expand the market development and its service area.

Some of the upper floor are used even for residential purposes either for the owner of the establishment or for their employed personnel. Sometimes, it is also found that the upper floor is rented for domestic purposes. The presence of domestic purposes for the land use in the market centres however distorts the usual relationship between establishments and trade area characteristics.

Age of the structure of some of the market centres is as old as the Dacca city. Creation of new market centres, extension and change in the ownership pattern of existing market centres took place in the passage of time. The new market centres have been created to cope with the demand of the retailing and other services at the Dacca city in general and at the new residential suburbs in particular. Extension of the establishment of the existing market centres takes place mainly due to the greater demand from increased population, income, and change in customer's preferences. Change in ownership pattern of establishment played a role in changing the type of business. Major changes in the ownership pattern took place immediately after the emergence of Bangladesh. Some of the ownership of establishments transfers from Non-Bangladeshi to Bangladeshi and eventually the types of retailing and services facilities change to cope with the expertise of the new owner.

Baitul Mukarram, Green Super Market, Siddeswari and Malibagh Node, New Eskaton and Airport Road, Laxmi Bazar and Polwell Market are exclusively rental. Most of the establishments at Rayer Bazar Tannery Corner are found owned by the owners of the buildings. Types of business facilities extended by the establishments generally determine the size of the establishment. Higher order goods and services provided by the establishments are generally located at large size of establishments. It is, however, limited mainly because of its availabilities and rent size.

It is found that in most of the market centres, there lies an inverse relationship between the rent-size of the establishments and starting period of the establishments. New establishments at the same market centres are paying more rent for same size of space than older establishment. In some cases it is also found that the rent is significantly lower for older establishment than the new ones. In most cases the rent is not generally given for optimum space requirement for a particular types of business. As such under utilisation of space do exist in most cases.

An insignificant proportion of the total number of establishments are found run without hired employee i.e. they are run by the family member. In contrust, a significant proportion of the total establishments provide only 1-6 employments . This statistics provides some basis how the privately owned establishments provide employment mostly to the unskilled employee. Such an employment structure reduces the unemployment problem to a certain extent. But the risk of loosing such an employment in the private establishments is found considerable. Total employment in the private establishments may not be reduced in number (employing other person) although an employee loosees his job. Although national interest regarding employment would be served but the employees' interest may be affected in many ways such as minimum wage structure, uncertainty in employment, etc.

Private investment is always for a profit motive. Most of the owners of such establishments found that investment in this establishment is more profitable than else where. Besides less risk is incurred in making profit in the commercial or business types of enterprises than the productive type of enterprises. Although the information regarding private investment is shy in character it is found that about one-fourth of the establishments have investment of Tk. 50,000 and above group of investment on retailing and service facilities. This type of investment gives quick return. Besides, less risk is involved, little expertise is needed in retailing and service facilities than the productive enterprises. These are some of the causes for non-significant expansion of privately owned productive enterprises. Availabilities of little investment funds illiterate and unskilled family labours make one to open retailing service-oriented establishments in the environment of unemployment problems even among the educated youths. The maximum number of new establishments have been created for the above mentioned reasons. Non-availabilities in space in planned market centres make them a drive to open establishments where space is available. No vacant space, has however, been found in any of the planned market centres.

Purchasing of the goods and services and selling them to the consumers and retailers are the two activities performed by an establishment. Consumers and retailers may be from the study area or outside the study area. It is found that about two-third of establishments purchase their goods and services from the study area. Similar percentage has been found in cases of selling goods and services within the study area. Usually, goods and services are purchased from the wholesale establishments.

The prices in the wholesale establishment are lower for a particular commodity even in the same market centre. Therefore, the retail establishments of a market centre purchase goods and services even from the same market for reselling direct to the customers. The price mechanism in most cases is usually evolved from the general conditions of the demand for and supply of particular goods and services. When the demand is greater than supply, the prices of the goods and services go up. If some control measures are not adopted by the government from time to time the consumers become the suffers.

6.2. Central Place and Its Elements:

The term central place has been synonymously used as market centres allthrough the present study.

Efforts to evolve a theory or a science of marketing are relatively new. The concept of marketing has been developed to describe a highly sophisticated art or activity that has not become more than an incidental element in economic theory. Some how the economic theorists have by-passed marketing as a dynamic generative forces in economics. It is therefore, seems to be necessary to differentiate between the two concepts market and marketing.

Market:

In a social economy there is a real separation between buyers and sellers of goods and services. But while they are separated, they are also necessarily related. Hence the separation is accompanied by an interdependence which is real. As soon as a person needs to purchase a type of goods and services, he is in the market looking for an establishment on the one hand and as soon as an establishment develops the capacity to sell this particular types of goods and

services he is waiting for that person. Therefore, there is a mutual and necessary relationship between them. This real interdependent relationship between buyers and sellers is a market.

Marketing:

Even when buyers and sellers meet together no exchange occurs until some force brings them into actual contact. This force, making a potential market contact into a real market contact, is what is known as marketing. Therefore, marketing is an activity that helps in materialising a potential relation of buyers and sellers. And the work of marketing always begin with the discovery of market potentials. Prices of the goods and services are mostly determined by the general conditions of demand and supply. The cost of acquiring goods and services depends mostly on the buying price, transportation cost, and opportunity cost of the time spent for the acquiring purposes. The price of a particular goods and services vary even in the same market centre. It varies in different market centres and margin of difference is much more pronounced than that of the individual market centre. The transportation cost varies with the distance of the market centres from the places of residence or working place of the customer. The opportunity cost of time involved in acquiring the goods and services largely depends on the distance and the person himself.

The business activities of the market centres are closely tied with types of transportation facilities available in the city in general and in the market centre in particular. The city of Dacca is better tied both with water and road transport facilities. Availability of these facilities varies significantly from one market centre to other. It is, therefore, found that the wholesale establishments are located mostly at the confluence of the road transport and water transport availabilities, e.g., Mitfor Road, Imamganj, Chawk Bazar, Patually, Moulavi Bazar. Better network of transport facilities, however, helps in increasing the zone of influence of this type of market centres. On the contrary, increased zone of influence of the market centres exclusively of the retail type depends mostly on the residential suburbs surrounding the retail market centres, availabilities of variety of goods and services, accessibility in these market centres, etc. It is found that each market centre has its

complementary region whose precise size is affected by population distribution, transport facilities, range of goods and services, hierarchy of central places. Therefore, these elements become the major elements of the central place theory.

The hierarchy of the market centres have been shown in terms of the area served total number of varieties of goods and services and the total number of establishments. The hierarchy in ranking method that has been made on the basis of these three variables individually the trend has not been found similar. It is, therefore, very difficult to interpret the classification of different market centres poses such different positions in the hierarchy of the market centres. Even if the trend of hierarchy of the market centres is not found similar there might be relationship between them, in three different combinations. It is found that rank correlation in terms of the area served and the variety of goods and services is found significant.The rank correlation in terms of the variety of goods and services available in the market centres and the total number of establishments is slightly more than the rank correlation of the market centres in terms of the total number of establishments in the market centres and the area served by the market centres. Although the market centres pose a different pattern of hierarchy in most of the cases for using the three different criteria the average of rankings of classified market centres show a similar pattern of hierarchy as assumed earlier. Such a result is available probably due to presence and absence of planned market centres in our study.

The threshold population is defined as the minimum population necessary to support the goods and services activities of an establishment within the market centres. The minimum size of threshold population for an establishment relating to Panbiri may not be same for clothings. If the population falls below the threshold level in any of the two activities one activity will run at a loss.If this activity runs at a loss it will face closure in the long run because no owners will continue his business in the face of loss. In contrast if in the other activity the population increases above the minimum size of a threshold population the owner of that establishment will

get better remuneration in the form of increased profits. The owner of that establishment may extend his activities either within his establishment or opening a new establishment relating to this type of activity. Otherwise, he may face competition from the other owners providing similar activities in that market centres or nearby market centres. As a result of increased competition the profit margin may reduce to a certain extent on the assumption of same size of population to be served for this activity. Usually, this is not the case, increased activity relating to the activity may attract more population of the distant places rather than the nearby population of the market centre.

The range of goods and service activities is defined as the distant which people are willing to travel to get the service facilities. Usually people are willing to travel a minimum distance for acquiring any types of goods and services.But in practice, the people may face two decision making criteria in acquiring a particular type of activity.

i) Availability of that type of activity in the nearby market centres.

ii) Time and cost involved in acquiring that particular type of activity.

If in acquiring the type of activity the firt criterion (mentioned above) is not available the people have no alternative to look to another market centres whatever may be the involvement of the time and cost factors. The second criterion needs consideration only when the type of activity is available in all the market centres. Here the market range in acquiring a type of activity may be a simple function of linear distance but more likely to be influenced by time and cost factors making it non-linear. Therefore, the range for a particular type of goods and services varies depending on the size and importance of the centre and the income level of the inhabitants of the area. If the level of income is higher one can cover maximum distance for higher order goods and services.

6.3 Spatial System of Intra-Urban Market Centres and Insights for Planning

Spatial system encompasses a locational distubution of the market centres and the coverage pattern of service areas through their retail functions. An efficient retail spatial system indicates optimum location of the centres and complete coverage of the total hinterland as well as service satisfaction of the population served.

In order to analysee the spatial system of the market centres in the study area, the following techniques have been used. The distance between the different market centres of a hierarchical group have been claculated using the map and then average of the radius was established. Using this average radius, service area for each of the centres were drawn (Map 6.3.1). The map shows that the first order centres are located at a distance of three miles on the average. The average distance of the second and third hierarchical order centres are 1.27 miles and 0.57 miles respectively. In calculating the above mentioned distances between the centres, the market centres that are very much detached were excluded.

When the hierarchical structure of the market centres are translated into spatial terms, it is found that, in some cases, it disagrees with the ideal situation ass bed in the central place theory. The situation of disagreement is found common in the present case (Map 6.3.1). The similar pattern may be found common also in the cities of other developing countries. The degree of disagreement or agreement may vary from country to country. The major factors responsible for not attaining the ideal situation of the central place theory are as follow :

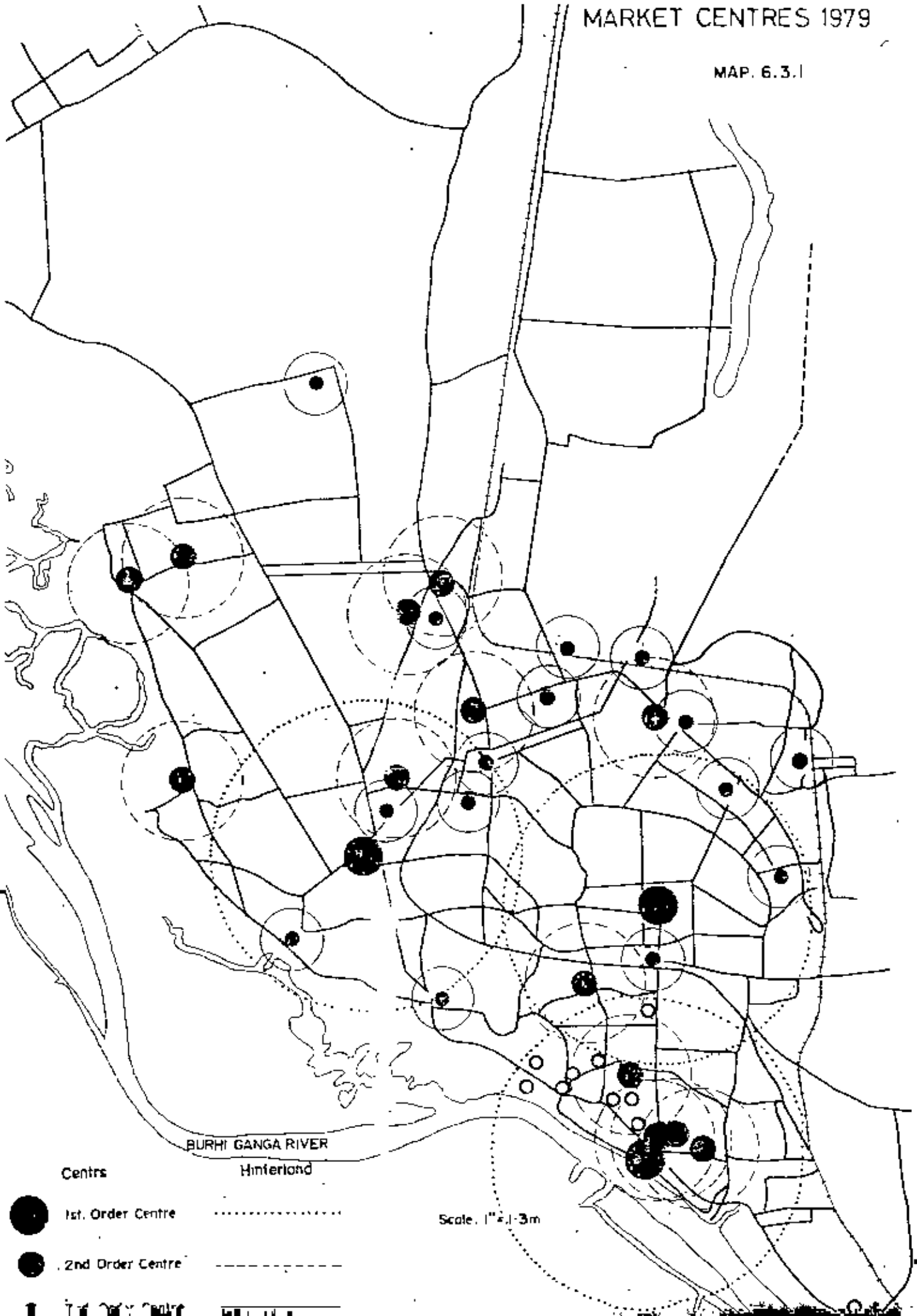
i Physical Barrier;
ii Non-accessibility;
iii Unfavourable Government Development Policy.

These three factors may, however, be interrelated. The primary factor which disturbing the ideal situation is the physical barrier, which becomes apperent from the locational distribution of the market centre itself and its corresponding hinterland.

Accessibility which is fundamental to the growth of a spatial pattern is again influenced by many factors and the situation in Dacca was not much in favour of the hexagonal shape. Last but not the least, the Government policy intervention in various forms played a major role in locating the market centres in Dacca

EXISTING SPATAL SYSTEM OF THE INTRA-URBAN MARKET CENTRES 1979

MAP. 6.3.1



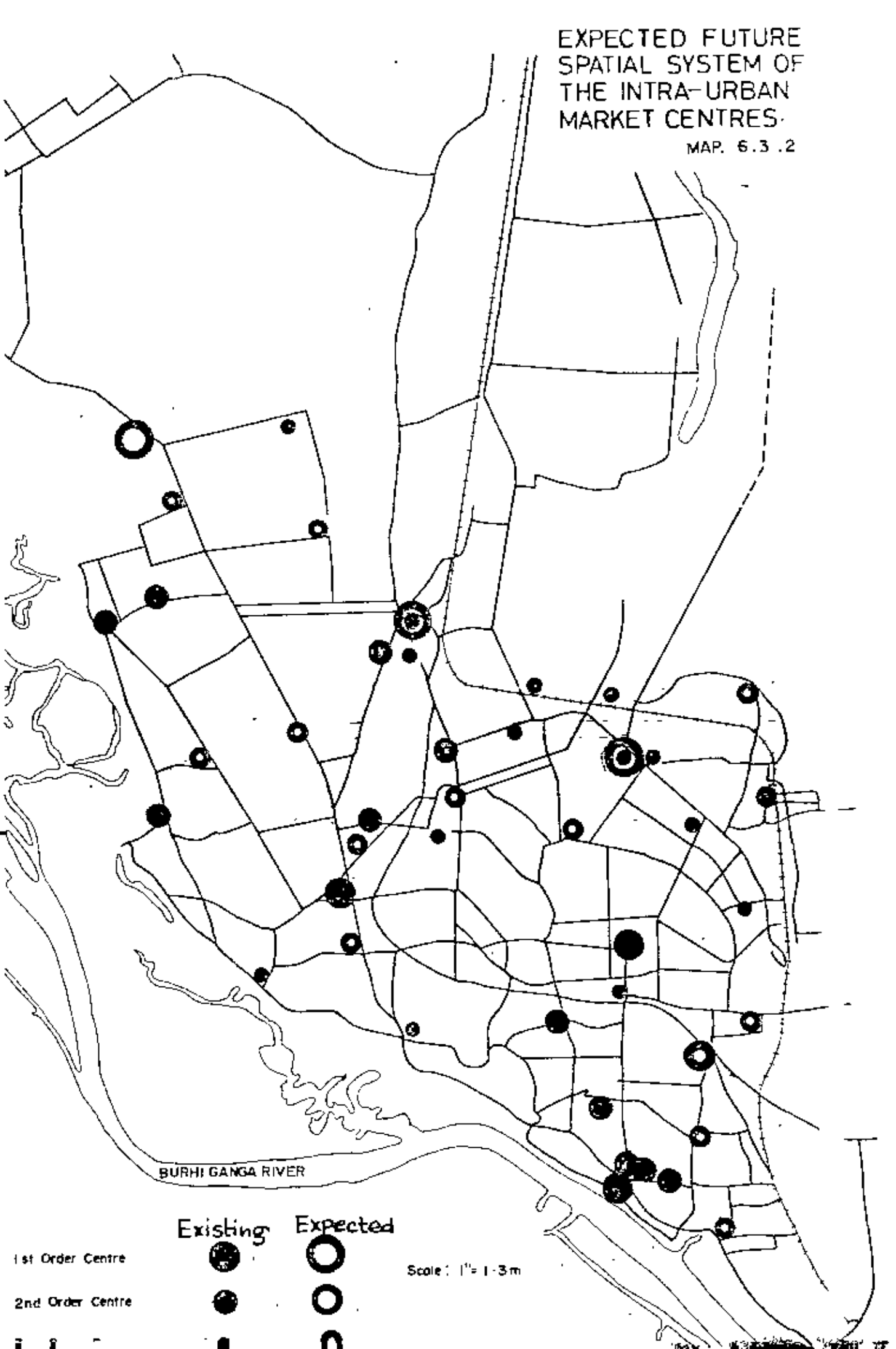
which do not support the growth of a spatial system envisaged in the central place theory.

The spatial system however, approves to some extent the pattern as depicted in the theory. It seems that the first order centres (Sadarghat, New Market, and Baitul Mukarram Complex) are somewhat equi-distantly placed and the new emerging ones are also expected to follow the trend. The pattern however, deviates in many cases from the ideal Situations when considered against the second and third order centres.

First Order Centre: There are only three centres of this hierarchical order, namely, Sadarghat, Baitul Mukarram Complex and New Market. They form three points of a triangle, the distances between Sadarghat and Baitul Mikarram Complex, and between Baitul Mukarram Complex and New Market being almost the same and that between Sadarghat and New Mrket is somewhat greater. Sadarghat is a very old centre which grew up rather spontaneously without much planning. It has more or less reached its optimum level of growth under the present circumstances of physical development. The other two centres were established during the last two to three decades on a planned basis. Over the years, they have been servicing vast areas of the city and thus proved their locational efficiency. Besides, these centres seem to have reached an optimum level of functional efficiencies. Since their establishment, the city has physically grown at a rapid rate in the north, north-west and north-east directions. This situation, however, demands additional centres of this hierarchical order in some of the newer location of the city (Map 6.3. 2). In response to this demand there are already a few locations emerging as first order centres. Three potential locations can be identified for planned growth as first order retail market centres in new Dacca. Farmgate may be a good example which may be the first order market centres from the point of view of spatial organisation of the central place, or market centres. Besides, its locational advantages and good accessibility (five major roads meet here), retail development, growth of central commercial and office activities, cinema hall and the overall growing trend may act as its potentials to be a first order market centre. Similarly, Siddeswari and Malibagh Mode also has potentials to be a first order market centre in the north-eastern sector of the city. But there will be a significant regional influence rather than central influence mainly because of lack of some central functions, such as, cinema hall, some high order goods and services, etc. This market centre should be encouraged and elevated to a first order market centre. Besides, Shyamoli can also be planned as a first order market centre because of its high potentialities (location, developable space, cinema hall and

EXPECTED FUTURE SPATIAL SYSTEM OF THE INTRA-URBAN MARKET CENTRES.

MAP. 6.3.2



and other growing commercial functions).

Second Order Centre: The average nearest distance between the second order centres is 1.27 miles. The pattern of locational distribution of the second order centre, is however, found, agglomerated and dispersed in old and new Dacca respectively. Farmgate and siddeswari and Malibagh Node have been identified to serve as a first order market centre and some of the third order centres may be identified to serve as a second order centres only through transformation, directly or indirectly by planning intervention. However, the planning intervention should take care of the short and long run development strategy of the city itself.

Third Order Centre: The existing locational distribution of third order centres show that there are some service gap of the market centres and causing inconveniences to some nearby communities (like Dhanmondi, Gandaria, Narinda, Gopibagh, etc.). In such communities, haphazard and privately developed market centres, may emerge out spontaneously. It is, therefore, better to plan for some third hierarchical order centres to help them grow in a desirable manner.

Eventually, over the passage of time, some of the third and second order centres may face to serve as a second and first order centres respectively when the demand arises.

It is however, recommended that a detailed study should be undertaken before such development programmes are considered by the Government to decide on issues that relates to :-

(1) What should be the locational criteria for a particular hierarchy centre ;

(2) What type of physical developments are required to for a particular hierarchy centre ;

(3) What would be the accessibility required to facilitate the functioning of a particular hierarchy centre.

(4) What varieties of goods and services are to be provided at a particular hierarchy

6.3 Concluding Remarks

The great bulk of central place theory is essentially descriptive but not necessarily a mirror of reality. Efforts, however, have been made to depict the ideal relation between central places and their hinterlands mainly for the purpose of improving the utilisation of market centres. The utilisation of existing spaces of the market centres have been improving historically in response to the need for inhabitants mainly of each centre's complementary region. Besides, new space is acquired for new market centres mainly from the point of view of rapid population growth, not migration to the Dacca city, etc. It is found that most of the existing market centres were started with the partial commercialisation of a landscape and gradually envisaged maximum spatial commercialisation. Similarly new market centres may begin with the partial commercialisation of landscape with a view to achieve the objective of full spatial commercialisation in the near future. The following planning insights may be suggested for better utilisation of the commercial structure for overcoming stress and imbalance problems prevailing in the market centres.

1. Higher order group of market centres should have to perform all the functions of the lower order market centres along with a group of central functions. Therefore, this group of market centres should have a better transport network along with the parking facility.

2. Higher order market centres should have central core market along with the subsidiary markets so as to attract the customers of the nearby area but also of the customers of the distant places.

3. Transport net work should be developed so as to facilitate easy access. The cost and time involved in acquiring goods and service facilities should be minimum.

4. Lower order group of market centres should provide only the low order goods and service facilities to low order tributory areas. The low order goods are generally the necessary goods and services that requires frequent purchasing with little consumers travel.

5. Urban systems and the level of income of the population of the hinterlands do determine the extension of the market centres. Therefore, extension of the market centres should be based on feasibility study.

6. Changes in the pattern of goods and services offered by the establishments should be based mostly on the demand of the catchment population. The demand of the catchment population depend on their level of income, consumers' preference, cost structure, etc.

7. Use of upper floor location should differ from ground floor for certain types of commercial functions. The upper floor may be used for some selected retailing and personal services rather than for residence/domestic purposes.

8. Most essential commercial functions, the demand for which are most frequent, should be located at the ground floor so that the customers have the easy access to the establishment.

9. Space determination for the establishment of the market centres should be based on the optimum requirement for that type of goods and service facility rather than whimsical allotment of space.

Above mentioned planning insights would help achieving better utilisation of the market centres. But, implementation of these recommendations in planning the market centres is a very difficult task but not impossible. As the market centres of Dacca city are of dual types (planned and unplanned) there might have some effects of the planned market centres to the unplanned ones. The effective competition between the planned and unplanned market centres

could raise the efficiency level of the market centres in their totality. It should be emphasized that for better competition of the planned market centres with the unplanned ones the Government should have to play a crucial role through some direct and indirect policy measures.

Economic ways of creating a rational network of central places thus maximise commercialisation of the landscape of the market centres. On the contrary, the central places would not provide optimum goods and service facilities so long only the random political decisions do determine the location of the mark : centres. The random political decisions should, therefore, be scrupulously avoided. The political decisions in creating a network of central places should rather be taken on the basis of feasibility study in commensureting with the national socio-economic objectives. As the national economic policy is usually formulated in the prevailing socio-political atmosphere it is certain that socio-political decisions would mostly be responsible for the outcome of the central place network.

APPENDIX - 1

The Department of Urban and Regional Planning
Bangladesh University of Engineering and Technology
Dacca.

Research Project: "INTRA-URBAN CENTRAL PLACES: Centrality Study of Market Centres as a Planning Tool"

Questionnaire on types of commercial establishments.

Name of interviewer _____ Sample _____

Name of the Centre _____

Sl.No.	Group of Functions	Tally	Total
I.	FOOD & PROVISION		
	1. Rice		
	2. Groceries		
	3. Ration Shop		
	4. Panbiri		
	5. Fruits		
	6. Bakery & Confectionery		
	7. Sweetmeat		
	8. Pharmacy/Drugs		
II.	HOUSEHOLD GOODS		
	9. Crokeries		
	10. Wooden Furniture		
	11. Bedding		
	12. Carpets		
	13. Curtains		
	14. Leather goods		
	15. Iron & Steel goods		

Sl.No.	Group of Functions	Tally	Total
III.	GENERAL MARCHANDISE		
16.	Variety Store		
17.	Antique/Handicrafts		
IV.	AMUSEMENT GOODS		
18.	Jwellery		
19.	Watch		
20.	Electronic goods		
21.	Electrical goods		
22.	Sporting goods		
23.	Musical Accessories		
24.	Optical goods		
V.	HARDWARE & BUILDING MATERIALS		
25.	Hardware Store		
26.	Machine Parts		
27.	Paint & Glass		
28.	Printing Press		
29.	Rubber-Stamp/Signboard		
30.	Cement & Rod		
31.	Sanitary/Bathroom Fittings		
VI.	BOOKS & STATIONERY		
32.	Books/Journals		
33.	Stationery		

Sl.No.	Group of Functions	Tally	Total
VII.	CLOTHING & SHOES		
34.	Sharee		
35.	Garments		
36.	Cloth Store		
37.	Shoes		
VIII.	ADMINISTRATION & WELFARE		
38.	Dispensary		
39.	X-ray Clinic		
40.	Specialists' Chamber		
41.	Lawyers/Astrologer		
42.	Bank		
43.	Post & Telegraph		
44.	Govt, Offices		
45.	Private Firm		
46.	Technical Institute		
47.	Type School		
48.	School		
49.	Hospital		
50.	Cinema / Theater		
IX.	PERSONAL SERVICES		
51.	Barber		
52.	Dry Cleaner		
53.	Tailor		
54.	Photo Studio		
55.	Restaurant/Snack		

Sl.No.	Group of Functions	Tally	Total
X.	COMMUNITY SERVICES		
	56. Filling Station		
	57. Electric Repair		
	58. Watch Repair		
	59. Auto Repair		
	60. Decorator		
	61. Others (mention)		

APPENDIX - 2

The Department of Urban and Regional Planning
Bangladesh University of Engineering and Technology
Dacca.

Research Project: "INTRA-URBAN CENTRAL PLACES:Centrality Study of Market Centres as a Planning Tool"

Questionnaire for Managers' /Owners' Survey

Name of interviewer:_____ Sample No.....

Time of interviewer: From _____ To _____ Total _____ Minutes

1. Name of respondent(respondent must be the owner or Manager of the establishment, if not present then a responsible attendant/Salesman to the establishment)._____ _____
2. Age..... Years 3. Sex ..... Male/Female
4. Education _____
5. Occupation_____ Religion_____
7. Name of the Centre _____
8. Type of centre : Single storied/Double storied/Multi storied_____
9. Name of establishment_____
10. Address_____
11. Major goods/Services offered_____
12. Type of establishment : Retail/Wholesale/Office/Chamber/Factory/Store/ Restaurant/Others_____
13. Size of establishment _____Sq.ft.
14. Location of the establishment: Ground Floor/1st Floor/2nd Floor _____
15. Occupancy Type _____Rental/Owned_____
16. Rent of establishment (if owned then probable rent) _____Taka
17. Total employee _____
18. Total persons involved in serving this establishments _____
19. Peak selling day of the week_____
20. Peak selling period of the day : morning/noon/afternoon/evening _____
21. Peak selling hour(s)_____ From _____To _____ Total_____
22. Year of establishment _____
23. Total capital investment _____Taka
24. Average daily sale _____Taka
25. Lowest daily sale _____Taka
26. Highest daily sale_____Taka

DETAIL INFORMATION ON GOODS AND SERVICES

Functions or services offered	Variety of goods/ services (Total No. of items)	Amount of goods(approximate estimation of mostly sold item	Price of goods (mostly sold items).		Place of buying (name of place of mostly bought item)		Place of selling (Name of place of mostly sold item)			
			highest price	lowest price	Within Dacca city	Outside Dacca city	To the shops (name of locality of shop)		To the customers(name of place of most of customers residence	
							Within Dacca city	Outside Dacca city	Within Dacca city	Outside Dacca city

APPENDIX - 3

DEPARTMENT OF URBAN AND REGIONAL PLANNING
BANGLADESH UNIVERSITY OF ENGINEERING AND
TECHNOLOGY, DACCA

RESEARCH PROJECT: "INTRA URBAN CENTRAL PLACES : CENTRALITY STUDY OF MARKET CENTRES AS A PLANNING TOOL"

CUSTOMERS' SURVEY

Name of interviewer: _____ Sample No. _____

Time of interview: From _____ To _____ Total: _____

Place of interview (Name of Centre) _____

_____

Type of establishment: _____

Name of respondent (the respondent must be adult) _____

Addresss: _____

Name of living place _____

Name of working place _____

Age _____ Sex _____ Education _____

Occupation _____ Religion _____

Relationship with head of the family _____

Total Number of family member _____

Total customers in the establishments at the Peak Hour(s) _____

Count once _____ persons.

Sl.No.	Group of Functions	VISITED MARKET CENTRES				
		Name of market centres (Place of purchase in Dacca city)	Frequency of visits (daily/ weekly/ monthly/ 3 monthly/ 6 and above	Time of visits (morning/noon/ afternoon/ evening)	Mode of transport(on foot/ Rickshaw /Car/Public Transport	Cost of Transport (Two way conveyance in Taka)
I.	FOOD & PROVISION					
	1.Rice					
	2.Groceries					
	3.Ration Shop					
	4.Panbiri					
	5.Fruits					
	6.Bakery & Confectionery					
	7.Sweetmeat					
	8.Pharmacy/Drugs					
I.	HOUSEHOLD GOODS					
	9. Crokeries					
	10. Wooden Furniture					
	11. Bedding					
	12. Carpets					
	13. Curtains					
	14. Leather goods					
	15. Iron & Steel goods					
I.	GENERAL MARCHANDISE					
	16. Varicty Store					
	17. Antique/Handicraft					

Sl.No.	Group of Functions	VISITED MARKET CENTRES: Name of market centres (Place of purchase in Dacca city)	Frequency of visits (daily/ weekly/ monthly/ 3 monthly/ 6 and above	Time of visits (morning/ noon/after-noon/evening	Mode of trans-port(on foot/ Rickshaw/ Car/Pub-lic Tra-nsport	Cost of Transport (Two way conveyance in Taka)
7.	AMUSEMENT GOODS					
	18. Jwellery					
	19. Watch					
	20. Electronic goods					
	21. Electrical goods					
	22. Sporting goods					
	23. Musical Accessories					
	24. Optical goods					
	HARDWARE & BUILDING MATERIALS					
	25. Hardware Store					
	26. Machine Parts					
	27. Paint & Glass					
	28. Printing Press					
	29. Rubber-Stamp/Signboard					
	30. Cement & Rod					
	31. Sanitary/Bathroom Fittings					
7.	BOOKS & STATIONERY					
	32. Books/Journals					
	33. Stationery					

Sl.No.	Groups of Functions	VISITED MARKET CENTRES: Name of market centres (Place of purchase in Dacca city)	Frequency of visits (daily/ weekly/ monthly/ 3 monthly 6 and above	Time of visits (morning/ noon/after-noon/evening	Mode of trans-port (on foot/ Rickshaw/ Car/Pub-lic Tra-nsport	Cost of Transport (Two way conveyance in Taka)
I.	CLOTHING & SHOES					
34.	Shar c					
35.	Garments					
36.	Cloth Store					
37.	Shoes					
II.	ADMINISTRATION & WELFARE					
38.	Dispensary					
39.	X-ray Clinic					
40.	Specialists' Chamber					
41.	Lawyers/Astrologer					
42.	Bank					
43.	Post & Telegraph					
44.	Govt. Offices					
45.	Private Firm					
46.	Technical Institute					
47.	Typing School					
48.	School					
49.	Hospital					
50.	Cinema/Theatre					

Sl.No.	Group of Functions	VISITED MARKET CENTRES: Name of market centres (Place of purchase in Dacca city)	Frequency of visits (daily/ weekly/ monthly/ 3 monthly 6 and aboce	Time of visits (morning/ noon/after-noon/evening	Mode of trans-port 9on foot/ Rickshaw/ Car/Pub-lic Tra-nsport	Cost of Transport (Two way conveyance in Taka)
X.	PERSONAL SERVICES					
	51. Barbar					
	53. Dry Cleaner					
	54. Photo Studio					
	55. Restaurant/Snack					
	COMMUNITY SERVICES					
	56. Filling Station					
	57. Electric Repair					
	58. Watch Repair					
	59. Auto Repair					
	60. Decorator					
	61. Others (mention)					

Appendix – 4

Table 5.2.1 Variety of Goods and Services

Group of Functions	1st. order centres			2nd. order centres				3rd. order centres				Total
	New Market	Baitul Mukarram Complex	Green Super Market	Farm-gate.	Siddeswari and Malibagh Node	New Eskaton and Air-port Rd.	Polwell Market	Bayer Bazar Tannery Corner	Lalbagh Node	Mohammadpur Nodal Area.	Laxmi Bazar	
	1	2	3	4	5	6	7	8	9	10	11	
I Food & Provision	320	59	7	49	19	12	7	27	26	45	28	599
1 Rice	32	–	–	–	–	–	–	–	–	–	–	34
2 Groceries	215	–	–	9	–	–	–	10	6	17	5	258
3 Ration Shop	–	–	–	–	–	–	–	–	1	1	1	3
4 Panbiri	–	9	–	8	5	–	–	6	5	8	3	44
5 Fruits	30	–	–	10	3	–	–	–	–	–	–	43
6 Bakery & Confec-tionary	16	15	3	13	7	5	3	6	3	3	2	76
7 Sweetmeat	–	6	1	3	2	–	–	–	2	5	11	30
8 Pharmacy/drugs	25	29	3	10	–	7	4	5	7	6	4	100
II Household Goods	41	44	6	2	10	12	1	2	6	6	2	132
9 Crokeries	15	5	3	–	10	–	1	2	–	–	–	36
10 Furniture (wooden)	–	11	–	2	–	6	–	–	4	–	–	23
11 Bedding	6	–	1	–	–	–	–	–	2	–	2	11
12 Carpets	–	2	–	–	–	–	–	–	–	–	–	2
13 Curtains	–	2	–	–	–	–	–	–	–	–	–	2
14 Leather Goods	20	8	2	–	–	6	–	–	–	6	–	42
15 Iron & Steel goods	–	16	–	–	–	–	–	–	–	–	–	16

	1	2	3	4	5	6	7	8	9	10	11	
III General Marchandise	100	31	7	16	20	10	15	-	-	18	12	229
16 Variety stores(Cosmatics/Toys/Fancy goods	79	27	4	16	11	10	11	-	-	18	12	188
17 Antique/Handicrafts	21	4	3	-	9	-	4	-	-	-	-	41
IV Amusement Goods	43	367	3	5	19	19	2	-	3	3	3	367
18 Jewellery	22	28	-	2	13	-	-	-	-	-	-	65
19 Watch and Repair	5	11	-	-	2	-	-	-	-	-	-	18
20 Electronic Goods	-	109	3	3	4	10	-	-	-	-	-	129
21 Electrical Goods	6	41	-	-	-	9	2	-	3	3	3	67
22 Sporting Goods	3	10	-	-	-	-	-	-	-	-	-	13
23 Musical Accessories	1	59	-	-	-	-	-	-	-	-	-	60
24 Optical Goods	6	9	-	-	-	-	-	-	-	-	-	15
V Hardware & Building Materials	36	9	1	12	12	38	1	7	4	3	3	129
25 Hardware Store	19	-	-	5	5	7	1	6	2	3	2	50
26 Machinery Parts	-	9	1	5	7	15	-	-	2	-	-	39
27 Paint and Glass	8	-	-	-	-	-	-	-	-	-	-	8
28 Printing Press	-	-	-	-	-	-	-	-	-	-	-	-
29 Rubber Stamp & Signboard	4	-	-	-	-	-	-	-	-	-	-	4
30 Cement and Rod.	-	-	-	2	-	16	-	1	-	-	1	20
31 Sanitary & Bathroom fittings	5	-	3	-	-	-	-	-	-	-	-	8
VI Books and Stationery	41	28	1	20	2	-	1	2	-	-	15	110
32 Books/Journals	25	13	-	7	-	-	-	2	-	-	9	56
33 Stationery	16	15	1	13	2	-	1	-	-	-	6	54

		1	2	3	4	5	6	7	8	9	10	11	Total
VII.	Clothing & Shoes	790	278	5	3	51	8	-	2	-	44	-	1181
	34. Saree	502	109	-	-	32	4	-	2	-	10	-	659
	35 Garments	201	92	2	-	19	-	-	-	-	11	-	325
	36. Cloth Store	37	65	2	-	-	-	-	-	-	16	-	120
	37. Shoes	50	12	1	3	-	4	-	-	-	7	-	77
VIII.	Administration and Welfare	24	178	82	27	16	20	12	26	1	1	5	392
	38. Clinics (X-ray)	5	3	-	2	-	-	-	-	-	-	-	10
	39. Specialists' Chamber	5	-	18	-	-	5	-	-	-	-	-	28
	40. Lawyers/Astrologer	2	11	2	-	-	5	-	-	-	-	3	23
	41. Banks	6	13	1	2	1	1	1	1	1	1	2	30
	42. Post & Telegraph	2	-	-	-	-	-	-	-	-	-	-	2
	43. Govt. Offices	-	21	39	5	15	3	8	25	-	-	-	116
	44. Private Firms	-	116	22	6	-	6	3	-	-	-	-	155
	45. Institutes/Type/ Technical	3	12	-	-	-	-	-	-	-	-	-	15
	46. Schools	-	-	-	6	-	-	-	-	-	-	-	6
	47. Cinema/Theatre	1	2		2	-	-	-	-	-	-	-	5

		1	2	3	4	5	6	7	8	9	10	11	Total
IX	Personal Services	90	99	9	26	31	26	19	24	13	31	20	388
	48 Barber	5	4	1	4	1	3	–	2	2	3	2	27
	49 Dry Cleaner	2	–	1	3	2	7	3	4	2	5	3	32
	50 Tailors	61	69	3	8	20	6	8	6	5	8	4	198
	51 Photo Studio	14	7	2	3	–	–	4	–	2	4	3	39
	52 Restaurants/Snacks	8	19	2	8	8	10	4	12	2	11	8	92
X	Community Services	8	–	–	5	3	10	3	9	7	2	4	51
	53 Auto Repair	–	–	–	–	3	5	–	6	2	–	–	16
	54 Electric Repair	6	–	–	5	–	3	2	1	2	–	1	20
	55 Decorator	2	–	–	–	–	2	1	2	3	2	3	15
XI	Others	–	63*	43**	–	–	1***	3****	–	–	–	–	110
	Total No. of Variety	41	35	26	29	22	25	17	18	20	21	22	55

* Unalloted – 31, Godown/Stores – 30, Arms – 1 and Coscor(Departmental Store) – 1.

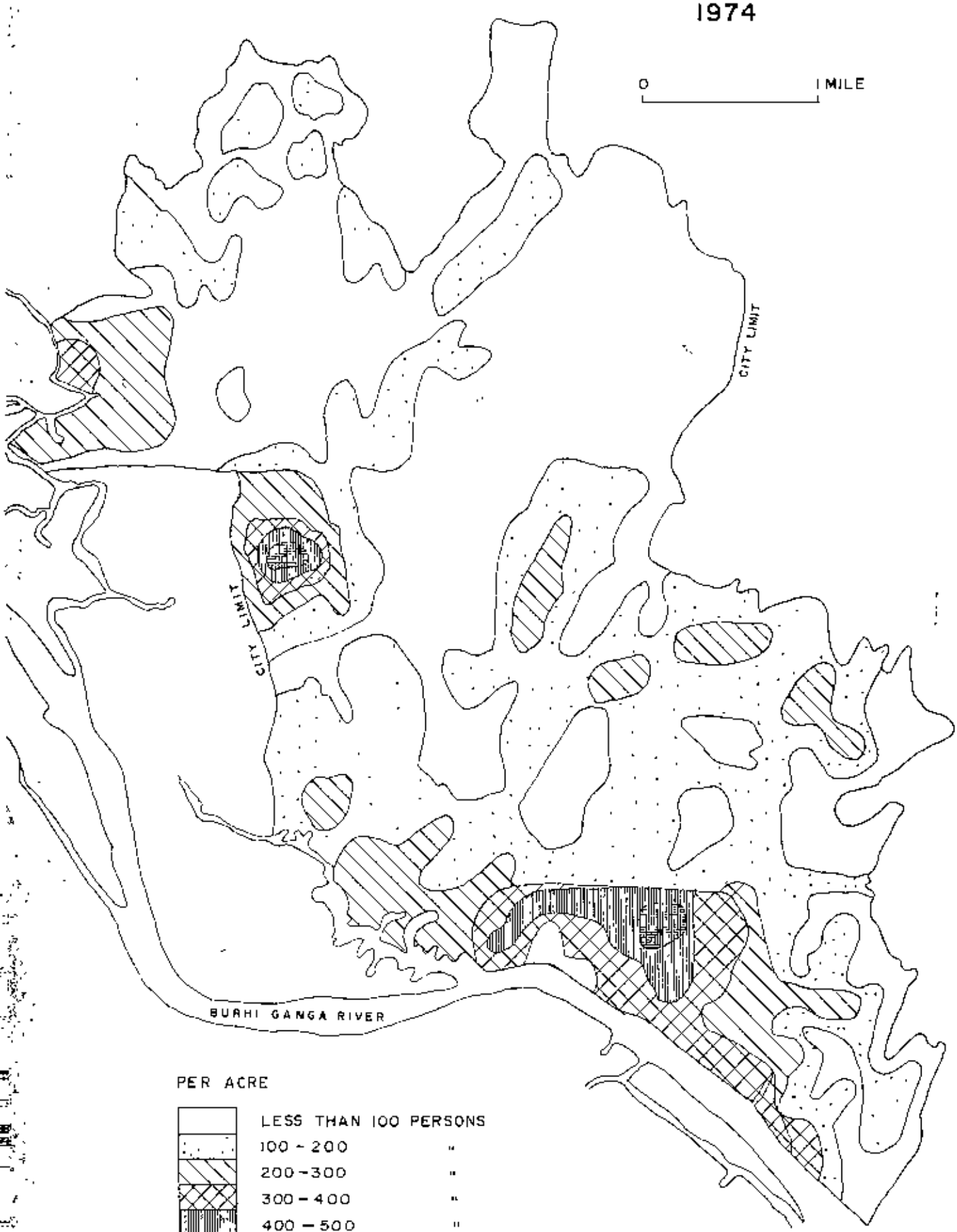
** Tailoring factory – 39 and unalloted – 4.

*** Filling Station – 1.

**** Locked – 3.

APPENDIX - 5

DACCA CITY
DENSITY OF POPULATION
1974



SOURCE: CENSUS OF BANGLADESH

APPENDIX - 6

Regression Line and Prediction

If two quantities, y and x, are related by a straight line law, the equation expressing the relationship will be of the form

$$y_i = b + mx_i$$

Where m is the parameter expressing the slope of the line, and is the parameter which tells that at what value the straight line cuts the axis of y. The slope m, tells that by how much y increases for an increase of unity in the value of x. Whenever there is a straight line trend between two quantities, y and x, we shall be able to find values for the two parameters m and b, which give the equation of the straight line, which is the best fit to the points on the graph (if plotted). There are many criteria by which we might define what we mean by a best fit. The generally accepted criterian is the 'least squares' one.

As the values of b and m are known, the best possible prediction of the value of y could be found out for a given value of x. The computing formulae for m and b are given below.

$$m = \frac{\Sigma xy - \frac{(\Sigma x)(\Sigma y)}{N}}{\Sigma x^2 - \frac{(\Sigma x)^2}{N}} \qquad b = \frac{(\Sigma x)(\Sigma xy) - (\Sigma y)(\Sigma x^2)}{(\Sigma x)^2 - N(\Sigma x^2)}$$

Where the variable x and y represent the same as earlier and n is the number of the given paired items.

Fitting the Regression line to the study :

As the service area (y) maintains a relationship with number of establishment (x) in the 11 retail market centres. The relationship is as follows :

$$y = b + mx$$
$$y = 1.570 + (.034).x$$

The predicted values of y given by a trend line even for other market centres (retail and wholesale in character) from the observed values of x of the 11 retail market centres of the Dacca city are determined. The predicted values of y (service area) for 41 market centres, thus estimated from the observed values of x (number of commercial establishments) of these 41 market centres. The values of y have been predicted to 41 market centres in the study only because these were not found out directly by the survey method. Only the service area(x) has been found directly for 11 retail market centres only. The table-6.1 constructed by the values of the service area, thus obtained, needs interpretation in relation to the assumed hierarchical order of the market centres of the market centres remain more or less similar to that of the assumed f first and second order groups of market centres. There is clear distinction between the first order and second order centres based on service area criteria. The market centres of third hierarchical order groups, pose a slightly different picture than assumed earlier. The distorted picture within the market centres of the third hierarchical order are mainly due to the undesirable environment to some ofthe market centres. As such the distortion to lower order market centres are found high as compared to that of the higher order market centres. The distinction between the second and third order is not that decisive. Personal knowledge of the author had to be taken into consideration in this regard.

Table - 6.1 : HIERARCHY OF MARKET CENTRES.

Name of Market Centres	Total number of Establishments	Service Area
I. Central Market Centres or first order centres		
1. New Market	1495	50.0 (48.5)
2. Baitul Mukarrem complex	1057	39.1 (42.0)
3. Chawkbazar	1035	"
4. Nawabpur Road	951	"
5. Islampur	909	"
6. Sadarghat	761	27.0

* Service area is the whole Bangladesh because of pure wholesale nature of the market centres.

The figure within the bracket may come out from the survey result.

Name of Market Centres	Total number of Establishments	Service Area
II. Regional Market Centres. or second order centres.		
7. Mitford Road	706	*
8. Moulvibazar	461	*
9. Nayabazar	372	*
10. Imamganj	370	*
11. Patuatuly	360	*
12. North Brook Hall Road	315	12.3
13. Kazi Alauddin Road	278	11.0
14. Bangla Bazar	231	9.4
15. Elephant Road	230	9.3
16. Siddheshwari and Malibagh node	185	7.8 (7.0)
17. Farmgate	176	7.5 (11.9)
18. Green Super Market	156	6.9 (13.2)
19. Mohammadpur Nodal Area	154	6.8 (1.2)
20 New Eskaton and Airport Road	154	6.8 (6.0)
21. Aulad Hossain Lane	106	5.2
22. Mohammadpur Town Hall Market	100	5.0
III. Neighbourhood and Local Market Centres. or third order centres.		
Rayer Bazar Tennary corner	99	4.9 (2.7)
23. Rayer Bazar Tannery corner	99	4.9 (2.7)
24. Laxmi Bazar	92	4.7 (1.2)
25. Polwel Market	64	3.7 (3.5)
26. Basabari Lane	64	*
27. Lalbagh Nodal Area	60	3.65(1.5)
28. Malibagh Node	59	3.6
29. Gulistan Hawkers Market	53	3.4
30. Maghbazar Wireless	53	3.4
31. Maghbazar Node	50	3.3
32. Uttara Market	44	3.1
33. Nayan Market	37	2.8
34. Postogola Market	37	2.6
35. Nawabgonj and Nilambar shah Rd.	31	2.6
36. Janata Market	31	2.6
37. Shahbagh Avenue	30	2.5
38. Noor Estate	27	2.5
39. Khurshid Mahal	25	2.4
40. DIT Super Market	24	2.38
41. Sher-e-Bangla Nagar Govt. Mkt.	21	2.3

BIBLIOGRAPHY

1. Baumol, W.J. and Ide, E.A., "Variety in Retailing", Management Science, 1965, pp 93-101.

2. Beavon, K.S.O. and Mabin, A.S., "The Losch System of Market Areas: Derivation and Extensions", Geographical Analysis, vol. 7, 1975, pp 131-151.

3. Beckmann, M.J., "Some Reflections on Losch's Theory of Location", Regional Science Association, Papers and Proceedings, No. 1, 1955, pp N-1 to N-8.

4. Beckmann, M.J. and McPherson, J.C., "City Size Distribution in a Central Place Hierarchy: An Alternative Approach", Journal of Regional Science, vol. 10, 1970, pp 25-30.

5. Berry, J.L. Brian, "The Impact of Expanding Metropolitan Communities upon the Central Place Hierarchy", Annals of the Association of American Geographers, vol.50, 1960, pp 412-416.

6. _____, Commercial Structure and Commercial Blight: Chicago, University of Chicago Press, 1963.

7. _____, "Ribbon Developments in the Urban Business Pattern", Annals of the Association of American Geographers, vol. 49, 1959, pp 145-155.

8. _____, Geography of Market Areas and Retail Distribution, Englewood Cliffs, N.J.: Prentice Hall, 1967.

9. Berry, J.L. Brian, and Garrison L.Willian, "A Note on Central Place Theory and the Range of a good", Economic Geography, vol.34, No. 4, October, 1958, pp 304-311.

10. _____, "The Functional Bases of the Central Place Hierarchy", Economic Geography, vol. 34, No. 2, April, 1958, pp 145-154.

11. Berry,J.L. Brian, and Horton, E. Frank, Geographic Perspectives on Urban Systems With Integrated Readings, Prentice Hall, 1970.

12. Berry, J.L.Brian and Roger, K., "Fairs and Markets in Central Place Studies", Annals of the Association of American Geographers, (Weir Lakes Conference,Michigan), October, 1962.

13. Berry, J.L. Brain, Barnum, H.G. and Tennant, R.G., "Retail Location and Consumer Behaviour", Papers and Proceedings, Regional Science Association, vol.9, 1962, pp 65-106.

14. "Retail Location and Consumer Behaviour in South Western Iowa" Papers and Proceedings, Regional Science Association, 1962.

15. Bogue, Don J., The Structure of the Metropolitan Community, Ann Arbor, University of Michigan, 1949.

16. Brush, E.J., "The Hierarchy of Central Places in South Western Wisconsin, Geographical Review, Vol.43, 1953, pp 380-402.

17. Bunge, W., Theoretical Geography, Lund Studies in Geography, Royal University of Lund, Sweden, 1962.

18. Carol, Hans, "The Hierarchy of Central Functions within the City", Annals of the Association of American Geographers, Vol. 50, 1960, pp 419-438.

19. Carter, H., "Urban Grades and Spheres of Influence in South West Wales", Scottish Geographical Magazine, Vol., 71, 1955, pp 43-56.

20. Clark, Colin, "The Economic Functions of a City in Relation to its Size", Econometrica, Vol. 13, 1955, pp 97-113.

21. Clark, W.A.V. and Rushton, Gerald, "Models of Intra-Urban Consumer Behaviour and Their Implications for Central Place Theory", Economic Geography,Vol. 46, No. 5, July, 1970, pp 486-496.

22. Curry, L.,"The Geography of Service Centres within Towns", Lund Studies in Geography, Series B., No.24,1962, pp 31-53.

23. Davies, D.H., Land in Central Capetown", Capetown, 1965.

24. Davies, R.L., "Structural Models of Retail Distribution", Institute of British Geographers, Transsactions No. 57, 1972, pp 59-80.

25. _____, "The Retail Pattern of Central in Coventry", in Institute of British Geographers (Urban Study Group). The Retail Structure of Cities, 1972, pp 7-10.

26. Davies, W.K.D., "Centrality and the Central Place Hierarchy", Urban Studies, Vol. 4, 1967, pp 61-65.

27. Dickinson, R.E., "The Distribution and Functions of the Smaller Urban Settlements of East Anglia", Geography, Vol. 71, 1932, pp 19-31.

28. Glasson, John, An Introduction to Regional Planning, Hutchinson & Co., (Publishers) Ltd., London, 1974.

29. Goddard, J.B., "Functional Regions Within the City Centre: a Study by Factor Analysis of Taxi Flows in Central London", Transaction and Papers, Institute of British Geographers, Vol. 49, 1970, pp 161-282.

30. Haggett, Peter., Locational Analysis in Human Geography, Edward Arnold (Publishers) Ltd., London, 1971.

31. Hossain, Mofazzal Md., "A Case Study of Some Selected High School in Dacca City to Determine the Optimum Location Criteria", Unpublished Master Degree Dissertation, Department of Urban and Regional Planning, Bangladesh University of Engineering and Technology, Dacca, 1967.

32. Hodge, G., "The Prediction of Trade Centre Viability in the Great Plains", Papers and Proceedings, Regional Science Association, vol., 15, 1965, pp 87-118.

33. Ingram, R.David, "Distance and Intra-Urban Spatial Variation: An Illustration of Some Methodological Problems", Urban Studies, Vol. 15, 1978, pp 83-87.

34. Islam, N., "Dacca - the Capital of Bangladesh", CUS Monograph No.5, Centre for Urban Studies, Department of Geography, Dacca University, Dacca, 1974.

35. _____ , "Models Used in Central Place Theory", Unpublished Course Paper, Department of Geography, University of Western Ontario, December, 1964.

36. Islam N. and Khan A., "Business Complex at Nayabazar: A Feasibility Study", Centre for Urban Studies, Department of Geography, Dacca University, Dacca, 1975.

37. _____ , "Socio-Economic Survey for Malibagh Shopping Complex", Centre for Urban Studies, Department of Geography, Dacca University, Dacca, 1975.

38. Johnson, E.A.J., The Organisation of Space in Developing Countries, Harvard University Press, Cambridge, Massachusetts,1974.

39. Johnson, J.Lane, "Centrality within a Metropolis", Economic Geography, Vol. 40, No. 4, October, 1960, pp 324-336.

40. Johnston, R.J., "The Distribution of an Intra-metropolitan Central Place Hierarchy in Melbourne", Australian Geographical Studies, Vol. 4, 1966, pp 17-33.

41. Khan, F. Karim, "Food Markets in Dacca City", The oriental Geographer, July, 1963.

42. Khan, F. Karim and Khan, M.H., "Delimitation of Umland or Greater Dacca", Oriental Geographer, July, 1961, pp 95-120.

43. King, Leslie J., "A Multivariate analysis of the Spacing of Urban Settlements in the United States", Annals of the Association of American Geographers, June, 1961, pp 222-239.

44. Lillibridge, J.M., "Shopping Centres in Urban Redevelopment", Land Economics, Vol. 24, 1948, pp 137-160.

45. Mayfield, Robert., "The Range of a Central Good in the Indian Punjab", Annals of the Association of American Geographers, March, 1963, pp 38-49.

46. Mcloughlin, Brian J., Urban and Regional Planning A Systems Approach, Faber and Faber, London, 1970.

47. Mian, Md. Ali and Miyan, Md. Alimullah, An Introduction to Statistics, Ideal Library, Dacca, 1968.

48. Mollah, Md. Khairul Islam, "Commercial Structure of Dacca City with Special Reference to Retailing",Unpublished Master Degree Dissertation, Department of Geography, Dacca University, Dacca University, 1975.

49. Nelson, Richard L., "The Selection of Retail Location, F.W. Dodge Corporation, 1958.

50. Nysteren, John D., "Geographical Analysis of Customer Movement and Retail Business Locations", Unpublished Ph.D. Dissertation, University of Washington, 1959.

51. Odland, J., Casetti, E. and King, J.L., "Testing Hypotheses of Polarized Growth within A General Place Hierarchy", Economic Geography, Vol. 49, No.1, January,1973, pp 74-79.

52. Onokerhoraye, A.G., "The Changing Patterns of Retail Outlets in West African Urban Areas: The Case of Benin, Nigeria", Geografiska Annaler, Vol.59 B, No.1, 1977, pp 28-42.

53. Palomaki, M., "The Functional Centres and Areas of South Bothnia", Finland Fennia, Vol. 88, 1964, pp 12-35.

54. Parr,B. John, "Models of the Central Place System:A More General Approach, Urban Studies, Vol. 15, 1978, pp.35-49.

59. Parr. B. John, and Denike,"Theoretical Problems in Central Place Analysis",, Economic Geography,Vol.46,No. 4,October, 1970, pp.568-586.

56. Patel,H.M., "Rural Markets in Rajshahi - East Pakistan", Oriental Geographer, July,1963.

57. Proudfoot,M.J.,"City Retail Structure', Economic Geography, Vol.13, 1937, pp. 425-428.

58. Reilly, W.J., "Methods of the Study of Retail Relationships", Bulletin 2944,University of Texas,1929.

59. Roberts, Margaret, An Introduction to Town Planning Techniques, Rutchinson & Co. (Publishers) Ltd., London,1975.

60. Rushton,G, "Analysis of Spatial Behavour by Revealed Space Preference", Annals of the Association of American Geographers, Vol. 59, 1969, pp. 391-400.

61. Saey, p., "Three Fallacies in the Literature on Central Place Theory", Tijdschrift voor Economishe en Sociale Geographie, Vol. 64, 1973, pp. 181-194.

62. Scott, E.P., "The Spatial Structure of Rural Northern Nigerian Farmers, Periodic Markets and Villages", Economic Geography, Vol, 48, 1972, pp. 316-332.

63. Simmons, J,W., Toronto's Changing Retail Complex: A Study in Growth and Blight, Chicago, Illinois, 1966.

64. Thomas, E.N., "Toward an Expanded Central Place Model", Geographical Review, Vol. 51, 1961, pp. 400-411.

65. Tornqvist, "Flows of Informations and the Location of Economic Activities", Geografisca Annaler, Vol. 50, 1968, pp. 99-107.

66. Ullman, E.L., "Trade Centers and Tributary Areas of the Philippines", Geographical Review, Vol. 50, 1960, pp. 203-218.