

## **Chapter-1:**

### **Introduction**

Markets are the most widespread exchange system and play a dynamic role not only in the rural socio- economic development but also performed the significant role in the regional level. The role of markets in rural development planning is the need of the hour to study (Mulimani & Belgaum, 2012). A market is a place where distribution of goods and services take place. Marketing can therefore be described as a transaction of goods and services in a given place and pricing system. Marketing has always been in existence even before the advent of money when trade by- barter was being used as a way of exchange it had revolved round marketing. Marketing is the backbone of economic activities; it is involved in different stages of production and making the final products to reach the final consumers. It can also be described as the direct flow of goods and services from producers to the users in such a way the utility in time, place and ownership enhanced. More importantly, the rural economy is characterized by very low per capita income and weak purchasing power (Filani and Richards, 1976; Skinner, 1964; Stine, 1962 and Webber and Skymanski, 1973). Periodic markets are invaluable socioeconomic components of the rural space. A periodic market is an authorized public gathering of buyers and sellers of commodities, meeting in the appointed place at a regular interval (Hodder, 1965). Commercial activities among rural dwellers are mostly carried out through periodic markets. Among the importance of periodic markets is their major role in bridging the gap of social and economic isolation associated with rural areas as well as integrating peasant traditional societies into regional and national socioeconomic systems. Some of these roles are well researched and documented (Lado, 1988; Geist, 1990). Although the importance of periodic markets to national development are unfortunately under estimated, they serve as focal points for exchange of commodities and innovation; avenues for social function; centres for communication and entertainment and points for rural evangelism (Park, 1981). Therefore, the academicians, planners and social scientists use these periodic markets in formulating their regional development strategies as nodes or hearts of diffusion of development impulses. In developing countries like India, the periodic market centres are the farmers first contact point with the marketing channels and considered as the nerve centres of the economic, social and cultural activities of the rural life of the country. The producer farmers not only depend on these markets for disposal of their products for cash, but also for the farm products which they do not produce

themselves. As a center of diffusion, they play a significant role in the habitat, economy and life of the people and act as basic building blocks of the complex marketplace exchange system of the modern world. The growths of market centres always follow the development of agriculture, transportation and industries. Market centres are economically most viable and represent the regional pattern of development because market centres provide trade and commerce service to the region, act as a nodal center for transportation and serve as a growth center by providing various services to the adjacent region. Thus, marketing system as well as social structure is always in a state of change both in terms of space and time. An attempt has been made in the present study to deal with the role of periodic markets in rural development of Uttar Dinajpur District. Rural periodic markets developed as a result of internal demand for exchange of goods and services among local communities. Periodic markets held at a regular time interval and in fixed places link villages to small towns and their surroundings to create a grass root level network of trade systems throughout the developing world. Periodic market is a normal and a unique trading institution which serves its hinterland.

Most of the internal trades of local produce are directed through these periodic markets, especially in agrarian set up. Thus a periodic market plays an important role in promoting the socioeconomic status of the rural community. In most countries of the developing world, market centres also serve as focal points of health delivery, local administration, political campaigns, religious programs, information exchange and innovation ,diffusion ,entertainment (Addo ,1977 ;Udo ,1982 ;Gormsen ,1985 ;Wanmali 1985 ;Alam ;1985). Periodic markets serve diverse socioeconomic activities for the rural communities in Uttar Dinajpur District.

Periodic markets in Uttar Dinajpur district held at regular interval in weekly, bi-weekly and tri-weekly basis and playing a role as a nerve center for socioeconomic, socio-cultural and socio-political harmony. These periodic market centres play diverse socioeconomic functions towards integration of peasant economies into regional level. In respect of attendance, area, influential range and number of shops, etc. periodic markets can be classified into different orders and there exists a positive relationship in between the size of periodic markets larger the district which attract considerable threshold from surrounding counterpart. People residing in rural counterpart prefer to congregate in periodic markets at regular intervals after attending their scheduled agricultural activities throughout the week. After producing their agricultural and horticultural commodities

they wish to dispose the surpluses in their nearby periodic markets from where normally local, long distance sellers or consumers procure the same commodity in cheaper rate than that of the permanent market and subsequently sell in urban markets. Periodic markets are the principal agency of satisfying the usual needs of rural inhabitant. On the other hand it also promotes regional economic interaction. Influx of urban goods in rural periodic markets and vice versa promotes the regional economic interaction within the district. With the advancement of transport rural sellers wish to travel in urban markets and bring varieties of urban product to the notice of rural consumer in periodic markets. Periodic markets also performed a viable role in promoting social, economic condition of different sections of the society.

So, periodic markets are the principal agency of satisfying the usual needs of rural as well as urban people on the other hand it has been promoted by regional economic interaction through incursion of long distance sellers into these markets. A periodic market has a viable role in promoting social- economic condition of different sections of the society.

Organized in a rational manner, a region's several periodic markets require spatial and temporal integration to work smoothly: meeting days are distributed among the seven days of the market week, with schedules taking into consideration the convenience of both sellers and consumers. Diverse services are available at rural periodic market centres, including the buying and selling of local perishable and fragile commodities such as vegetables or earthenware pots; and non agricultural employment opportunities are available for trading and other activities. Also, farmers can easily obtain fertilizers, seeds, insecticides and pesticides; and periodic markets offer the raw materials for household-level industries, bringing development to rural areas.

### **1.1 Literature Review:**

In the present study the attempt has been made to review some of the relevant literature related to the issue selected. H.M Saxena (1988) emphasized on the 'Rural Markets are the nerve centre of economic, social, and cultural activities and also the farmer's first contact point with marketing, channel which helped a lot in understanding of periodic market's contribution to rural economies. Again in 2004 he focused on spatio-temporal aspects and synchronization of periodic markets. B.W. Hodder (1961), contributed significantly to the field of marketing geography by throwing light on the rural periodic markets in a part of Yorubaland. R.K Shrivastava (2006) narrated the

issues like spatio-temporal relationships, hierarchical reorganization, mobility pattern of traders and morphological pattern of the markets. Udosen and Adams (2009) examined spatio-temporal synchronization of periodic markets in Akwa Ibom State, using eighteen periodic markets as a case study. M Ali & M.M Khan (2007) conducted the study on hierarchy of periodic market centres in Shahjahanpur District. R.S.Dixit (1979) highlighted the market centres and their spatial development in the Umland of Kanpur. Vasu Deshpande (1941), studied about the market villages and periodic fairs of Bombay, Karnatak region. B.W Hodder (1961), contributed significantly to the field of marketing geography by throwing light on the rural periodic markets in a part of Yorubaland. D.R.F Taylor (1968) concentrated on spatial aspects of Kenya's rural development strategy in spatial aspects of development. R.J. Bromley (1971), throws light on the markets in developing countries and in 1987, examined the periodic markets and their role in rural development policy. Thomas. H. Eighmy (1972), concentrated in the case of west Nigerian periodic markets – the lowest order central places. He later on pointed out that the evolving transport nets extend the reach of metropolitan centres, rudimentary urban places evolve from their rural matrix and technological innovations diffuse across areas and down the urban hierarchy. The specific observation has been made by S.V. Wanamali (1981), on tribal economies and also studied about the spatial behavior patterns of urban-rural interaction, rural service centres in India, market centres and their distributions and in 1987 he focused on the periodic markets its marketing process and implication on rural development in India with special reference to Singhbhum district. The most effective and exhaustive work has been done by R.S.Dixit (1979), highlighted the market centres and their spatial development in the Umland of Kanpur. S. I. Hugar (1982), analyzed the role of weekly markets in the development of rural areas of Gadag taluk and in (1984), concentrated on spatial analysis of the market system in Dharwad district. H.M. Saxena (2004), observed role of market towns in regional development of Rajasthan state and focused on regional planning, Willium Applebaum is widely regarded as the chief architect of marketing geography. He spelled out in his 'marketing geography' the need and scope of marketing geography. B. W. Hodder (1961, 1963, 1964, and 1965) in his article 'Rual periodic day markets in Yoruba lands', in 'Transition', of the institute of British Geographer studied in depth various aspects of market centres, such as, origin, growth, distribution and periodicity with particular reference of Yoruba land. The origin and growth of periodic markets or historical studies have been least attempted by geographers. B. W. Hodder (1965) in his

paper entitled 'Some Comments on the Origin of Traditional Markets South of the Sahara' has described the factors responsible for the origin of periodic markets in a part of Africa. J.H. Stine (1962) has described the origin of periodic markets as an economic phenomenon. 'The trade centres of Tinnevely district and cotton markets in the same region' were published by Krishnan (1940) and Ponniah respectively in Journal of Madras geographical Association. Periodic markets also got focus during this period. S W Sinha (1951) in his article 'Weekly market at Bamnia in Manbhum' in journal A geographical review of India, analyzed that how does these weekly market places bring about some marketing awareness in tribal communities.

B.G. Tamaskar in 1955 in his article 'A study of the settlement pattern and weekly market in Patharia Kalan region,' in Geographical Review of India, highlighted the fact that how these weekly marketplaces form a settlement pattern on the basis of their own economic rationale. A.B. Mukherjee, in 1957 in his article 'The bi-weekly markets in Modinagar in National geographer,' signifies the relevance of these market centres in Modinagar area.

S.P. Mukherjee, in 1968 in article 'Commercial activity a market hierarchy in a part of eastern Himalaya,' Darjeeling, in the 'National geographical journal of India' the market centres were graded in accordance with various attributes and some consistency methodology was used in this paper. Deshpande (1941) studied market villages and periodic fairs in Bombay-Karnataka region.

G.W. Skinner, the only one who should be credited with an evolutionary model, begins with a region that supports only small peasants markets, population growth give commercial impetus to the region, requiring peasant to specialize in order to meet the subsistence needs and providing for more market centres whose flows must be articulated. A single market that once initially supported many villages and subsequently becomes the hub for the smaller markets, carries the development prospect in with some of the villages. Skinner in his model, portrayed the fact that how urban centres would develop only as a result of rural market intensification. There are some theories and models which incorporate the basic concepts underlying the evolution of the market and development. Carol A. Smith says that the social and economic forces will have much importance around the market centre, but whereas Polanyi considers cultural or political rather than economic variables.

B. Schwimmer and G. Appleby describe that smaller market centres develop first and are promoted to the higher level in the hierarchy as new market development. Plattener and Crissman also describe the process of rural market evolution, which they have tested their theories using data on Taiwan and Mexican towns. Plattener describes that first a large urban centre with both political, administrative functions, then several small local markets.

Most studies regard marketing as a peripheral feature of rural economy. E.K. Fisk (1971) has, however, argued that non-agricultural sector of economic activity may aid the process of development. Marketing is also one of the forms of economic activities which also encourage agricultural development. By this the transitions from periodic to regular marketing together with the economic and rural development takes place in the region.

The study related to the emergence and growth of marketplaces in the Faizabad district conducted by S M. Singh, in 1965, deserve specific mention. In his study S.M. Singh identified a five stage process of growth of market centres leading from instability to stability stage. The works of V.K Patel (1963), B.G Tamaskar (1966), P.G. Agarwall (1968) and S.P. Mukherjee (1968) came out as a significant contribution to the marketing geography, which analyze spatial and functional organization of market centres in different parts of the country. R.N.P. Sinha (1963) ascertained the role of a market centres in tribal acculturation in his article 'Role of Phariya in tribal acculturation in central Indian market' published in *Ethnology* journal.

During the last four decades, there has been a remarkable growth of interest among geographers to study rural markets. The volume of literature on rural markets is vast and it is neither possible nor desirable to review the entire literature.

For details one must consult the bibliographies prepared by Bromley (1974 and 1979) on 'Periodic Markets, Daily Markets and Fairs'. Two review articles written by R.H.T. Smith (1979, 1980) entitled, 'Periodic Marketplaces and Periodic Marketing: Review and Prospects' are notable for their contribution. Another reference to bibliography is the Newsletter No. 15 of the International Geographical Union, a working group of Market Place Exchange Systems, edited by E. Gromsen (1965). The origin and growth of periodic markets or historical studies have been least attempted by geographers. B.W. Hodder (1965) in his paper entitled, 'Some Comments on the Origin of Traditional

Markets South of the Sahara' have described the factors responsible for the origin of periodic markets in a part of Africa. Stine (1962) has described the origin of periodic markets as an economic phenomenon. Belshaw (1965) has given a good account of the evolution in marketing systems from traditional exchanges to modern markets in various parts of the world. The growth of periodic markets in Singbhum district of Bihar has been discussed by Wanmali (1981).

The periodic marketplace, as an element of the spatial system, has been discussed by geographers in the form of spatio-temporal synchronization, market-place rings and their hierarchies. The relationship between temporal and locational spacing was discussed first by Hodder and Ukwu (1969) and further elaborated by Fagerland and Smith (1970), Smith (1970), Wood (1978), Bromley (1976), Wanmali (1977). They have examined a hypothesis that 'proximity in space implies separation in time' and both direct and inverse relationship has been found in various regions of the developing world. This relationship has also been examined in terms of traders and consumer hypothesis developed and discussed by Smith (1971), Smith and Hay (1969), Gana (1976), Ishihara (1978), Thorpe (1978), Filani and Richard (1976), etc.. Market rings form the base of periodic market network. Such terms as 'ring' (Hodder, 1961), 'cycle' (Thomas, 1924), 'circle' (Polaman, 1961), and 'circuit' (Hill, 1966), have been used and imply the existence of a system. The phenomenon of market cycle has been widely discussed and described by several geographers in various parts of the world, including India. The concept of market shift (Alao, 1968) has also been developed in order to explain the system in which the market meetings move from one market to another. The hierarchy of periodic markets has been examined in detail by Skinner (1964), Berry (1967), C.A. Smith (1976) and Bromley (1974). Skinner (1964), in his study of rural China have found that marketing systems exist in an integrated pattern of hierarchy. Several variables like volume of trade, number of shops, total number of people assembled, etc., have been used by geographers in order to study the hierarchical pattern. Periodicity is an important aspect of rural marketing. In his study of African periodic markets, Good (1973) has suggested that 'the distribution of market periodicities and market networks presents a complex array of function, distinct, contiguous, and overlapping systems: a kaleidoscope of place- time interrelationships'.

The periodicity factors have also been examined by B.W.Hodder (1971), R. H.T. Smith (1971), and R. J. Bromley (1975). In India, considerable research work has been done on weekly markets. V.K. Srivastava, H.M.Saxena, B.G.Tamaskar, R.S.Dixit, S. V. Wanmali and Gedam have done geographical studies of the various facets of weekly markets. Several Ph.D theses and research projects have also been completed on periodic markets in the Departments of Geography at Gorakhpur, Udaipur, Sriganaganagar, Allahabad, Amrawati, Madurai and Bombay Universities.

S. Park. in 1981 in *Economic Geography Journal*, published e.g. rural development of Korea and the role of Periodic markets, in which he tried to analyze that how the periodic market system as a traditional institution located in the rural hinterland, has contributed to the development of rural Korea. The emphasis was on the study of the spatial aspects of development.

S. Wanmali, in 1980 in the 'Royal Geographical Society' published an article on the regulated and periodic market and rural development in India, attempted to highlight the harmful nature of periodic markets to producer seller rather than regulated market along with their spatio-temporal arrangement.

Robert, H.T. Smith 1980 in 'Progress in human geography', the article 'periodic market places and periodic marketing, review and prospect,' analyzed how does the attendant in periodic market places converge with different motives either to purchase or sell or for non economic purpose.

D.W. Jackson, in 1971 in *Transactions of the Institute of British Geographers* article on 'Periodic markets in southern Ethiopia' laid an emphasis on the market structures of the densely populated Gamu Highlands, a simple calculation to remove the weighting influence of variations of population density on market size is used to differentiate a two-tier hierarchy of markets: local and specialist, Local markets, which have no permanent settlement, exhibit a random spatial distribution.

H. K. Soon, in 1984 in his thesis on 'The periodic market in contemporary Korea and its continuing role in rural development' mainly discussed the understanding of periodic marketing and its developmental potentials.

P. P. Bale in 2011 wrote the article on 'A geographical comparative analysis of service areas of cattle market centres in Solapur District', in *Indian Streams Research Journal*, with an objective of the present investigation is to make an enquiry into

the service area of cattle market centres in Solapur district of Maharashtra. The measurement of service areas of cattle market centres is important for understanding marketing data, market centres performance and such kind of studies help to find out the served areas as well as poorly, moderately and highly served area in the study region.

P Ryngnga, & B. B. L Ryntathiang, in 2012 in Journal 'International Journal of Social Science Tomorrow' published the article on 'Periodic Market and Rural Development: An Appraisal Study of Cherrapunjee of Meghalaya' emphasized periodic market in the tribal, rural area of Meghalaya in which Iew Sohra (Cherrapunjee) periodic market acts as the main artery to cater to the services and needs of the other rural neighbourhood. To further the work draws attention to the market mechanism, functions, etc. in order to distinguish the served and un-served area of nearby villages or area to reduce the spatial gaps and take the un-served area in the fold of serving area by proposing new periodic markets in the study region.

R. J. Bromley, Symanski and. C. M Good, (1975) in 'Annals of the Association of American Geographers', published an article 'The Rationale of periodic markets' highlighted about the origin and persistence of periodic markets and explained in terms of the needs of producers, the traditional organization of time, inertia, comparative advantage and how the periodic market transit into daily markets.

A thorough analysis of periodic markets of Singhbhum district of Bihar by S.V. Wanmali concentrates on the nature of distribution and characteristics of goods and services as a part of a system of distribution. His taxonomical study of periodic markets in a non-plain region indicates that even in a tribal set up, the periodic market, as a trading centre, forms the part of a larger exchange and distributional system of goods and services may change from that of a plain area, but there is a close resemblance in the nature of trading of goods and services. Hence, Wanmali stresses the inclusion of periodic market centres as focal points of implementation of rural development plans, so that the benefits of the development programs could be availed properly and optimally by the all sections of people in rural society.

A detailed study of periodic markets of the Tarai region of Uttar Pradesh by Shrivastava investigates the reason behind outflow of manpower from the region, as a condition of non-employment generating situation, and forwards the strategy of rural development planning to be based on the consideration of periodic market centres as

points of focus for the entry of infrastructural benefits and distribution of goods and services. His contention bears to check the exodus of rural population through planned utilization of goods and services which enter into the periodic markets of the region. The development planning based on utilization of periodic markets is expected to create employment opportunities, to plan viable integrated development programmes and to provide many of the urban facilities to rural areas. Keeping this in view, he suggests five tier development policy strategy based on integration of periodic markets for the balanced rural development of backward region. However, his five tier planning strategy for rural development of Tarai region includes the synchronization of market days, establishment of new market centres, market regulation, improvement of information networks and other locational strategies. The review of studies on the behavioural aspects of consumers and sellers indicates that the geographers have been very much interested in this field. But almost all efforts are concentrated to the urban or daily market centres. Some efforts also have been attempted to understand behavioural norms of market attendants in periodic markets in India as well as abroad but they are sporadic and in small numbers (Shrivastava 1979, Smith 1977, Tmaskar 1984, Stine 1962, Hay 1977, Webber & Simanski 1974 Smith 1972). The empirical studies on the behavioural aspects of sellers and consumers made by different scholars revealed that their (Sellers & Consumers) incomplete knowledge of demand and supply system and some social constraints influence the spatial behaviour of them. Under such conditions they are more likely to be bounded rational satisfies rather than economic men. Thus individual may be satisfied by undertaking journey which will not necessarily result in an economic optimization of potential opportunities (Pred, 1967). In addition to above factors, age, sex, level of profit also controls the variable of consumer's behaviour (Fingleton 1975). Huff (1960) thought that individual's behavior in visiting market centre is influenced by his cultural, demographic, economic and geographical milieu. Moreover occupation, ethnic affiliation, life cycle, resident; trading hours and amenities appear to be associated with differences in the observed pattern of shopping behavior (Thomas 1974, Potter 1977b, Hillman and Whally 1977).

## **1.2 Objectives**

Periodic markets exist since long under different geographical and social environment. They have immense potential as a source of non agricultural rural economic activity to rural people. As a result apart from agricultural activity periodic markets have brought the changes in rural masses through its socio-economic transformation capability.

Although there are numerous studies on periodic markets elsewhere, but there is particular no systematic study on the periodic market centres in Uttar Dinajpur District.

The objectives of the present study are as follows:

1. To examine the origin and developmental factors of rural periodic market centre in Uttar Dinajpur District since historical period.
2. To analyze the various spatio-temporal aspects of the periodic markets.
3. To assess hierarchy and centrality of rural periodic market centres.
4. To assess the connectivity and accessibility of rural periodic market centres of the study area.
5. To examine the relation between travel patterns of the participants in the markets and types of commodities as well as the services rendered by the participants.
6. To explain the role of rural periodic market centres in regional economic development of study area.
7. To suggest strategies to develop the rural areas through periodic market centre.

### **1.3 Research Questions:**

The aims at understanding certain basic issues related with the periodic marketing system and its role in regional economic development in Uttar Dinajpur District, therefore, raise the following questions while studying the situations:

- 1) What were the operating forces behind the development of periodic markets in Uttar Dinajpur District?
- 2) How do spatial and temporal aspects of rural periodic markets bring an imprint in marketing organization system in rural areas?
- 3) How does different order of periodic markets make an systematic exchange system in the study area?
- 4) How does periodic market bring transformation in the rural economy?

### **1.4 Hypotheses:**

The following hypotheses are proposed to be tested while studying the problem:

1. The service area by each market is an indication of rural development.
2. There is a symbiotic relationship in between transport network and market development.
3. Markets and spaces are integrated through periodic marketing process.

### **1.5 Database and Methodology:**

In order to fulfill the above mentioned objectives, the following methodology has been adopted. The data used for this study has been obtained from both primary and secondary sources. As per West Bengal State Marketing Board Report 2010 there are 205 periodic markets are scattered in the Uttar Dinajpur District. In this regard the study is carried out by random sampling techniques, as 20 %-30% sample of periodic markets has been taken as the study units, based on different parameters. After selection of the sample rural periodic market centres present study was carried out on the basis of intensive fieldwork in the study area, which is supplemented by the secondary sources of data abstracted from West Bengal State Marketing Board, District Statistical Abstracts and District Census Handbook etc. The questionnaire, schedule and interview techniques have been employed to collect the data and information regarding all aspects of periodic market centres. The study also adopted reconnaissance survey on the basis of a questionnaire and schedule to ascertain the participant's behaviour. However, primary data were obtained through the use of a questionnaire administered to respondents (both sellers and buyers) on market days. The first stage in the collection of primary data involves the reconnaissance survey of the particular market centres, this is to enhance familiarization and also facilitates the easy administration of questionnaires. The second stage involves an oral interview and administration of questionnaires. Some of the information is collected about history of origin of particular periodic market and its subsequent developmental perspective. In this regard information was collected from age old persons residing in the vicinity of market centres and organizer of the market centres. After procuring the information, emphasis was given to the general characteristics of each sample periodic market centres in the district. Data analysis were first carried out on the in-depth interview and case studies. The collection and compilation of the data were followed by tabulation and computation, absolute frequency, cumulative frequency, percentage and ratios of the same. The analysis and interpretation of the data incorporate both the empirical and the theoretical approaches. The archival research, the extensive field study, and the intensive laboratory exercises have resulted in clear understanding and discussion of all the concerned perspectives of periodic markets and its role in regional development in the district. Data collected from the field is first rectified and tabulated subsequently. Then it was tested by appropriate statistical techniques such as the nearest neighbour analysis, the

chi-square test, the centrality index, correlation analysis, regression analysis and network analysis. Appropriate cartographic techniques are employed to support the discussion.

The base map of sample periodic market centres in Uttar Dinajpur district is prepared. In this regard handheld GPS was used to determine the latitudinal and longitudinal location of the points (Periodic market centres). After procuring the values it has been mapped through Global Mapper. The second step was to find out the distance between the periodic markets through the same GIS software. On the basis of these direct distances nearest neighbour analysis techniques has been applied to determine the pattern of distribution of periodic market centres in Uttar Dinajpur District. Thematic mapping techniques have been employed to classify the periodic markets based on periodicity characteristics, attendance, area covered by periodic markets, number of stalls, nature of periodic markets, shops opening, hierarchy of periodic markets, the influential range of periodic markets.

The spatio-temporal synchronization of periodic market systems has been an intensively studied field, especially in Anglo-Saxon geography (Bromley 1974a, 1979). R. H.T. Smith (1971, 1972) in particular has made comparative studies of a number of periodic market systems throughout the world. He developed a method of testing the spatio-temporal synchronization, or as it was called later, integration (R. H. T. Smith 1979) of a market system. This method examines if spatial and temporal distances of markets are inversely related. The spatio-temporal relation of periodic market places in Uttar Dinajpur District has been examined with the help of distances calculated on maps. With the help of maps markets occurring on the same day, adjacent day, one day or two days interval, actual distances between them has been calculated and a mean obtained for each day. For the adjacent day market, distances for prior or after day market has been measured and mean has also been obtained. On the basis of the calculated values for each day graph has been prepared.

Centrality index methodology (Davies, 1976) has been adopted for determination of hierarchy of periodic market centres in Uttar Dinajpur District. Since previous literature regarding determination of hierarchy is vast but it is convenient to determine hierarchy through centrality index methodology. The study has applied random sampling techniques for selection of periodic markets. At least 20%- 30% of periodic markets have been randomly selected for study. Various data regarding these periodic market places are procured from primary and secondary sources. Further, some subjective

and objective parameters are selected and four point weight, age scale varying from 1 (lowest) to 4 (highest) is applied on the basis of comparative and relative importance to selected market centres. After assigning the values of the various parameters Centrality Index for each periodic market are calculated. Finally, on the basis of calculating Centrality Index, periodic markets were divided into a different order of hierarchical groups. Euler's graph theoretic measures have been applied to determine the connectivity of rural periodic market centres in Uttar Dinajpur District.

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