Market Hierarchical Pattern of Paschim Medinipur, West Bengal, India: An Approach

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Abstract: Hierarchical analysis of market gets importance since 1960s onwards. Market centres are always a focal point for the economists and geographer which acts as central place in respect of services and functions that provides with various levels like first order, second order, third order and so on to the dependent population. Highest order market centres are much further apart and mostly situated as regional urban centres whereas lowest order centres offering services most frequently occurred and closely spaced. There is a close interrelationship among the markets irrespective of the number, spacing, size and order in hierarchical system. The present study tried to evaluate the hierarchical relationship among 228 markets and its blockwise distribution of Paschim Medinipur district of West Bengal, India. Different statistical methods have been used to find out market hierarchical pattern of Paschim Medinipur such as Centrality index, Threshold population, Combined service index, Yearly tranjection and Average score index. ANOVA technique reveals the similar fashion in ordering pattern of the markets among different techniques and unequal fashion in orderwise spatial distributions of markets in Paschim Medinipur.

Keywords: Market, Hierarchical, Order, Centrality Index, ANOVA

1. Introduction: The term hierarchy (Greek word 'hierarchia' means "leader of sacred rites") means an arrangement of items or categories in which the items are represented as 'above', 'below' or “at the same level as one another”. The English word 'hierarchy' was first cited by the Oxford English Dictionary in 1880. In economic geography the term hierarchy used by French geographer Garnier and Delobez (1979) and defined as "the organization of a whole series, in which each term is greater than the following one by a symbol of normative character". Walter Christaller (1933) in his “central Place Theory” put the pioneer stone regarding market hierarchy. According to him a centre has been supported by certain amount of productive land because essential services must be performed for the surrounding land. August Losche (1954) has modified Christaller’s model and stated that scale of economy play instrumental role in ordering pattern of the market. The hierarchy of market centres as a central place composed with varying degrees of functional complexity. More complex places are termed 'higher order' and serve larger tributary areas than less complex "lower order” centres. Brush and Gauthier (1962) demonstrated the existence of functional grades focusing the importance of determination and discreteness of functional classes and objectivity in ranking centres. Berry (1967) stated that "Central-place principles provide a complete statement of urban location only when urban centres are supported exclusively as market centres by the retail and service functions they provide for surrounding regions". The ordering or ranking of retail centres of the settlements indicates that there is a regular interconnection between the retail centres with its surrounding complementary region. The hierarchical ordering of the centres also indicates the number of population served by the centres and the types of establishment present. Thorpe (1968) proposed market hierarchy based on number of service and amount of trade. Based on sales he categorised UK in seven types of market centre, viz regional centres, sub-regional centres, area centre, major centres, district centres, local centres and village centres. According to Wanamali (1980) the 'socio-economic' gap between the centers and its tributary areas clearly reflects a "developmental dualism". This dualism and "functional friction" between the highly developed centres and its undeveloped territory resist the integration necessary for new planning programmes. Garnier and Delobez (1979) stated that in continuum of functional relations a possible outcome is hierarchy of market. They opined that “ in fact, for reasons connected with the history of growth, with perpetuation through sheer intertia, with a sharp rise in population, and with changes in the standard of living, the commercial system may have reached a certain stage to which the use that is made of it may more or less correspond. It is thus necessary to take account of both elements.” Most of the studies related to hierarchy in the field of economic geography focus
mainly on the centrality of the markets. For identifying the hierarchy of market places in a spatial organization the central place system has now been universally accepted and more especially for the regional planner for micro-level balance regional development.

2. Study area: Paschim Medinipur located in the southern part of West Bengal, has been carved from the erstwhile Medinipur district, the then largest district of India and came into existence in the present form from the 1st January 2002. Paschim Medinipur district is the southernmost district of the Burdwan Division, is situated between 21°36’35” and 22°57’10” North latitudes and between 86°33’ 50” and 88° 12’ 40” East longitudes. Its boundary lies in Bankura and Purulia districts in the north, Mayurbhanj and Balasore districts of Odisha in the south, Hugli and Purba Medinipur districts in the east and Singbhum district of Jharkhand and part of Odisha in the west. The total geographical area of Paschim Medinipur district is 9345.00 sq. km. Paschim Medinipur comprises of four sub-division and twenty nine blocks. The study includes 228 markets of Paschim Medinipur district which have been distributed in twenty nine blocks with varying level of concentration (Fig No-1).

3. Objectives: The major objectives of this study are as follows:
   i. To study the pattern of the market hierarchy in the district.
   ii. To findout the blockwise market order distribution of Paschim Medinipur district.
   iii. To analyse the variations of market ordering system in Paschim Medinipur.
   iv. Finally to discuss the composite market ordering fashion of Paschim Medinipur district.

4. Hypothesis: To fulfill the objectives following two hypotheses have been taken into consideration and these are-
   1. Orderwise spatial distributions of markets of the study region are located in a similar fashion.
   2. Different methods are used to findout the ordering pattern of the markets of the study region and the methods of distribution pattern also shows a similar fashion of the location of markets.

5. Database & Methodology: Analysis of market hierarchy is not an easy tusk but a complex one as different variables are responsible for the ordering of market these must be chosen in scientific manner and perfect coherence among them. Nature of the retail or wholesale functions markets are varies according to its socio-economic set up of dependent villages and consumer behaviour. To identify the market hierarchy the author has been emphasis on the association of the marketing functions of 228 centres of the district based on two categories of methods i.e. one related to ‘equipment’ which considered total number of shops in a market centre and size of market area and other is ‘functioning of equipment’ based on sum total of annual turnover of the markets (Scott, 1970). The indicators that have been taken for analysis are the number of employment in the market, number of establishment and magnitude of trade area which is directly related to marketing functions. Spatial locations of the markets are identified from District planning Map series of Paschim Medinipur prepared by National Atlas and Thematic Mapping Organisation (NATMO), 2011 and Google Earth image, 2015. The major data sources are Agricultural Market Directory, Paschim Medinipur, 2011 and Census of India, relevant issue of Paschim Medinipur, 2011. Two way Analysis of variance (ANOVA) has been applied to test the hypothesis. Based on average score index technique hierarchical pattern of Paschim Medinipur district has been identified. For methodological operation techniques have been discussed and used to the present analysis for better understanding. The attempt has been made to measure and identify the hierarchical pattern of the markets by using different traditional techniques. Some traditional techniques have been changed represented by the author in modified form along with these proposed new techniques. For present analysis the following techniques are discussed below.

5.1 Modified Christaller method:
   Christaller Central Place theory is one of the important and scientific works in economic geography. The 'Centrality Index' of the theory developed by Christaller is an important measure to understand the methodology and pattern of hierarchy of a centre. He proposed his theory assuming uniformity in landscape, population distribution, transportation and constant range of goods. The Centrality Index is represented as:
Figure No-1: Location of Markets in Paschim Medinipur

Source: Prepared by Scholar from District Planning Map Series, NATMO, 2011 & Google Earth, 2015
\[ Ct = Tz - \left[ E_z \frac{T_g}{E_g} \right] \]

**Where,**

- \( Ct \): Centrality Index
- \( Tz \): The number of shops in the centre Z
- \( Tg \): The number of shops in the whole region,
- \( Eg \): The number of inhabitants in the region,
- \( Ez \): The number of inhabitants in the centre Z.

In order to identify the centrality index of the central places of Southern Germany (1933) Christaller applied this method. Das Nirmalya (2015) has been slightly modified this above technique. Christaller considered Southern Germany as a region but here he considered the blocks as a small unit of analysis to avoid regional heterogeneity in distribution of population, different pattern of agriculture and transport development which are responsible for the development of a market as the central place. Another modification has been made here that Christaller considered the number of inhabitants of the places under study but author considered the people who engaged in commercial or marketing activities. The reason behind it that the field study shows that in most of the markets of Paschim Medinipur district periodic in nature i.e. 88.18 percentage (Samanta, 2015). Only the people live in the market areas those who are directly or indirectly engaged in the marketing activities. On the basis of this modification the researcher considered the following formula to measure the centrality index for hierarchical ordering of the market centres of Paschim Medinipur district.

\[ C_{tm} = N_{sj} - \left[ \frac{N_{ej} B_s}{B_p} \right] \]

**Where,**

- \( C_{tm} \): Centrality of a market
- \( N_{sj} \): Number of shops of jth market centre
- \( N_{ej} \): Number of employee of jth market centre
- \( B_s \): Number of shops of the market under study in the small administrative unit (Block)
- \( B_p \): Number of population in the Block

Author has taken special care in the application of Centrality of market analysis in the present context with keeping in mind that centrality of a market is the prominent function in the analysis of market hierarchy. Modification of Christaller theory gives better understandability and meaningful result in present situation. Centrality of a market evokes its strength and potentiality with respect to its shop and employee. Larger number of shop and employee means higher order market and vice-var-sa.

![Figure No-2: Market hierarchy based on modified Centrality Index](image-url)
In this method seven markets are fall in first order. The ratio of first, second, third, fourth and fifth order market is 7:12:19:40:150. The order wise distribution (Fig No-2) clearly depicted a hierarchical gradation of market following rank size order and a pyramidal structure with width base. The first and second order markets are daily markets, provides higher services to the people in terms of number and order.

5.2 Mean Threshold Population per Market Centre
Threshold means the minimum demand necessary to support an economic or commercial activity such as a service for a centre. In case of market activity, the term threshold referred to as the minimum number of customers required for its sustenance, growth and to run profitable marketing. In case of function each market has demand a distinct threshold with a special dimension. There is a direct relationship between market size and threshold which influence the geography of market centres and retail activity. To support activities of each market centres need a certain threshold population which varies according to the size of the market. Thus, the threshold population for a service is the population required in a market place and its complementary area together to provide the minimum number of consumers. The higher order markets usually have a greater threshold and larger complementary area. The establishments and goods offered by a market centre to the customers living within the market and the complementary area constitute the centrality of the market. So, the measurement of threshold population per market centres is a useful method for identifying the hierarchy of the markets of any region.

The method of calculating the mean threshold population per market centre may be represented as

\[
P_j = \frac{m}{n} \sum \frac{P_{ji}}{n}
\]

Where,
\( P_j \) = Mean Population per market Centre,
\( P_{ji} \) = Population of jth market centre, where ith function exists,
\( m \) = Number of market centre in the region and
\( n \) = Total number of markets having the ith function.

The above method is very useful for identifying the hierarchical order of the urban market centres where people are lived within or just surrounding the markets. So the people of these centres are the customers of that particular market and the market also offer the goods or services to the people of its complementary region. To calculate the market threshold populations for the services in the urban market centres are much easier than the rural markets where the types of sellers and buyers are totally different in nature. The rural markets are smaller in size and most of the sellers and buyers are not the permanent residents of these markets. Therefore, the author considers the blockwise population as the customer of the markets. For individual market the number of establishments or shops and blockwise population has been considered to identity the hierarchical order of the market centres to establish the regional economic importance of the centres. Here, the author has modified the method "Mean threshold population per market centre" and this may be represented as Adjusted Threshold Population per market:

**Adjusted Threshold Population per market:**

\[
\text{Atpm} = \frac{T_{pr}}{T_{sr}} \times \text{Sim}
\]

Where,
\( \text{Atpm} \) = Adjusted Threshold population per market
\( T_{pr} \) = Total population of the region
\( T_{sr} \) = Total shops of the region
\( \text{Sim} \) = Total Shops of the individual market.
Only four markets are fall under first as well as second order of market hierarchy (Fig No-3). Larger number of market lies in fifth order which denotes markets are able to sustain and maximise the profit with lower threshold population in the district. The ratio of first, second, third, fourth and fifth order market is 4:4:18:14:188. The order wise distribution clearly depicted a hierarchical gradation of market following rank size order. As the nature of the lower order markets are retail type sustain very few customers. Good transportation facility and agricultural development helps to develop number of market in very near distance with close proximity.

5.3 Combined Service Index:
Most of the techniques for analysis of hierarchy have been considered one or two criteria of the marketing activities. Some techniques are based on the number of establishment, the number of employee or the number of customer of the market area. In composite index technique Sharma, Routray and Singh (1984) have considered the number of establishments where as in mean threshold population per market centre technique the population of the market is the only criteria for analysis. The functional index as proposed by W. K. D. Davies (1967) where the total number of outlets of
function in the individual market and the whole system is the main criteria that gives the degree of centrality. Viewing these different methods the Das, N. (2015) formulates a separate technique to find out the level of importance of different markets of Purba Medinipur district. He considers the three criteria like the number of shops or establishment, the number of market employee and the population served by the market. In rural areas there is no such permanent market population like urban markets. The basic assumptions behind this modification of the technique are as follows:

i) The block or tahasil is considered as the lowest administrative boundary to avoid the heterogeneity of the density distribution of population at district level.

ii) Population of the block or tahasil is considering as the customer of the markets under study located within the block because the permanent markets are the main centre of exchange of goods.

iii) Number of shops or establishment of different markets should be compared with the district or regional scale for proportionate presentation and the number of employees of individual market should be compared with the district or regional market employees under consideration. From the above assumption he represents the formula as

\[
CSI= [(Wsi. Wei) Pbi]
\]

Where,

\( CSI \) = Combined Service Index
\( Wsi \) = Weightage of shops of ith market centre.
\( Wei \) = Weightage of employee of ith market centre.
\( Pbi \) = Population of the lowest administrative unit (block/tahasil) served by the market ‘i’

The weightage of shops and employee can be measured by the following way:

\[
Wsi = \frac{Number \ of \ shops \ of \ ith \ market \ centre \ of \ different \ functions}{Total \ number \ of \ shops \ of \ the \ district \ or \ region}
\]

\[
Wei = \frac{Number \ of \ employee \ of \ ith \ market \ centre \ of \ different \ functions}{Total \ number \ of \ employee \ of \ the \ district \ or \ region}
\]
Figure No-4: Market hierarchy based on combined service Index

Combined service Index includes shops, employee and population served by a market. Index value signifies individual market shop and employment ratio to the total market of the block. The ratio of first, second, third, fourth and fifth order market is 4:3:3:7:211(Fig No-4). The order wise distribution clearly depicted step wise rank size market order with larger number of lower order markets.

5.4 Yearly Market Tranjection: Most of the scholar used only ‘equipment’ for analysis of market hierarchy and little attentions have been paid to the ‘functioning of equipment’. Though equipments like shops, population and number of services are essential tools for analysis of market hierarchy but ultimate financial tranjection or annual turnover signify the economic potentiality of market. Market turnover related to nature, number of market days, number of seller and buyers. Incorporation of
annual turnover of a market much more relevant in market analysis for this reason author has proposed yearly tranjection of the market in hierarchical analysis which is expressed as:

\[ Y_{mt} = m_{ti} \times d \]

Where,

- \( Y_{mt} \) = Yearly market Tranjection
- \( m_{ti} \) = Market tranjection of ‘i’ market in rupees in a day
- \( d \) = Number of market days in a year

**Figure No-5: Market hierarchy based on Yearly market tranjection**

Yearly transaction of a market is very significant criteria for market analysis in term of its economic potentiality which is not only include volume of money flow but also rate of commodity transfer, volume of trade of agri-products and number of people interaction. From economic point of view regional development of an area market transaction denotes opulence of sellers and buyers both and consumption level of the dependent population. Market having higher annual turnover able to serve...
larger hinterland and larger mass of the district. Number of market days is also very important and positively related with volume of yearly transaction.

In the present analysis the transaction level varies widely among the markets (Fig No-5). Three markets are fall under first order i.e. Kharagpur Gol bazar, Kshirpai market and Ramjibanpur Natun hat and two markets in second order of market hierarchy. Larger number of market lies in fifth order similar to the other methods. The ratio of first, second third fourth and fifth order market is 3:2:6:19:198. The order wise distribution clearly depicted a market hierarchy following rank size order. Lower order markets are retail type and sustain very few customer naturally annual tranjection will be lower because of their lower level of economic and commercial activity. Lower order markets are fulfilling the local demand of the people and lower tranjection has been profitable to the sellers. The fourth and fifth order markets are mainly local product based which are influenced by the nearest higher order markets. So, all the lower order markets have local influence on the economic system of the district.

5.5 Average scoring method
This method has been proposed by the author to find out the average picture of different order of markets of the district that has been calculated with the help of various techniques previously used. It is assumed that the conventional methods are used in different times by many geographers that can fulfill the partial requirement of the present study. Therefore, the author proposed the average scoring method using the previously followed methods. Score of each market has been assigned for first order, second order, third order, fourth order and fifth order as 25, 20, 15, 10, 5 respectively in case of every technique. Average scoring method can be expressed as

\[ ASI = \frac{^1Ctm_i + ^1Atpm_i + ^1CSI_i + ^1Ymt_i}{N} \]

Where,

ASI= Average Scoring Index

\(^1Ctm_i = \text{Rank of } 'i' \text{ market in Centrality of market} \)

\(^1Atpm_i = \text{Rank of } 'i' \text{ market in Adjusted Threshold Population} \)

\(^1CSI_i = \text{Rank of } 'i' \text{ market in Combined Service Index} \)

\(^1Ymt_i = \text{Rank of } 'i' \text{ market in Yearly market tranjection} \)

N= Number of the techniques
On the basis of the above methodology and selected variables, the composite hierarchical pattern of markets in Paschim Medinipur has been determined. Five order hierarchies i.e. first, second, third, fourth and fifth have been found with 2, 2, 18, 108 and 98 markets in each order respectively and listed in table no-1. The order wise distribution has been depicted in figure no. 6 and spatial distribution of different order has visualised in figure no. 7. There are only two first order i.e. Kharagpur Golbazar market and Jhargram Rail bazar market and two second i.e. Anandapur bazar and Ghatal Kuthi bazar order market which are considered as district and subdivision level of nodal centres respectively. Other market can be designated with its regional importance like third order as block centres, fourth order as panchyet or anchyal and fifth order market as local centres.
Table No-1: Market ordering of Paschim Medinipur based on Average Scoring Index

<table>
<thead>
<tr>
<th>SL. No</th>
<th>Number of Markets</th>
<th>Order</th>
<th>Name of the Markets</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>I</td>
<td>Kharagpur Market (Gol Bazar), Jhargram Rail Market Vegetable Bazar</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>II</td>
<td>Anandapur Bazar, Ghatal Kuthi Bazar</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
<td>III</td>
<td>Godapiyasal Hat, Jalchak Bazar, Panchkhuri Hat, Chandrackona Road Bazar, Nadangoria Hat, Nilda Bazar, Ramjiban Pur Natun Hat, Amlagora Hat, Belki Bazar, Chirakuti Hat, Dasgram Hat, Gopiballavpur Bazar, Kshirpui Municipal Market, Raja Bazar, Sagarpur Bazar, Sonamui Hat, Radhanagar Hat, Sarai Daily Bazar</td>
</tr>
<tr>
<td>4</td>
<td>108</td>
<td>IV</td>
<td>Dabcha Hat, Debra Hat, Garhbeta Hat, Jenkapur Hat, Keshiari Hat, Khatla Hat, Khukurdaha Bazar, Kshirpui Hat, Lalgarh Hat, Lankagarh Hat, Narayagarhat Hat, Pangchhapur Hat, Sevagarh Hat, Belda Nonda Market, Dahijuri Hat, Daspur Bazar, Debra Bazar, Goatlore Hat, Gopiganj Hat, Jayantipur Bazar, Khakrit Hat, Khas Bazar, Kushtaghat Hat, Maratala Hat, Nedhua Kulasiari Hat, Ranichak Bazar, Turka Hat, Barasat Bazar, Baulasini Hat, Belia Hat, Benapur Hat, Bural Hat, Dadpur Hat, Dubra Hat, Harirampur Hat, Hoomgarh Hat, Jhakra Hat, Jot Ghanashyam Hat, Kalichandi Hat, Kesabchak Nimtala Ghat Hat, Kesimpada Hat, Kharja Hat, Kharar Hat, Kukrakupi Hat, Logineary Hat, Madpur Hat, Mugbasan Hat, Nabin Manua Hat, Naraole Bazar, Ramgarh Hat, Ranichak Hat, Rohini Hat, Sonakhalie Hat, Talibhat Hat, Akalpaush Hat, Badurkhoard Hat, Balgeria Hat, Balinar Bazar, Chaibat Hat, Dhangadi Hat (Anikola), Dingal Hat, Dubrajpur Hat, Dudhkonara Hat, Dujipur Ghola Hat, Gokurpur Bazar, Gosai Bazar, Jaykrishnapur Hat, Jot Kanumargar Shibtala Hat, Kakrakhat Hat, Kamarpota Birhanpur Kramamari Hat, Kankdari Hat, Kesah Rekha Hat, Keshpur Hat, Khagragerya, Khalsiyali Hat, Khandurui Bazar, Khasbar Hat, Kheput Dakshinbar Hat, Khudmarai Hat, Konarpur Kotai Garh Kshirai Hat, Maharajpur Hat, Mungurul Hat, Mohar Bazar, Mukshidurpur Hat, Pachim Lahana Hat, Paukajari Hat, Panchkhalallia Bazar, Parhathi Hat, Patna Bazar, Pindrai Hat, Radhakantapur Hat, Radhamohanpur Hat, Routmani Hat, Sabra Hat, Sairri Hat, Sankoo Bazar, Singaghai Hat, Sirsa Hat, Sonakonia Hat, Sultanpur Hat, Temathani Veli Bazar, Thakurbari Bazar, Totasai Hat, Udachak Hat</td>
</tr>
</tbody>
</table>
| 5      | 98                | V     | Ajurya Hat, Akra Hat, Amarda Hat, Amlasuli Hat, Angua, Angua Hat, Arunkhagha Hat, Babuheriya Hat, Baghasti Hat, Bakrampur Bazar, Balsebheri Bazar, Balchak Kalmala Bazar, Balpai Hat, Bamanda Hat, Bamanpur Bazar, Bankati Hat, Banpura Hat, Banskuthi Hat, Banspat Hat, Barageria Hat, Basanda Bazar, Basanta Bazar (Telepukur), Bhanjapur Netaji Bazar Samity, Bhuyanra Tantultala Bazar, Chandabila Hat, Chechua Hat, Chhatinasol Bazar, Chhotia Jharia Hat, Chorchita Hat, Dakshin Arbara Hat, Dhalbelun Hat, Dhangari Hat, Dhumsai Hat, Gidhni Hat, Golgram Hat, Gopinathpur Hat, Hatihalka Bazar, Hijili Hat, Irpala Hat, Janabar Hat, Jhara Bazar, Joykrishnapur Hat, Kalma Pukhuria Hat, Kamalpur Hat, Kanha Anrasol Bazar, Karhia Hat, Karkai Hat, Kashi Danga Hat, Keshrambha Hat, Khanjadi Bazar, Kharika Hat, Krishnapur Bazar, Kurul Hat, Lakshimipari Hat, ...
<table>
<thead>
<tr>
<th>Source: Computed by author, 2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loyada Hat, Mahapal Bazar, Mahesh Bagat Bazar, Mahesh Danga Bazar, Malighati Hat, Maligram Hat, Marchi Hat, Mayurkholo Bazar, Monoharpur Hat, Monsuka Hat, Mowa Hat, Nagripada Hat, Nahanjara Hat, Nandakurya Hat, Natun Bazar, Nayagram Hat, Negui Hat, Nichhipur Bazar, Nimtala Bazar, Nota Bazar, Palsanapur Hat, Panch Gecchia Hat, Panchgeria Hat, Pandachhencha Hat, Pandisol Hat, Perua Hat, Pingla Hat, Radipur, Rajnagar Bazar, Ramnagar Hat, Ranisarai Hat, Renjura Hat, Sagra Hat, Sangro Hat, Sarrang Bazar, Sashra Hat, Shayamsundar Bazar, Shyamchak Hat, Shyamleswar Hat, Sribara Hat, Srinagar Super Market, Sursankar Hat, Sursankar Bazar, Tararui Hat, Tilantapara Bazar</td>
</tr>
</tbody>
</table>
Figure No- 7: Spatial distribution of Market Hierarchy
6. **Blockwise hierarchical distribution of market**: Distribution of market hierarchy in Paschim Medinipur (Table No-2 & Figure No-8) depicts orderwise concentration of market in twenty nine blocks. Only two first order markets are found in Jhargram and Kharagpur-I blocks. There is also two second order markets situated in Keshpur and Ghatal. In context of market ordering from the apex order to bottom order market show hegemony in market ordering in the block. No any block has been found having all five order markets. Total eighteen (18) third order markets have been found in the district and nearly equally distributed among fifteen blocks. Discrepancy has been viewed due to polarization effect in the distribution of First order, second order, fourth order and fifth order markets among the blocks.

<table>
<thead>
<tr>
<th>Name of the Block</th>
<th>Market Order</th>
<th>Total Hats</th>
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<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
</tr>
<tr>
<td>Jhargram</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Binpur-I</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Binpur-II</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jamboni</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Nayagram</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Sankrail</td>
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<td>0</td>
</tr>
<tr>
<td>Gopiballavpur-I</td>
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<td>0</td>
</tr>
<tr>
<td>Gopiballavpur-II</td>
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<td>0</td>
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<tr>
<td>Salboni</td>
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<td>0</td>
</tr>
<tr>
<td>Keshpur</td>
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<tr>
<td>Garbeta-I</td>
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<td>0</td>
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<tr>
<td>Debra</td>
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<td>Pingla</td>
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<td>Keshiary</td>
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<td>Dantan-I</td>
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<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Daspur-I</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Daspur-II</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Percentage (%)</strong></td>
<td>0.877193</td>
<td>0.877193</td>
</tr>
</tbody>
</table>

*Source: Prepared by Scholar based on Average Scoring Index*
Figure No-8: Blockwise Hierarchical Distribution of Market
Largest fourth order markets are situated in Daspur-I (10) and Daspur-II (15). Medinipur block shows the higher rate of Urbanization and urban centric larger market development play the instrumental role in lesser growth in lower order market. Fifth order markets are concentrated within twenty one blocks and large number of markets are found in Nayagram (10), Gopiballavpur-I (9), Dantan-I (9), Debra (7), Daspur-II (6) and Pingla (6). In case of distribution of fourth and fifth order market are found in physically, economically and socially developed blocks (Samanta, 2015) which are endows with alluvial plain having fertile soil, replenished ground water potential which provides good agricultural productivity. Seasonal inaccessibility of road and low road density unable to cater larger population of the blocks. So the numbers of small size markets are developed to cater local demand of the people.

7. Major findings: Analysis has been draining out some important facets as follows:

i) The distribution of the markets of the district show clear ordering pattern according to rank. Hierarchical distribution of the markets is related with economic under development of the region. The first order centres are found in Jhargram and Kharagpur-I blocks which have been categorised as Economically Backward Blocks (EEBs) by Government of West Bengal (DHDR, Paschim Medinipur, 2011) because of underdevelopment in agriculture and lower number of economic activities.

ii) Blockwise distribution of market hierarchy gives interesting scenario that lower order market are concentrated within economically developed blocks in a larger number. Higher population density, developed transportation and diversified demand helps in larger number of market in near distance. Demand of local consumption is much higher in comparison to the wholesale because of its subsistence agro-based economy.

iii) F-test (4, 16) at 0.05 significance level observed value is 9.05 and tabulated value is 3.01. So null hypothesis is rejected which denotes unequal fashion orderwise spatial distributions of markets in Paschim Medinipur.

iv) Application of two way ANOVA (F-test 4, 16) at 0.05 significance level observed value is 2.85 and tabulated value is 3.01. So null hypothesis is accepted i.e. different methods which are used to findout the ordering pattern of the markets of the Paschim Medinipur shows a similar fashion.

Conclusion: Analysis includes five different techniques to findout hierarchical order of the markets conveniently. During selection of the techniques attention has been paid in the direction of better understanding and fruitful result extraction. Modified centrality analysis is also very important to findout spatial distribution pattern of market within blocks. The higher size of adjusted threshold population depicts larger population which have been served by a market centre. Combined service index method has considered the number of establishments or shops, the number of market employees and the population served by the market. The yearly tranjection value helps in understanding the financial potentiality of the markets. Though study includes centrality index, adjusted threshold population, combined index and yearly tranjection for the analysis of market hierarchy gives partial status of ordering, as these method faced some sort of lacuna because of selecting one or two variables individually instead of composite manner. In this purpose average scoring method has been applied to identify overall hierarchy of market pattern of Paschim Medinipur district. Market ordering derived by average scoring technique corresponds nearly with adjusted threshold population and combined index in terms of number of first order, second order and third order whereas centrality index and Yearly tranjection correspond with first and second order for the same. But distribution of market between fourth and fifth order does not correspond with other four techniques because all the variable belongs to ‘equipment’ and ‘functional equipment’ are composed into the average scoring techniques for the analysis of market. In case of every technique hierarchical pattern of market has been found with hegemony in the blockwise distribution. The study is clearly reveals the areal interactions between the markets with varying intensity of hierarchy and emphasis given on the market related development criteria to bring the region under balance economic growth. This type of market analysis will definitely provide a base for an integrated regional development plan in the district. The work, however, has enough scope for raising a number of questions in the light of spatio-geographical complexities based on centrality for exchange of goods and services. There may be many more undefined facts of the problems which may be solved in the process dynamic research of open system of spatial analysis. At
least, the present work is interested in analyzing the geographical aspects of market centre as the focal theme of marketing geography as well as the economic geography.

References