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Spatial Variation in Demographic Development in Koch Bihar District, West Bengal: An Inter Block Wise Appraisal

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Abstract: Development is a multi dimensional phenomenon which a society or a region achieves through its evolution process .Some of its major dimensions includes sex ratio, literacy rate, urbanisation rate, work participation rate etc. The existing study examines the pattern of regional variation in demographic development at the block level in Koch Bihar district applying composite score method and Importance performance analysis based on some selected demographic indicators. Data has been obtained from district census handbook, 2011. Result shows significant disparities among the blocks and there is a centralisation of development in the study area. Haldibari, Mekhliganj and Sitalkuchi these three blocks are the most deprived blocks in the district .Decentralisation of infrastructural investment and equal opportunities will help to reduce deprivation in less developed blocks.

Key wards: Demographic, indicators, block wise variation, development, importance performance analysis.

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I. INTRODUCTION

Socio economic development is a multi dimension process which improves the quality of life of the people (Ohlan,2012) . In order to get a clear picture of overall socio economic development of any region demographic performance is very much important. Demography means the study of statistics such as births, deaths, income or the incidence of disease which illustrate the changing structure of human population (Chandana,2002). Demographic development of an area refers to the performance of the area in terms of pattern of life, as reflected in rural urban component, quality of life as manifested in its literacy rates, vital rates, sex ratio and level of income dynamism as suggested by its occupational structure (Yadav and Sharma,2009). The level of demographic development can be measured in terms of urbanisation, literacy rate ,sex ratio and rural economy (Ray and Rahaman,2017). Demographic development promotes the process of societal overall development.

In India, inter-regional disparity has been an integral feature of the history of India's socio economic development (Sam and Chakma,2016) and the magnitude of disparity varies from region to region. These regional disparities can cause social disharmony, complications in economic growth and society's development. So, research on regional disparity is essential for addressing the lacuna in the planning process of development (Sen, 2001) and the basic objective of development should focus on the expansion of human capabilities which has been neglected for long in India (Das, 1991). Decentralized distribution of infrastructural investment can remove such regional imbalances(Sarkar,2013). So, in this paper, an attempt has been made to show the inter block wise variation in demographic development in Koch Bihar district to know the actual demographic scenario of the district.

II. OBJECTIVES

1. To assess the regional disparity in demographic development at the block level in Koch Bihar district.
2. To identify the backward blocks of the district and their reasons of backwardness.

III. DATA & METHODOLOGY

The study is entirely based on secondary data from District census Handbook of Koch Bihar District (2011). Different statistical techniques are there to assess the regional disparity of development. In this paper, Z score method and Importance performance analysis have been used to determine the regional disparity in demographic development. In order to determine the level of demographic development 13 indicators are taken into consideration.

Indicators: Keeping in view with the objectives, 13 demographic indicators have been selected for the computation of composite score and Importance performance analysis.

1. Sex Ratio (X1)
2. Urban Sex Ratio (X2)
3. Rural Sex ratio (X3)
4. Child Sex Ratio (X4)
5. Percentage of urban population(X5)
6. Total literacy rate (X6)
7. Percentage of female literacy (X7)
8. Percentage of rural literacy (X8)
9. Percentage of total worker (X9)
10. Percentage of main worker (X10)
11. Percentage of rural non agricultural labour (X11)
12. Percentage of rural male non agricultural labour (X12)
13. Percentage of rural female non agricultural labour (X13)

Composite score method: By using these data and indicators an attempt has been made to examine the development of different blocks of Koch Bihar district. Z score has been used to analyse the spatial variation of demographic development.

$$z_i = \frac{x_i - \bar{x}}{s}$$

Where, Z_i is the computed Z-score , $\bar{x}$ is the mean and S is the standard deviation (SD). For categorising the blocks mean and SD value has been calculated. Then SD is divided by 2 and Half of SD is added with mean value to form 'high' category and half of SD is subtracted from mean to form ' low' category and rest values lying between high and low category comes under 'medium' category.

The composite score of demographic indicators present overall pattern of demographic condition in Koch Bihar district. Further the blocks have been classified into three groups based on these computed values and thematic map has been prepared to analyse the spatial variation.

Importance performance analysis: Importance-performance analysis (IPA) is an approach for measuring how people feel about certain characteristics of an issue or thing (Martilla & James, 1977). It is a tool which helps customer satisfaction understanding as well as detecting and placing priority on those services/products which improvement is necessary(Ormanovic,2017). IPA is a quantitative approach developed by Martilla and James in 1977. A benefit of IPA is that it generates a clear picture of how important certain elements are in comparison with how satisfying they are to clients or customers (Levenburg & Magal, 2004; Siniscalchi, Beale, & Fortuna, 2008).

IV. STUDY AREA

Koch Bihar is a district of West Bengal in the foothills of Himalaya. Koch Bihar lies in the North Eastern part of West Bengal, bounded by the district of Alipurduar in the North, Jalpaiguri in the North- West, State of Assam in the East and International border in the form of Indo-Bangladesh boundary in the South-West, South and South-East. It lies between 25˚57'47" N and 26˚36'20" N and 88˚47'44" E to 89˚54'35"E with the total area of 3387 square kilometres having population of 2819086 with the density of 832 persons per square kilometres as per 2011 census. The district comprises 12 blocks namely Haldibari , Mekhligang ,Mathabhanga I , Mathabhanga II, Koch bihar I , Koch bihar II ,Tufanganj I ,Tufanganj II , Dinhata I , Dinhata II , Sitai and Sitalkuchi . The areas mainly based on agricultural activities. This is one of the most backward districts in West Bengal.

V. ANALYSIS & DISCUSSION

Demographic development of each block in Koch Bihar district has been analysed based on selected demographic indicators. A brief discussion has been drawn here.

Table 1: Composite score of demographic indicator

Blocks	X1	X2	X3	X4	X5	X6	X7
Haldibari	1.406	-0.957	1.659	0.873	-0.596	-0.697	-0.634
Mekhliganj	-0.287	1.023	-0.140	-1.550	-0.012	-0.671	-0.861
Mathabhanga I	-0.227	-0.957	-0.016	-0.299	-0.596	-0.195	-0.479
Mathabhanga II	-0.106	-0.957	0.109	-0.847	-0.596	0.061	-0.026
Koch Bihar I	-0.106	0.991	-0.140	-0.612	1.463	0.912	0.958
Koch Bihar II	-1.738	0.945	-2.001	1.108	2.576	1.971	2.055

Tufanganj I	-0.469	0.931	-0.264	-0.769	-0.162	0.283	0.301
Tufanganj II	-0.166	0.965	-0.016	0.795	-0.004	0.735	0.661
Dinhata I	-0.287	0.885	-0.016	-0.065	-0.287	0.182	0.329
Dinhata II	-1.013	-0.957	-0.822	-1.081	-0.596	-0.015	0.067
Sitai	1.587	-0.957	1.846	1.342	-0.596	-2.107	-1.913
Sitalkuchi	1.406	-0.957	-0.202	1.108	-0.596	-0.452	-0.459

Blocks	X8	X9	X10	X11	X12	X13	CSS
Haldibari	-0.684	-1.135	-1.332	-0.736	-0.823	-0.461	-0.317
Mekhliganj	-0.729	0.270	0.286	-0.761	-0.682	-0.883	-0.384
Mathabhanga I	-0.153	1.746	1.583	-0.433	-0.241	-0.743	-0.078
Mathabhanga II	0.118	-0.377	-0.352	0.009	0.197	-0.509	-0.252
Koch Bihar I	0.759	0.336	0.598	1.135	1.135	1.043	0.652
koch Bihar II	1.928	-1.217	-1.307	1.574	1.703	0.976	0.659
Tufanganj I	0.341	-0.082	0.126	1.185	0.861	1.977	0.328
Tufanganj II	0.787	-0.316	0.603	0.938	0.955	0.807	0.519
Dinhata I	0.204	-0.373	-0.347	0.332	0.276	0.449	0.099
Dinhata II	0.037	-0.406	-1.010	-0.959	-1.021	-0.729	-0.654
Sitai	-2.176	2.045	1.653	-1.157	-1.180	-1.011	-0.202
Sitalkuchi	-0.425	-0.471	-0.482	-1.126	-1.184	-0.919	-0.366

Source: Calculated by the author

Table 2: Level of demographic development

Category	Range	No.of Blocks	Name of the Blocks
High	>0.222	4	Koch Bihar I,Koch Bihar II,Tufanganj I,Tufanganj II
Moderate	-0.222-0.222	3	Mathabhanga I, , Dinhata I, Sitai
Low	<-0.222	5	Haldibari, Mekhliganj, Mathabhanga II ,Dinhata II, Sitalkuchi

Source: Calculated by author

Less developed region: Haldibari, Mekhliganj, Dinhata II , Mathabhanga II and Sitalkuchi these 5 blocks are considered as less developed in terms of overall demographic condition having the composite value of less than -0.222.These blocks are suffering from low sex ratio, less literacy rate, less work participation rate. In these blocks very little share of population is engaged in non agricultural work etc. These blocks are suffering from less infrastructural facilities , lower literacy rate and female literacy is also very less here. Lack of awareness among the people is the main constrain for development in these areas .Lack of major transportation, educational institution, health centers and other facilities promotes these blocks to remain backward in demographic condition. These are the backward regions of the district in demographic condition.

Moderate developed region: 3 blocks namlely Mathabhanga I, Dinhata I, Sitai are moderate developed blocks in the district . The composite score value ranges between 0.222to -0.222. These blocks have moderate sex ratio, urbanization, literacy rate and work participation rate.

Highly developed region: Koch Bihar I,Koch Bihar II,Tufanganj I,Tufanganj II these are the blocks of highly developed blocks in the district having the value of more than 0.222 . This is due to that fact that Koch Bihar I is the district head quarter having all the facilities of public health centers, educational institution, transport and communication. . Here sex ratio, child sex ratio, female literacy rate , work participation rate is also high . Availability of transportation and communication promotes the non agricultural activities in the study area. More number of educational institutions , health care centers, infrastructural facilities have influenced these areas to be developed in demographic condition.

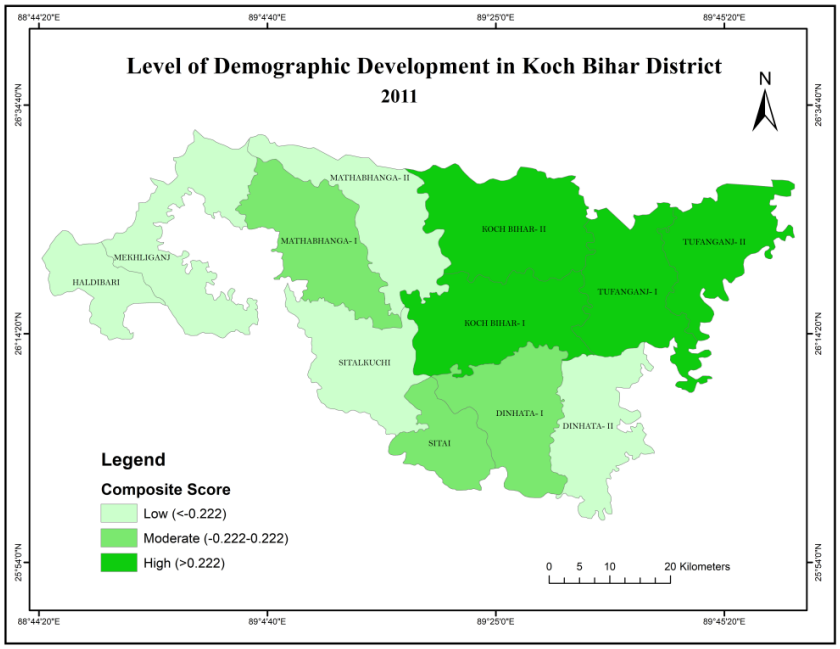


Figure 1. Level of demographic development in Koch Bihar District,2011

Block wise importance performance matrix

IPA is considered as an useful tool in examining customer satisfaction and management strategies. Here, Importance performance analysis has been applied to assess the level of development of the blocks based on selected demographic indicators. This is a simple graphical tool generally used to assess the importance and performance of each attribute. The vertical axis represents the importance and horizontal axis represents the performance measure. Based on the importance and performance scales each block occupies its location on the graph. The two axes divides the graphs into four quadrants and each quadrants show their level of performance and importance .In this study 13 demographic indicators were presented separately in association with total population of each block. The location of each block represents its level of development based on their importance and performance. The quadrants are as follows:

Quadrants I- Keep up the Good work:

The attribute placed in this quadrant has high importance and high performance. It indicates that the customers value such attribute as relevant to the service they consumed. Such attribute must be maintained and exploited to achieve its maximum benefits as potential competitive advantage. At this point, it is important to sustain optimum level of resources to suffice its maximum benefits.

Quadrant II- Concentrate Here:

This quadrant has high importance and low performance . It is an indicative of the critical performance shortfalls whereby the importance attribute fails to satisfy the customers. In order to ensure good quality of services delivered to the customers, such attribute should become a priority to be attained first. This situation requires immediate actions and allocation of additional resources. If it is not immediately attained, it may become a major weakness that potentially reduces the level of competitiveness.

Quadrant III- Low Priority:

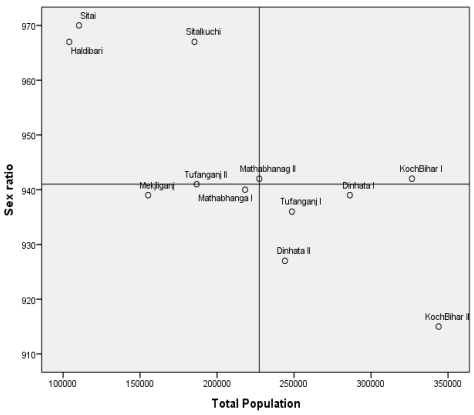
This quadrant has low importance and low performance. It shows the attribute is underperforming, but it requires no further action since it does nothing to the betterment of the services for the customers. Any extra efforts spent on the attribute will just go in vain as the attribute has minimum impact to the consumed services.

Quadrant IV- Possible Overskill:

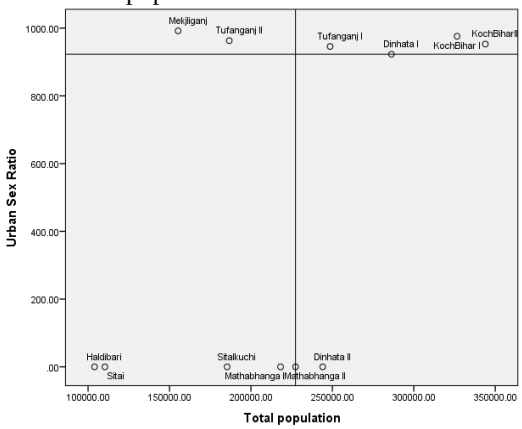
This quadrant has low importance but high performance. It indicates that the attributes were successfully performed but unfortunately deemed irrelevant by the customers. At this point, it is important to redefine the need to allocate more resources toward such attribute.

The analysis of all the attributes with total population for each block of the district has been shown here.

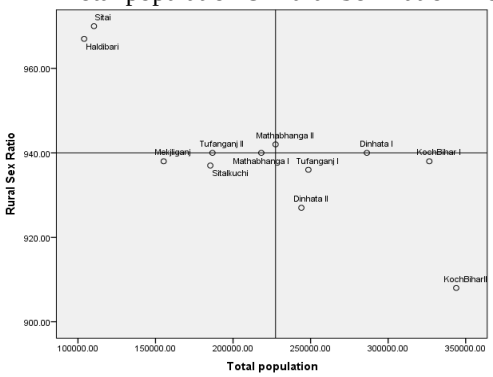
Performance analysis matrix between blockwise Total population & Sex Ratio



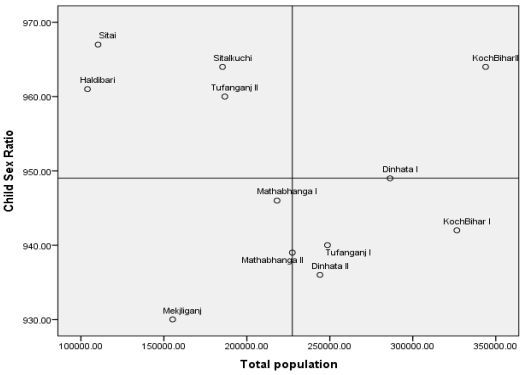
Performance analysis matrix between blockwise Total population & Urban Sex Ratio



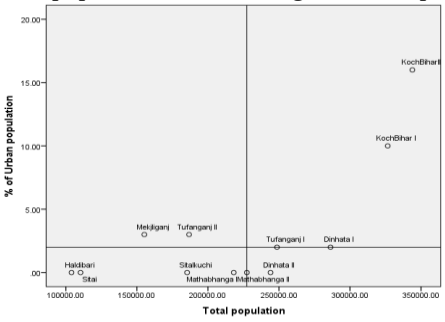
Performance analysis matrix between blockwise Total population & Rural Sex Ratio



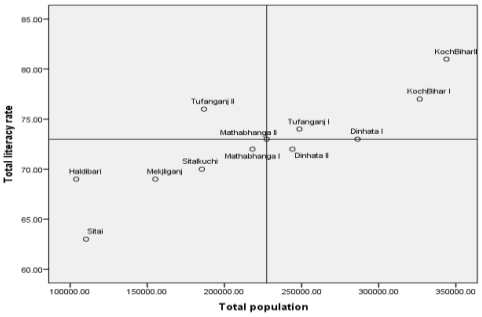
Performance analysis matrix between blockwise Total population & Child Sex Ratio



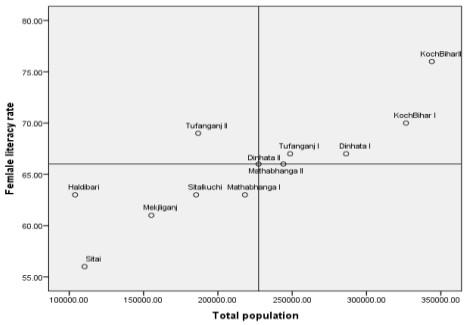
Performance analysis matrix between blockwise Total population & Percentage of urban population



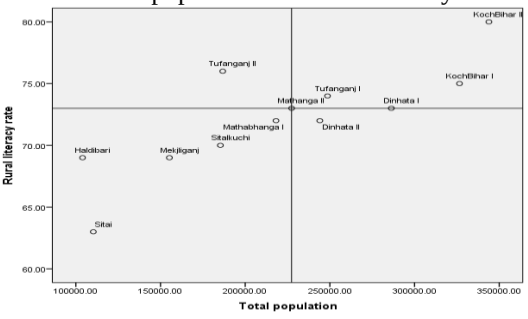
Performance analysis matrix between blockwise Total population & Total Literacy Rate



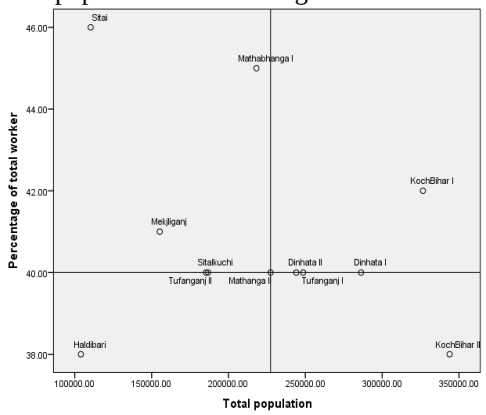
Performance analysis matrix between blockwise Total population & Female Literacy Rate



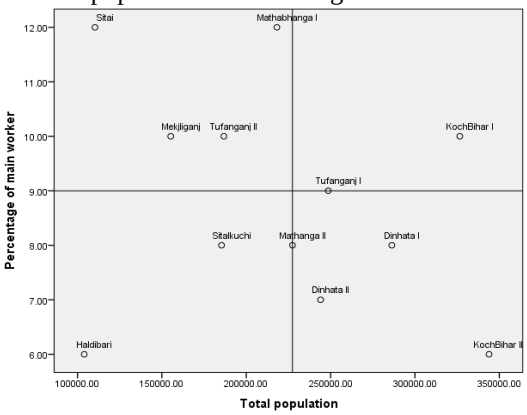
Performance analysis matrix between blockwise Total population & Rural Literacy Rate



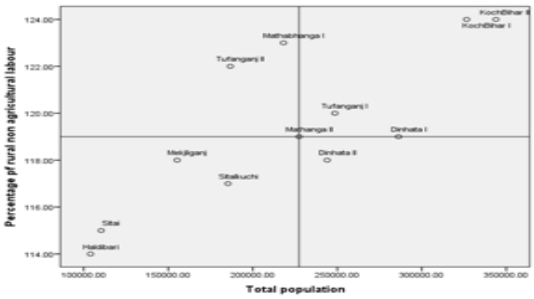
Performance analysis matrix between blockwise Total population & Percentage of Total Worker



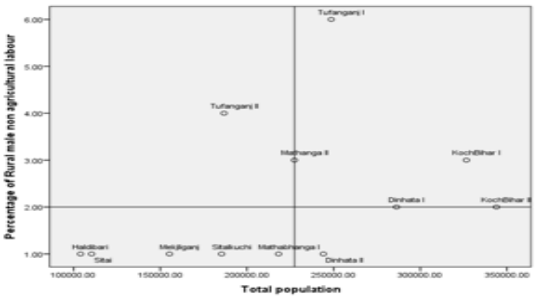
Performance analysis matrix between blockwise Total population & Percentage of Main Worker



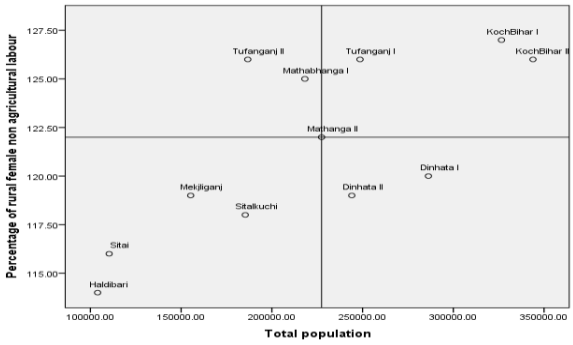
Performance analysis matrix between blockwise Total population &Percentage of RNAL



Performance analysis matrix between blockwise Total population & Percentage of RMNAL



Performance analysis matrix between blockwise Total population & Percentage of RFNAL



Source: Calculated by author *RNAL=Rural non agricultural labour

Figure 2: Performance Analysis Matrix of X1 to X13 Variables

Table 3 : Block wise importance performance matrix based on selected variables

Blocls/ Variables	HDB	MKH	MTB I	MTB II	KOB I	KOB II	TFG I	TFG II	DHT I	DHT II	STI	SLK
X1	2nd	3rd	3rd	M.L	1st	1st	1st	M.L	4th	4th	2nd	2nd
X2	3rd	2nd	M.L	4th	1st	2nd	1st	2nd	M.L	4th	3rd	3rd
X3	2nd	3rd	M.L	M.L	4th	4th	4th	2nd	M.L	4th	2nd	3rd
X4	2nd	3rd	3rd	M.L	4th	1st	4th	2nd	M.L	4th	2nd	2nd
X5	3rd	2nd	3rd	4th	1st	1st	M.L	2nd	M.L	4th	3rd	3rd
X6	3rd	3rd	3rd	M.L	1st	1st	1st	2nd	M.L	4th	3rd	3rd
X7	3rd	3rd	3rd	M.L	1st	1st	1st	2nd	1st	M.L	3rd	3rd
X8	3rd	3rd	3rd	M.L	1st	1st	1st	2nd	M.L	4th	3rd	3rd
X9	3rd	2nd	2nd	M.L	1st	4th	M.L	M.L	M.L	M.L	3rd	M.L

X10	3rd	2nd	2nd	M.L	1st	1st	M.L	2nd	4th	4th	3rd	3rd
X11	3rd	3rd	2nd	M.L	1st	1st	1st	2nd	M.L	4th	3rd	3rd
X12	3rd	3rd	3rd	M.L	1st	M.L	1st	2nd	M.L	4th	3rd	3rd
X13	3rd	3rd	2nd	M.L	1st	1st	1st	2nd	4th	4th	3rd	3rd

Source: Calculated by the author

HBD=Haldibari,MKH=Mekhliganj,MTB=Mathabhnaga,KOB=KochBihar,TFG=Tufanganj, DHT=Dinhata,STI=Sitai, SLK=Sitalkuchi.

Here, 1st, 2nd, 3rd, 4th indicates the quadrants. 1st= Keep up good work (high developed),2nd=Concentrate here (moderate developed) ,3rd= Low priority(least developed), 4th=Possible overskill(less developed), M.L=Median Location (balanced developed in terms of importance and performance).

Table 4 : Highest Weightage Ranking of Importance Performance of different blocks

Blocks/Quadrant	Keep up the good work	Concentrated here	Low priority	Possible overkill	Median location	Total indicator
Haldibari		3	10			13
Mekjliganj		4	9			13
Mathabhanga I		4	7	2		13
Mathabhanga II				2	11	13
Koch Bihar I	11			2		13
Koch Bihar II	9	1		2	1	13
Tufanganj I	8			2	3	13
Tufanganj II		11			2	13
Dinhata I	1			3	9	13
Dinhata II				11	2	13
Sitai		3	10			13
Sitalkuchi		2	10		1	13

Source: Calculated by the author

Table 3 represents the block wise importance performance matrix based on selected indicators. On the basis of this table highest weightage ranking of performance has been derived (Table 4).Based on this ranking value the level of development of each block in terms of demographic performance has been calculated (Table 5).

It is clear from highest weightage ranking that Koch Bihar I,Koch Bihar II and Tufanganj I fall under quadrant I that is associated with high importance and high performance . The main reason is the high ratio between sex ratio, literacy rate, female literacy rate, work participation rate , percentage of non agricultural labour with total population. These blocks are considered as highly developed blocks in the district based in IPA method.

Only Tufanganj II falls under quadrant II that is associated with high importance and low performance. The reason behind is the moderate ratio between sex ratio, literacy rate, female literacy rate, work participation rate, rural non agricultural labour with total population. This block is moderate developed blocks in demographic situation.

Table 5: Level of development of the blocks based on IPA

Quadrant	Level of development	Blocks
I- Keep up the Good work	High importance High performance (Highly developed)	Koch Bihar I Koch Bihar II Tufanganj I
II- Concentrate here	High importance Low performance (Moderate developed)	Tufanganj II
III-Low priority	Low importance Low performance (Least developed)	Haldibari,Mekhliganj Mathabhanga I,Sitai Sitalkuchi
IV-Possible overskill	Low importance High performance (less developed)	Dinhata II

Median Location	Balanced developed	Dinhata I Mathabhanga II

Source: Calculated by the author

Haldibari, Sitai, Sitalkuchi, Mekhliganj, Mathabhanga I fall under quadrant III that is associated with low importance and low performance. These blocks are considered as least developed blocks having very poor ratio between sex ratio, literacy rate, female literacy rate, work participation rate, rural non agricultural labour. These blocks are the most backward blocks of the district and need more attention towards development.

Dinhata II block fall under quadrant IV that is low importance but high performance, indicating the less ratio between total population and variables. Here performance of these variables are quite satisfied and have possibilities to be highly developed.

Dinhata I and Mathabhnaga II maximum fall under median location having balanced ratio of sex ratio, literacy rate, female literacy , work participation rate , rural non agricultural labour.

V. CONCLUSION

The study reveals significant disparities among the blocks in demographic development. Haldibari, Mekhliganj and Sitalkuchi these three blocks are considered as least developed blocks in terms of demographic development applying both the method. These are mainly rural areas, inadequate infrastructural facilities; uneven distribution of all facilities for common people is the main reason of backwardness of these blocks. Whereas, Koch Bihar I is the highest position holder block in the district. The main reason behind the position is that it is the district head quarter having the adequate number of educational institution, health centres, infrastructural facilities which promotes the people to enjoy better standard of living. Koch Bihar II and Tufanganj I these blocks are also highly developed blocks in the district. Decentralisation of infrastructure, health care facility, educational centres are very much necessary to minimise discrimination among the blocks. So, Government should look into the backwards blocks of the district and should take proper policies for their future development.

REFERENCE

[1]. Chandana RC. Geography of population : Concepts, Determinants and Patterns, Kalyani Publication, New Delhi,2002.
[2]. Das, A. (1999). 'Socio-economic development in India: A Aegional analysis', Development and Society, 28(2)313-45.
[3]. District Census Handbook, Koch Bihar , 2011.
[4]. Levenburg, N. M., & Magal, S. R. (2004). Applying importance-performance analysis to evaluate e-business strategies among small firms. E-Service, 3(3), 29-48.
[5]. Ohlan R. Pattern of regional disparities in socio economic development in India: District level analysis. Social Indicator Research .2013; 114(3):841-873.
[6]. Ormanvic, et al(2017). Importance performance analysis: Different Approaches. Acta Kinesiologica 11 (2017) Supp.2:58-66.\
[7]. Ray M, Rahaman M. Spatial variation in demographic development in West Bengal: A district level analysis. International Journal of Academic Research and Development .2017;2(3):138-143
[8]. Sam, K., & Chakma, N. (2016). An inter-block level analysis of regional disparity in the youngest alipurduar district of west Bengal. Space and Culture, India, 3(3), 10- 20.
[9]. Sarkar, C .B. Role of socio economic factors on imbalanced regional development in West Bengal, India . Journal of Geography and Regional Planning. 2013; 6(1): 10-18
[10]. Sen, P.K. (2001). Geographical Perspective of the Rural Socio-Economic Inequality in West Bengal, Environment and Development (Ed.), The Geographical Society of India, Kolkata
[11]. Yadav SJ,Sharma U. Regional Disparities in the Levels of Demographic Development in Haryana 2001. Sodh, Samiksha aur Mulyankan-International Research Journal .2009;2(6):5-9

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