

“SPATIAL VARIATIONS IN LEVELS OF DEVELOPMENT IN PARNER TAHSIL OF AHMEDNAGAR DISTRICT: A VILLAGE LEVEL ANALYSIS”

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ABSTRACT: It is important to note that, development of villages is an essential precondition to development of the nation. Hence, the facilities in villages must resemble those of a city. The PURA (Providing Urban Amenities in Rural Area) model envisages a habitat designed to improve the quality of life in rural areas (Gupta, Y.K. et al 2009). But, it hasn't done properly in our nation's villages even after post independence. Therefore, there is need to be made available the essential facilities in villages for appropriate meet their demands.

Accordingly, there are 49 parameters of development are chosen for the study of 131 villages in Parner tahsil. There are 10 parameters are demographic out of 49, in the same way 20 parameters are household, 10 are social, and 09 are economic has been used for the analysis of overall development. Statistical methods and techniques such as mean, standard deviation, percentage, ratio, weighted score and Z score have been adopted in present paper for presentation of respective values of parameters. Karl Pearson's product-moment coefficient of correlation method has been used for quantitative analysis of development of study area.

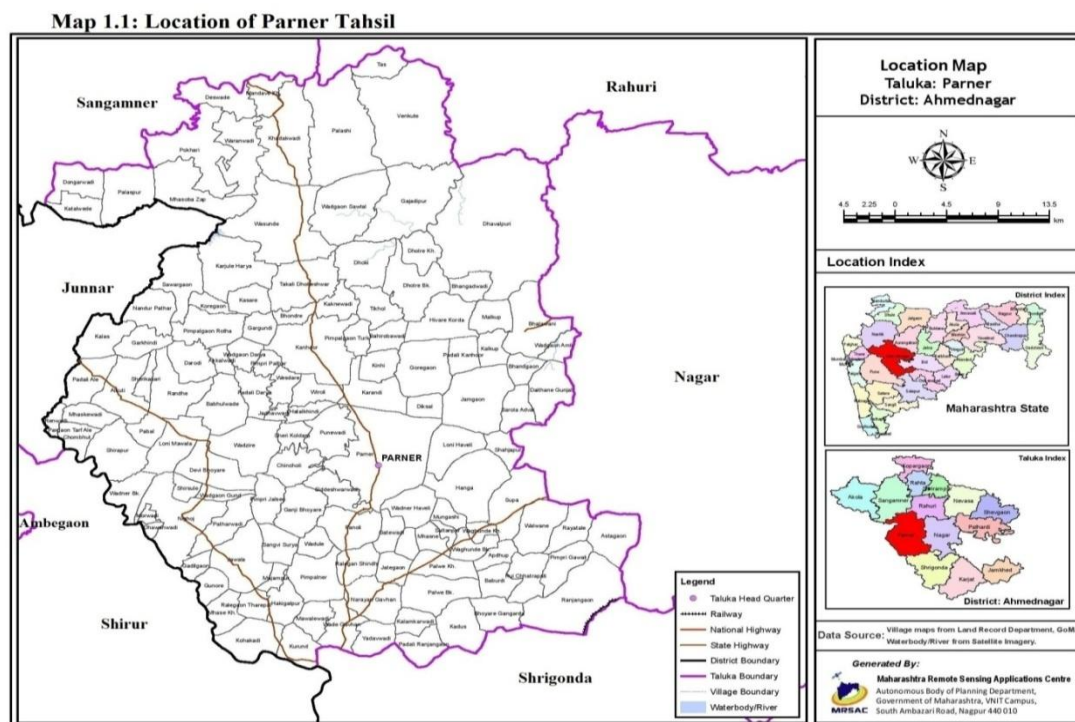
Average values of each village for four broad parameters obtained from summation of observed and rated values of respective villages divided by respective number of parameters. Later on, average composite standardize score is taken into consideration for analysis of overall development scenario at village level. Based on the average composite standardize score, the lowest Z score indicates less degree of development and highest Z score indicates high degree of development. Considering the range of the average and standard deviation of composite Z scores five categories were conveniently identified viz. i) very low, ii) low, iii) moderate, iv) high and v) very high development for the study of development at village level.

According to composite Z score, village Wade Gavhan holds the first position and attained 1.3525 Z average composite score whereas, Dongarwadi holds the bottom position

and attained -1.8883 composite Z score of development. In terms of overall development, there are 22 villages out of 131 are very low developed, in the same way, 43 villages are low developed, 49 villages have moderately developed, 12 villages are developed and only 05 villages are very high developed. Thus, wide variations in overall development generally observed due to there are wide variations are observed in demographic structure, household amenities, social aspects and economic aspects or facilities. There is moderate positive correlation found between economic, household and social parameters with overall development while a weak relationship observed between demographic parameters and overall development in study area. It may be stated from the above discussion that, overall development of study area may be related to other additional aspects such as magnitude and quality of natural and human resources.

Key Words: Development, Demographic, Household, Social and Economic parameters.

1.1 THE STUDY AREA: The Parner tahsil of Ahmednagar district has been selected for the study to present work. The map (s) 1.1 shows that location of the study area within Maharashtra state as well as Ahmednagar district. The tahsil is confined by $18^{\circ} 49' 40''$ N. to $19^{\circ} 21' 13''$ N. latitudes and $74^{\circ} 10' 22''$ E. to $74^{\circ} 38' 34''$ E. longitudes.



Source: <http://www.mrsac.gov.in>

There are huge limitations are observed for development of villages in study area. Geographically, Parner tahsil located on 'Deccan plateau' and climatologically, it lies in the 'rain shadow zone' of Maharashtra state. Therefore, tahsil characterized with low rainfall and it is identified as 'drought prone area' in Ahmednagar district. Only Kukadi and Mandohol are two seasonal rivers drain in tahsil. Undulating topography, poor soils, stony waste, and scarcity of water to agriculture, no adequate industrial estates and other source for employment etc. are the limitations for development of tahsil. Hence, people are migrated to urban area especially Mumbai and Pune. Therefore, there are number of villages experienced either very low or even minus population growth rate.

1.2 OBJECTIVES: - The main aim of the present research paper is to analyze the spatial variations in levels of development in Parner tahsil of Ahmednagar district, Maharashtra. Hence, following objectives are kept in mind to achieve the aim of study.

- i) To examine the levels of demographic, household, social, and economic development.
- ii) To analyze the spatial variations in levels of overall development in study area.

1.3 SOURCES OF DATA COLLECTION: The levels of development has been analysed on the basis of 2011 census data because of the latest village level data for all the selected parameters were available only up to this year. Hence, the required essential data has been collected from Census of India, Census Handbook, Ahmednagar District from 1991 to 2011 and Socio- Economic Review and District Statistical Abstract Ahmednagar district - 2018.

Addition to this, data of ideal village Ralegan Sindhi and M.I.D.C. of Supa and industrial units of Bhalwani also considered and additional weightage has been given to each of them. Ralegan Sindhi, is an ideal village and one of the well known example not only in our country but also the abroad for its eco-friendly development.

1.4 ADOPTED METHODOLOGY: In the present paper the term 'overall development', consider as the resultant composite development of demographic (X1), household (X2), social (X3) and economic (X4) aspects as an indicators of development in study area. Accordingly, there are 49 aspects are chosen from the main 4 categories as a parameters of development. Category wise detailed list of 49 parameters indicated by X1- $x_{1 \text{ to } 10}$, X2- $x_{11 \text{ to } 30}$, X3- $x_{31 \text{ to } 40}$, and X4- $x_{41 \text{ to } 49}$ are given below in table-1. Average values of each village for four broad parameters obtained from summation of observed and rated values of respective villages divided by respective number of parameters.

Table-1: Parameters of Development-2011

X1. DEMOGRAPHIC PARAMETRES	x22 : Drainage: open/ closed; x23 : Fuel- Gas/biogas; x24 : Kitchen facilities; x25 : Banking facilities; x26 : Television facilities; x27: Computer/Laptop with /without internet; x28: Telephone/mobile or both facilities; x29: Scooter / moped facilities available x30: Permanent houses.
It is one of the important broad components applied for magnitude of human development. In this category, ten variables have been selected for the appraisal of development. They are x₁ : Decadal growth rate; x₂ : Male decadal growth rate; x₃ : Female decadal growth rate; x₄ : Density of population; x₅ : Sex ratio; x₆ : Sex ratio in 0-6 age group; x₇ : Literacy; x₈ : Male literacy; x₉ : Female literacy and x₁₀: Family size.	X3. SOCIAL PARAMETRES: Development of society understood with the help of following Parameters: x₃₁ : Educational Facilities; x₃₂ : Medical facilities; x₃₃ : Non-governmental medical facilities; x₃₄:Transportation and communication facilities; x₃₅ : Miscellaneous facilities etc. ; x₃₆ : Nearest town distance; x₃₇ : Electricity; x₃₈ : Important temples; x₃₉ : Ideal village and x₄₀: Tourist centres.
X2. HOUSEHOLD PARAMETRES:	X4. ECONOMIC PARAMETRES:
Census of India considered household amenities as an indicator of human development. In this category, twenty variables have been selected x₁₁ : good; x₁₂ : roof with metal/asbestos; x₁₃ : wall with bricks/concrete; x₁₄ : floor with mosaic tiles; x₁₅ : 3 to 6 & above dwelling rooms; x₁₆ : percentage of household size having 3 to 5 persons; x₁₇ : percentage of households having own houses; x₁₈ : percentage of households having drinking facilities available in premises/near; x₁₉ : Percentage of houses having : electricity; x₂₀ : Latrine facilities; x₂₁: Bathroom facilities with /without roof;	Accordingly, economic development of study area examines with the help of following parameters: x₄₁ : Percentage of main workers; x₄₂ : percentage of working population x₄₃ : percentage of non-agriculture workers x₄₄ : percentage of irrigated area x₄₅ : percentage of forest area; x₄₆ : percentage of cultivable area; x₄₇ : Banking facilities available in % of villages x₄₈ : Land holding and x₄₉ : villages had M.I.D.C.

1) Average values of X1: demographic, X2: household, X3: social and X4: economic parameters computed respectively by given below formulas.

X1 Demographic	X2 Household	X3 Social	X4Economic
$\bar{x}_1 = \frac{\sum x_{11}+x_{12}+\dots+x_{10}}{n}$	$\bar{x}_2 = \frac{\sum x_{21}+x_{22}+\dots+x_{20}}{n}$	$\bar{x}_3 = \frac{\sum x_{31}+x_{32}+\dots+x_{30}}{n}$	$\bar{x}_4 = \frac{\sum x_{41}+x_{42}+\dots+x_{49}}{n}$

The 'Z' score method has been used to analyze spatial variations in level of development in study area.

2) The 'Z' score of each parameter computed by using given below formula for 131 villages.

$$Z = \frac{x_i - \bar{x}}{\sigma}$$

Where: Z = the standardized score

x_i stands for values of X1, X2, X3, ... Xn

$\bar{x}$ stands for mean value of X1, X2, X3, ... Xn

σ stands for standard Deviation of X1, X2, X3, ... Xn

The calculated value of Z score connotes how many standard deviations you are away from the mean. If a Z-score is equal to 0, it is on the mean. If a z-score is below 0 (-negative) represent given data point value below the mean and Z score value above 0 (+positive) indicate above the mean. In this way, obtained standardize (Z) score of each parameter and each village is constructed and put in table-2. Later on the average ($\bar{Z}$) Z scores worked out by given below formula.

3) The average composite ($\bar{Z}$) Z score computed simply by the given below formula:

$$\bar{Z} = \frac{ZX_1 + ZX_2 + ZX_3 + ZX_4}{N}$$

Where:

$\bar{Z}$ = Average composite Z Score

ZX1 stands for Z score of Demographic Parameters

ZX2 stands for Z score of Household Parameters

ZX3 stands for Z score of Social Parameters

ZX4 stands for Z score of Economic Parameters

N stands for Number of Main Parameters

Ultimately, the average composite ($\bar{Z}$) Z score put in column no. 8 of table-2 in an ascending order.

Table-4 is prepared with the help of table-2. Based on the composite standardize score, the lowest Z score indicates less degree of development and highest Z score indicates high degree of development. Boundary lines conveniently demarcated between i) very low, ii) low, iii) moderate, iv) high and v) very high development with the help of mean and

standard deviations. Graphic techniques were used to the data representation and identify very low, low, moderate, high and very high levels of development of villages (fig. 1).

Numbers, mean, percentage, ratio, weighted score and standardized score etc. have been adopted for representation of actual observed values and standardized values for respective parameters. Essential calculations such as summation, mean, Z score, standard deviation, and coefficient of correlation has been work out with the help of Microsoft excel sheet. 'Karl Pearson's product-moment coefficient of correlation method' has been used for construction of correlation matrix. Relationship between respective parameters and overall development has been examined with the help coefficient of correlation R values in table-4.

1.5 REVIEW OF LITERATURE: Huge amount of literature is available about development of an area either from micro to macro and from local to global level. Some of the selected literatures reviewed which are applicable and helpful for prepare present research paper.

Nijkamp (1986) argue that infrastructure is one of the instruments to improve development of a region. Noor and Abdul (1992) used a set of 88 indicators from 5 major sectors and 'Z' score method for analysis of spatial variations in levels of development in U. P. Diane Conyers (1993) given guidelines on social analysis for rural area development planning. Awasthi and Panmand (1994) deeply studied the development of 'Ralegan Sidhhi' in detail. Notable works about development of India carried out by Das (1999) and Dholakia (2003). Narain et al. (2005) estimated a socio-economic development of different districts in Kerala with the help of 39 indicators. Ziari's (2006) study on development of Iran and Gupta's et al. (2009) study on the Karchhana tehsil of Allahabad district in Uttar Pradesh State also important. Besides, Snieska and Simkunaite (2009) analyze relationship between infrastructure and economic development of the Baltic States. Case studies carried out by Government of India, Ministry of Panchayati Raj (2010) in development of Hiware Bazar, Gangadevapalli, Ramachandrapuram and Piplantri Gram Panchayats.

Notable studies in present decade are carried out by following eminent scholars. Nayak (2014) using a set of 13 indicators and surveyed in five villages of Dharwad district. Suryawanshi (2014) used to 13 indicators from physical, demographic and economic variables for assessment of development in Jawahar, Mokhada, Vikramgad and Vada tahsil of rural Thane District, Maharashtra. Zaidy and Shamshad (2014) using a set of 32 indicators and Z score method applied for a geographical analysis of land use and levels of socio-economic development in Hamirpur District, Uttar Pradesh. Rakesh (2014) in his Ph.D. thesis

13 indicators applied for an analysis of ‘disparities in human development of Andhra Pradesh state. Maiti and Misra (2014) and Samanta (2015) applied nine indicators for ‘block level disparity in social development of Paschim Medinipur district, West Bengal. Chand and Aktar (2016) used a set of 28 indicators for regional imbalances in the Levels of Socio-Economic Development: a case study of Malda district, West Bengal. Shaikh et al., (2016) selected 29 infrastructural facilities for analysis of development in Vadi village, of Surat district in Gujrat. Gadekar and Sonawane (2017) used a set of 24 indicators of socioeconomic development of Ahmednagar district in Maharashtra. Pradhan (2017) applied 13 indicators for ‘empirical analysis of inter district infrastructural development in Odisha’. Thombare (2017) analyse levels of development in Parner tahsil of Ahmednagar district. Baldan et al. (2018) have analysed of human development in Romania, 2008-2015 period with the help of six population indicators of development. Lawande and Mhaske (2018) used a set of 19 indicators for the analysis of human resource development in Pathardi tashil of Ahmednagar. Mandal (2018) chosen six facilities available in villages for analysis of development. He emphasizes on village level disparity in available facilities and development of 21 villages of Ramkishore Gram Panchayet, Kulpi C.D. Block, and South 24 Parganas. Saha, et al. (2018) applied 30 indicators for study on ‘regional disparities in the level of socio-economic development of Kochbihar district, West Bengal’. Sau, et al. (2018) used eight indicators for analysis of ‘disparities in social development of Purba Medinipur District, West Bengal. Vorobyov and Bugai (2019) discussed internal and external factors of socio-economic development of rural areas.

1.6 ANALYSIS OF SOCIO ECONOMIC DEVELOPMENT: In general, development can be viewed as a multi-dimensional phenomenon. Here a composite standardized score of development is constructed using above mentioned four broadly chosen parameters including their 49 parameters of development.

Table – 2: Parner Tahsil: Standardized Score of Socio-Economic Development – 2011

Sr. No.	Villages	Village Code No.	Z Scores for Parameters of Development				Average Z Score ($\bar{Z}$)
			Demographic (ZX1)	Household (ZX2)	Social (ZX3)	Economic (ZX4)	
1	2	3	4	5	6	7	8
1.VERY LOW DEVELOPED VILLAGES							
1	Dongarwadi	558266	-1.5777	-3.0941	-0.9268	-1.9544	-1.8883
2	Katalwede	558267	-0.2012	-2.6253	-0.6894	-2.1492	-1.4163
3	Palaspur	558268	0.5065	-2.3787	-0.2245	-1.9520	-1.0122
4	Hatakhindi	558318	-1.5887	-0.1683	-1.3136	-0.9128	-0.9958

5	Pokhari	558270	-0.8131	-2.0384	0.5731	-1.436	-0.9286
6	Dhoki	558283	-0.8731	-1.1731	-0.3126	-0.9429	-0.8254
7	Sheri Koldara	558333	-1.0927	0.1355	-1.5821	-0.5759	-0.7788
8	Wesdare	558301	-0.5973	-0.4876	-1.6552	-0.3456	-0.7714
9	Wadgaon Darya	558298	-0.3756	-0.6693	-1.1402	-0.8562	-0.7603
10	Pimpalgaon Turk	558293	-0.4574	-0.8196	-1.0661	-0.6900	-0.7583
11	Wiroli	558317	1.2541	-0.1862	-3.3555	-0.7147	-0.7506
12	Waranwadi	558271	-0.5531	-1.8940	0.0992	-0.6403	-0.7471
13	DhotreKh.	558282	0.4973	-1.1779	-0.9318	-1.3144	-0.7317
14	Koregaon	558289	-0.4016	-0.8908	-1.1653	-0.4503	-0.7270
15	Mhasoba Zap	558269	1.2091	-2.0272	0.0471	-2.0711	-0.7105
16	Bhondre	558294	0.3807	-0.7154	-1.6392	-0.7794	-0.6885
17	Gargundi	558295	-1.2081	-0.7914	-1.1813	0.5233	-0.6644
18	Kasare	558290	-0.8392	-0.8216	-0.4108	-0.4641	-0.6339
19	Gajadipur	558278	0.1786	-1.1886	-1.0460	-0.4393	-0.6238
20	Kaknewadi	558292	-1.1916	-0.7687	0.2003	-0.6362	-0.5990
21	Wadule	558325	-0.4847	-0.0136	-1.2044	-0.6686	-0.5928
22	Nandur Pathar	558288	0.1798	-0.8765	-0.0852	-1.5276	-0.5774

2. LOW DEVELOPED VILLAGES

23	Gatewadi	558323	1.3936	-0.0152	-1.5791	-2.0000	-0.5502
24	Sarola Advai	558310	-0.6032	-0.3556	-0.5291	-0.6180	-0.5265
25	Hivare Korda	558304	-0.7869	-0.5285	-0.0742	-0.6778	-0.5169
26	Jadhavwadi	558332	-0.1153	0.1300	-1.4057	-0.4988	-0.4725
27	Bhandgaon	558309	-0.9824	-0.3361	0.0641	-0.6107	-0.4663
28	Deswade	558272	0.2995	-1.7250	0.1873	-0.6248	-0.4657
29	Tikhol	558302	-0.5201	-0.5035	-0.1103	-0.6698	-0.4509
30	Siddeshwarwadi	558321	-0.7288	-0.1229	0.0891	-1.0099	-0.4431
31	Mandave Kh.	558273	0.9950	-1.7127	0.2244	-1.2103	-0.4259
32	Pimpalner	558326	-0.8794	-0.1054	-0.3464	-0.2838	-0.4038
33	Khadakwadi	558274	-0.0567	-1.5648	1.6662	-1.5868	-0.3855
34	Sawargaon	558287	-0.4967	-0.9246	0.4849	-0.5556	-0.3730
35	Wadgaon Sawtal	558284	-0.4837	-1.2105	1.0259	-0.7042	-0.3431
36	Randhe	558338	-0.7811	0.1459	-0.2395	-0.4961	-0.3427
37	Ghanegaon	558376	-1.7975	1.0787	-1.4679	0.9254	-0.3153
38	Majampur	558362	-1.9213	0.6910	-1.5089	1.5985	-0.2852
39	Daithane Gunjal	558308	-0.2830	-0.2717	0.1763	-0.6632	-0.2604
40	Malkup	558305	0.0656	-0.5277	-0.0481	-0.4894	-0.2499
41	Kalamkarwadi	558391	-1.8530	1.5992	-1.2955	0.6021	-0.2368
42	Dhotre Bk.	558281	0.8042	-1.1886	0.2034	-0.7427	-0.2309
43	Garkhindi	558328	0.0721	0.0476	-0.0742	-0.9244	-0.2197
44	Punewadi	558319	0.2853	-0.1571	-0.5031	-0.4814	-0.2141
45	Kalas	558327	-0.2203	0.0421	0.3005	-0.8339	-0.1779
46	Sultanpur	558372	-2.3382	0.8521	-1.4659	2.2416	-0.1776
47	Wasunde	558285	-0.4109	-1.0148	1.4948	-0.7760	-0.1767
48	Pimpalgaon Rotha	558296	0.3140	-0.7170	-0.1816	-0.0869	-0.1679
49	Shahjapur	558368	-0.6606	0.8473	-0.1874	-0.6404	-0.1603
50	Padali Kanhoor	558313	-0.3169	-0.2410	-0.1263	0.0525	-0.1579
51	Goregaon	558314	-0.9966	-0.2637	1.2674	-0.5715	-0.1411
52	Palwe Bk.	558389	-1.7357	1.5495	0.1743	-0.5204	-0.1331
53	Venkute	558277	0.1411	-1.3791	1.1011	-0.3672	-0.1260

54	PimpriPathar	558299	2.1836	-0.6442	-1.6442	-0.3353	-0.1100
55	Babhulwade	558330	-0.7362	0.0783	0.2254	0.0030	-0.1074
56	Loni Haveli	558366	-0.5340	0.7157	0.0290	-0.5968	-0.0965
57	Palashi	558275	0.8427	-1.5127	1.7715	-1.4815	-0.0950
58	Mungashi	558373	-0.8409	0.9674	-1.2795	0.8293	-0.0809
59	Jategaon	558377	-0.2374	1.0318	-0.7535	-0.3330	-0.0730
60	Wadgaon Gund	558349	-0.6391	0.3296	-0.7154	0.7824	-0.0606
61	Kalkup	558312	0.0884	-0.3460	0.0120	0.0091	-0.0591
62	Kinhi	558315	0.4041	-0.2585	0.3917	-0.7480	-0.0527
63	Tas	558276	1.8331	-1.4761	-0.8948	0.3999	-0.0344
64	Astagaon	558382	-0.9042	1.1765	-0.3778	0.0134	-0.0230
65	Panoli	558322	0.6691	-0.0426	-0.2485	-0.4334	-0.0139

3. MODERATE DEVELOPED VILLAGES

66	Karandi	558316	0.2296	-0.2685	-0.0071	0.0512	0.0013
67	Bhangadwadi	558280	0.9468	-1.2100	0.2124	0.1566	0.0040
68	Padali Darya	558331	0.8196	0.0997	-0.5922	-0.3068	0.0051
69	Wadgaon Amli	558307	-1.0430	-0.4689	0.5771	0.9565	0.0054
70	Bhoyare Gangarda	558387	-0.7009	1.4437	-0.5792	-0.1386	0.0063
71	Dhavalpuri	558279	-0.3581	-1.2626	2.0429	-0.3479	0.0186
72	Jamgaon	558311	-0.5978	-0.3874	1.2043	0.0725	0.0729
73	Ganji Bhoyare	558351	-0.2799	0.4624	0.3627	-0.2483	0.0742
74	Gadilgaon	558358	-0.2462	0.6453	-1.0651	1.0370	0.0927
75	Wadner Haveli	558374	-0.2527	0.8787	-0.7134	0.6235	0.1340
76	Karjule Harya	558286	0.4340	-1.0411	1.7072	-0.5629	0.1343
77	Gunore	558359	-0.9091	0.5801	-0.2245	1.0967	0.1358
78	Waghunde Bk.	558371	-1.0163	0.9224	-0.3998	1.0667	0.1433
79	Kanhoor	558300	0.0127	-0.6367	1.8685	-0.6574	0.1468
80	Akkalwadi	558297	2.8222	-0.6653	-1.0931	-0.4733	0.1476
81	Mhasne	558375	-0.1122	0.8835	-0.7896	0.6167	0.1496
82	Pimpri Gawali	558384	-0.5567	1.2747	-0.1523	0.1179	0.1709
83	Pimpri Jalsen	558350	0.0792	0.4039	-0.0752	0.3203	0.1821
84	Baburdi	558386	-0.7625	1.3861	-0.0551	0.2439	0.2031
85	Diksal	558365	0.3505	0.7077	0.2164	-0.4304	0.2111
86	PalweKh.	558378	-0.5003	1.1535	-0.0511	0.2449	0.2117
87	Walwane	558380	0.0042	1.1932	-0.4419	0.1014	0.2142
88	Padali Ale	558342	0.5621	0.2938	0.2374	-0.2300	0.2158
89	Chincholi	558334	1.0664	0.1081	-0.0682	-0.2421	0.2161
90	Kadus	558388	0.1141	1.4915	-0.516	-0.1936	0.2240
91	Sherikasari	558339	0.3837	0.1526	-0.6132	0.9736	0.2242
92	Rui Chhatrapati	558385	-0.6791	1.2938	0.1623	0.2515	0.2571
93	Shirsule	558347	-0.4643	0.3634	-0.6513	1.8359	0.2709
94	Apdhup	558379	1.5643	1.1169	-0.5391	-1.0528	0.2723
95	Hanga	558367	-0.4558	0.7908	1.0079	-0.2104	0.2831
96	Bahirobawadi	558303	2.8018	-0.6403	-0.7615	-0.2147	0.2964
97	Bhalawani	558306	-0.0357	-0.4383	2.3334	-0.6490	0.3026
98	Loni Mawala	558336	-0.0727	0.2019	1.0400	0.0517	0.3052
99	Shirapur	558345	-0.6334	0.3288	1.1422	0.3853	0.3057
100	Chombhut	558344	-0.7733	0.3069	-0.3397	2.0382	0.3080
101	Kohakadi	558364	-1.0716	0.6099	0.7554	0.9745	0.3171
102	Darodi	558329	1.5125	0.0222	-0.3146	0.0761	0.3240

103	Wadzire	558335	0.0158	0.08383	1.8024	-0.5872	0.3287
104	Mhase Kh.	558360	0.0305	0.64171	-0.3187	1.0051	0.3397
105	Padali Ranjangaon	558392	0.2109	1.7030	-0.6182	0.1017	0.3494
106	Devi Bhoyare	558348	0.3379	0.2803	0.7010	0.1516	0.3677
107	Ranjangaon	558383	-0.8073	1.3419	0.9388	0.0257	0.3747
108	Pabal	558337	0.3436	0.1296	-0.6052	1.7585	0.4066
109	Takali Dhoke.	558291	0.1219	-0.8482	2.8179	-0.4033	0.4221
110	Patharwadi	558354	-0.3197	0.5045	0.6893	0.9372	0.4528
111	Rayatale	558381	0.2562	1.1046	-0.1263	0.6575	0.4730
112	Mhaskewadi	558341	-0.1352	0.2385	0.0491	1.7787	0.4828
113	Yadavwadi	558393	-1.0017	1.7046	-0.3136	1.7379	0.5320
114	Renwadi	558343	1.5059	0.3057	-0.3537	0.6982	0.5390

4. HIGH DEVELOPED VILLAGES

115	Sangvi Surya	558352	0.9011	0.5729	-0.4419	1.4045	0.6091
116	Hakigatpur	558361	-0.0292	0.7093	-0.4178	2.3088	0.6428
117	Mawalewadi	558395	-0.1615	1.9356	-0.4920	1.3941	0.6690
118	Dhawanwadi	558357	1.1042	0.5176	-1.0380	2.1185	0.6756
119	Ralegaon Tharepal	558363	0.0193	0.6310	0.0721	2.0124	0.6837
120	Waghunde Kh.	558370	1.8045	0.8556	0.7654	-0.4423	0.7458
121	Alkuti	558340	0.8340	0.1653	0.9508	1.1512	0.7753
122	Morwadi	558356	0.3301	0.5487	0.1252	2.1077	0.7779
123	Jawala	558353	0.0043	0.4417	1.2804	1.5311	0.8144
124	Supa	558369	1.2269	0.8612	1.9447	-0.1413	0.9729
125	Wadner Bk.	558346	0.6923	0.2488	0.9909	2.0051	0.9843
126	Parner	558320	0.2274	-0.1285	4.3653	-0.1473	1.0792

5. V. High DEVELOPED VILLAGES

127	Kurund	558396	0.6302	2.0338	1.0780	0.7585	1.1252
128	Narayan Gavhan	558390	1.7894	1.6354	0.0110	1.4374	1.2183
129	Ralegan Shindhi	558324	0.2649	0.3574	4.1666	0.5006	1.3224
130	Nighoj	558355	0.5432	0.5614	1.9247	2.2657	1.3237
131	Wade Gavhan	558394	1.0520	1.7873	1.2063	1.3645	1.3525
Parner Average ($\bar{x}$)			-0.0499	0.0037	0.0061	0.0054	-0.0087
Tahsil Standard Deviation (σ)			0.9062	0.9996	1.1037	1.0008	0.5525

Source: Compiled by Author based on census of India-2011

Table-3 : Parameter wise five Lowest and Highest Developed Villages.

Sr. no.	Demographic	Household	Social	Economic	Overall
Lowest	Sultanpur	Dongarwadi	Wiroli	Katalwede	Dongarwadi
	Majampur	Katalwede	Wesdare	Mhasoba Zap	Katalwede
	Kalamkarwadi	Palaspur	PimpriPathar	Gatewadi	Palaspur
	Ghanegaon	Pokhari	Bhondre	Dongarwadi	Hataalkhindi
	Palwe Bk.	Mhasoba Zap	Sheri Koldara	Palaspur	Pokhari
Highest	WaghundeKh.	PadaliRanjangaon	Supa	Morwadi	Kurund
	Tas	Yadavwadi	Dhawalpuri	Dhawanwadi	Narayan Gavhan
	PimpriPathar	Wade Gavhan	Bhalawani	Sultanpur	Ralegan Shindhi
	Bahirobawadi	Mawalewadi	Takali Dhoke.	Nighoj	Nighoj
	Akkalwadi	Kurund	RaleganShindhi	Hakigatpur	Wade Gavhan

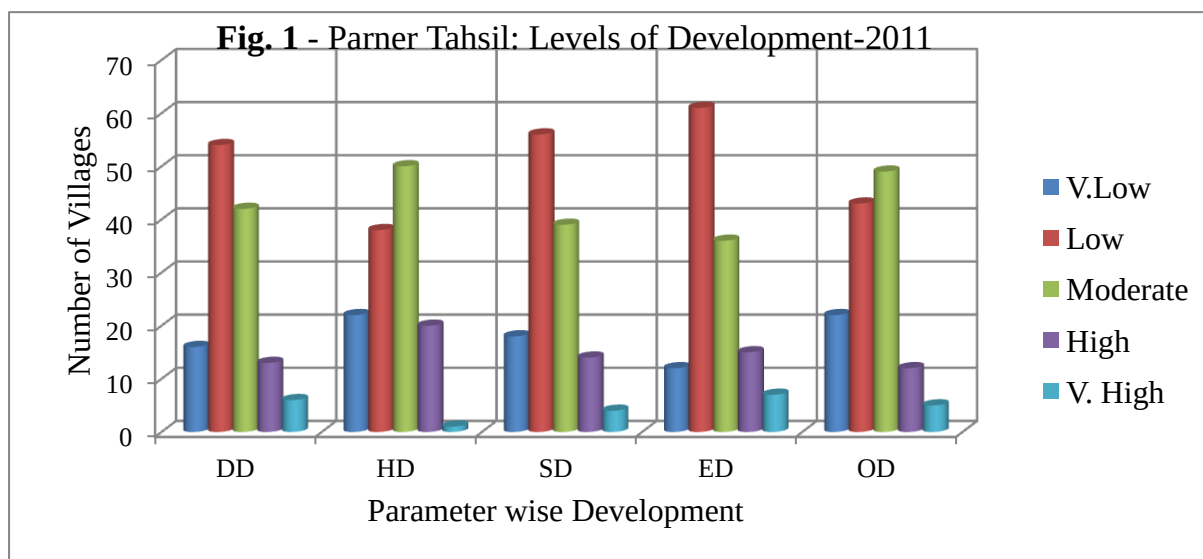
Table-3 exhibits parameter wise each of top and bottom five villages arranged according to ascending order for analysis of the contrasting view of development. Table - 2 exhibits distribution of villages according to. i) very low, ii) low, iii) moderate, iv) high and v) very high developed villages in Parner tahsil.

1.6.1. LEVELS OF DEVELOPMENT: Main aim of present paper is to analyze village wise variations in level of overall development in Parner tahsil. Hence, an attempt has been made to show village wise variations in level of overall development in 131 villages. To determine the level of overall development the average composite Z scores of Demographic, Household, Social and Economic parameters have been taken into account. The average composite Z scores of overall development varies from lowest of -1.8883 in Dongarwadi to highest of 1.3525 in Wade Gavhan.

Table 4: Parner Tahsil: Levels of development - 2011

Sr. No.	Level of Development	Class Boundaries of Parameters and Development	Parameter Wise Number of Villages					
			DD	HD	SD	ED	Overall Development	
			X1	X2	X3	X4	No.	Percentage
01	Very Low	$< \bar{x} - \sigma$	16	22	18	12	22	16.80
02	Low	$\bar{x} - \sigma$ to 0	54	38	56	61	43	32.82
03	Moderate	0 to $\bar{x} + \sigma$	42	50	39	36	49	37.40
04	High	$\bar{x} + \sigma$ to $\bar{x} + 2\sigma$	13	20	14	15	12	09.16
05	Very High	$\bar{x} + 2\sigma >$	06	01	04	07	05	03.82
Total villages in Tahsil			131					
								100.00

Key: $\bar{x}$ = Mean, σ = Standard Deviation, DD = Demographic Development, HD = Household Development, SD = Social Development, ED = Economic Development. OD = Overall Development.



Considering the values of mean ($\bar{X}$) and standard deviation (σ) of each parameters five classes viz. i) very low, ii) low, iii) moderate, iv) high and v) very high development were conveniently identified and table-4 and fig.-1 has been constructed for the analysis of levels of development.

1. VERY LOW DEVELOPED VILLAGES ($\bar{Z} = < -0.5618$) : Table -2 and table-4 makes it clear that villages having less than of $\bar{X} - \sigma$ average composite Z score that are said to be very low developed villages. The bottom ranking 22 villages (16.80 per cent) are included in this category. The composite average Z scores of this category varies from lowest of -1.8880 in Dongarwadi to highest of -0.5774 in Nandur Pathar. Maximum bottom villages viz. Dongarwadi, Katalwedhe, Palaspur, Hattalkhindi, Pokhari etc. in this category are distributed northwestern part of tahsil. Relatively, Nandur Pathar, Wadule, Kaknewadi, Gajdipur and Dongarwadi, Katalwedhe, Palaspur, Hattalkhindi, Pokhari etc. in this category are distributed northwestern part of tahsil. Relatively, Nandur Pathar, Wadule, Kaknewadi, Gajdipur and Kasare show somewhat topper villages in this category.

All the villages in this category suffers by the number of problems such as out migration lead to low growth rates, low population density due to undulating topography, poor soil and scarcity of water, low sex ratio, low literacy in both male and female, low educational, medical, transportation and communication facilities, very low banking facilities, low proportion of workforce and high dependency ratio, low area under cultivation, irrigation and forests, absence of rural small scale industries and very low workers engaged in secondary and tertiary sectors of economic activities. Household amenities such as high percentage of Kachha houses, no drinking water facilities available in premises or near, low percentage of household having – latrine facilities, bathroom facilities, drainage, Fuel-Gas/biogas, kitchen facilities, computer or laptop etc.

2. LOW DEVELOPED VILLAGES ($\bar{Z} = -0.5612$ to 0) : This class includes those villages which are having between $\bar{X} - \sigma$ to 0 average composite Z scores. There are 42 villages (32.82 per cent) in tahsil fall in this category. The composite Z scores vary from lowest of -0.5502 in Gatewadi to highest of -0.0139 in Panoli. Comparatively, bottom five villages in this category are Gatewadi, Sarola Advai, Hiware Korda, Jadhavwadi and Bhandgaon while Panoli, Astagaon, Tas, Kinhi and Kalkup are toppers.

Maximum villages in this category are distributed irregularly north-eastern and central part of tahsil. These villages have undulating topography, relatively less fertile soils and paucity of water for irrigation.

3. MODERATE DEVELOPED VILLAGES ($\bar{Z} = 0$ to 0.5438): Villages having composite Z score ranges between zeros and $\bar{X} + \sigma$ to be assigned moderate developed villages. There are 49 villages (about 37.40 per cent) come under this class. Villages in this category vary from lowest Z score of 0.0013 in Karandi to highest Z score of 0.5390 in Renwadi. It is seen from table-2 that relatively, bottom five villages in this class are Karandi, Bhangadwadi, Padli Darya, Wadgaon Amli and Bhoyare Gangarda. Contrasting to this, Patharwadi, Raytale, Mhaskewadi, Yadavwadi and Renwadi are relatively topmost five villages in this class.

4. HIGH DEVELOPMENT VILLAGES ($\bar{Z} = 0.5438$ to 1.0963): A total of 12 villages (9.16 per cent) have average composite Z score from 0.5438 ($\bar{X} + \sigma$ to $\bar{X} + 2\sigma$) to 1.0963 are said to be high developed villages. Average composite Z score of this category actually observed between lowest of 0.6091 in Sangavi Surya and highest of 1.0792 in Parner. Sangvi Surya, Hakigatpur, Mawalewadi, Dhawanwadi and Ralegan Therpal are bottom villages in this group. While, Parner, Wadner Bk. Supa, Jawala and Morwadi are top most five villages in this category.

Maximum villages come under this class are distributed in southern part of tahsil. Parner and Supa developed better of due to their own peculiarities. Parner is a tahsil's headquarter and therefore it has administratively important. Supa is developed due to it is only industrialized village with M.I.D.C. and benefits of proximity to Pune city.

It may be seen from table-2 that, demographic and social development not been done satisfactorily in some bottom villages in this class. Hence, it is a very difficult and challenging task of these villages to be transform from negative to positive standardize score and for this uplifted in respective terms of development.

5. VERY HIGH DEVELOPED VILLAGES ($\bar{Z} = 1.0963 >$): Average composite Z score of more than 1.0963 ($\bar{X} + 2\sigma >$) is termed as very high developed villages. Table-2 and fig -1 delineated that there are only 5 villages (3.82 per cent) found in this group. Villages in this group spread in the southern part of tahsil. Four villages out of five in this group are Wade Gavhan, Nighoj, Narayan Gavhan, Kurund is belonging to the Kukadi river basin. Remaining one village is Ralegan Sindhi is an ideal village and eco-friendly developed not only famous in our nation but also in the world.

1.6.2. Inter-Correlation among the Parameters: A simple inter-correlation among the four independent and one dependent variable of development have been calculated and tested with

the help of Karl Pearson's product-moment method of correlation. It is assumed here that inter-correlation exists between each category of independent and dependent variables.

With reference to table-5, it is clear that ' r ' = 0.6004 is most important and connate a moderate correlation between household and economic parameters. A very weak positive correlation observed between demographic and social parameters with r = 0.0719. Contrasting to this, a very weak negative correlation denoted by r = -0.1112 between demographic and household. In the same way, a very weak negative correlation also shows between demographic and economic parameters by ' r ' = -0.0736 and between household and social parameters indicates by r = -0.0625 followed by a very weak negative correlation between social and economic parameters denoted by ' r ' = -0.0127.

Table - 5: Coefficient of Correlation

Parameters of Development	Pearson's Coefficient of Correlation		Parameters of Development				
	(R)	R	Demographic	Household	Social	Economic	Overall
			XZ1	XZ2	XZ3	XZ4	XZ5
Demographic	XZ1		1.000	-0.1112	0.0719	-0.0736	0.3623
Household	XZ2		-0.1112	1.000	-0.0625	0.6004	0.6474
Social	XZ3		0.0719	-0.0625	1.000	-0.0127	0.4949
Economic	XZ4		-0.0736	0.6004	-0.0127	1.000	0.6879
Overall	XZn		0.3623	0.6474	0.4949	0.6879	1.000

Note: XZ5 is Dependent variable and XZ1, XZ2, XZ3 and XZ4 are Independent variables.

1.6.3. Correlation between Parameters and Overall Development: With reference to table-5, coefficient of correlation reveals that the economic parameters of development are most important of all. Its coefficient of correlation with overall development index is ' r ' = 0.6879. Household parameters are equally important with correlation value of ' r ' = 0.6474. This is followed by the social parameters are connate association with overall development with ' r ' = 0.4949 Thus, three parameters of development viz. economic, household and social denoting moderate positive correlation with overall development. Besides, table-5 shows that, correlation value ' r ' = 0.3623 connote a weak positive correlation between demographic parameters and overall development.

It is essential to note from the above discussion that, overall development has been satisfactorily associated with economic, household and some extent also with social

parameters. But it is not satisfactory associated in terms of demographic and social parameters. Therefore, attention should be paid especially on demographic aspects and some extents on social aspects or facilities which are presently not adequately to meet the requirements of people in study area.

In this regard, preference should be given to the demographic parameters such as decrease out migration and improve decadal growth rate in 23 villages and female decadal growth rate in 30 villages; improve sex ratio in 74 villages which is today less than 958 and improve in 0-6 age group sex ratio which is today only average 855 and it is less than 855 in 77 villages; improve average and female literacy (75.03 and 65.63% respectively) etc. for their up gradation in respect of demographic development. In the same way, attention should also be paid some extent on social parameters such as governmental and non-governmental medical facilities, electricity, number of ideal villages, and number of tourist centres for appropriate improvements in social development. For this, preference should be given especially those villages that are very low, low and moderately developed (refer table-1) in study area.

1.7. FINDINGS:

1. In terms of demographic development, there are 70 villages indicated negative (-) 'Z' score connote less than tahsil's average 'Z' score. It is lowest of -2.3380 in Sultanpur and it is highest of -0.0292 in Hakigatpur. Contrasting to this, there are 61 villages show positive (+) 'Z' score which connotes more than that of tahsil's average Z score which varies between lowest of 0.0042 in Walwane and it is highest of 2.8222 in Akkalwadi.

2. Considering household development, it is investigated that, there are 60 villages indicate negative (-) 'Z' score which denotes less than that of average Z score of tahsil and it ranges between lowest of -3.0941 in Dongarwadi to highest of -0.0136 in Wadule. On the other hand, there are 71 villages attained positive (+) 'Z' score and it is more than that of household average Z score of tahsil and it is observed lowest of 0.0222 in Darodi and highest of 2.0338 in Kurund.

3. Regarding the social development, it is investigated that, there are 74 villages indicate negative (-) Z score which is less than that of tahsil's average 'Z' score and it varies between lowest of -3.3555 in Wiroli and highest of 0.0071 in Karandi. Contrasting to this, positive (+) Z score means more than that of average Z score of tahsil found in 57 villages

and it lies ranges between lowest of 0.0109 in Narayan Gavhan and highest of 4.3653 in Parner.

4. In context of economic development, it is prove from table-2 that, there are 73 villages out of 131 villages show negative (-) Z score which connotes less than that of tahsil's average Z score and it lies between lowest of -2.1491 in Katalwedhe and highest of -0.0869 in Pimpalgaon Rotha. On the other hand positive (-) Z score means more than average Z score of tahsil found in 58 village and it varies between lowest of 0.0030 in Babhulwade and highest of 2.3088 in Hakigatpur.

5. From table 2, it is observed that 65 villages out of 131 villages are found to be negative (-) Z score which indicate less than that of average composite Z score of tahsil. This lays ranges between lowest of -1.8883 in Dongarwadi and highest of -0.0013 in Panoli. More than average composite Z score found in 66 villages by positive (+) values lie between lowest of 0.0013 in Karandi village to highest of 1.3525 in Wade Gavhan village.

1.8. Suggestions:

1. In terms of overall development, there are only 05 villages (about 4 per cent) are very high developed and 12 (about 9 per cent) villages are high developed category. Out of them Wade Gavhan, as indicated in table 2, was at the zenith of the list followed by Nighoj, Ralegan Sindhi, Narayan Gavhan, It is essential to note that Ralegan Sindhi comparatively a small village in Parner tahsil, performed better in sustainable development. This particular village can play a model role not only in Parner tahsil but also in India's progress and sustainable development.

2. In contrast to performance of these very high developed villages, there are 22 villages are very low developed. Out of them Dongarwadi village as denoted in table 2, was at the bottom of the list followed by Katalwede, Palspur, Hattalkhindi, Pokhari etc. In addition to these 5 villages other 17 villages seen in table-2 which were very low developed. Specific rural development programmes have to be outlined and properly implemented to uplift of these villages from very low developed category to stage by stage very high developed category would be easy to achieve.

3. It may be kept in mind from the foregoing discussion that, there are highest number of 49 villages (37.40 per cent) have moderately developed followed by 43 villages (32.82 per cent) are low developed and 22 villages (16.79) are very low developed category. It means that 114

villages (> 87 per cent) out of 131 are required to be made available appropriate facilities by government for their enhance development from present category to upper category.

3. It is prove from table-2 that, out of 131 villages there are 70 villages in terms of demographically fall behind, 60 villages have not available appropriate household amenities, 74 villages have not satisfactorily social facilities and 73 villages indicates economically backward. Geographers must pay greater attention to these individual villages and studied them in depth, with a view to suggesting policies and strategies for demographic, household, social and economic development with proper infrastructure planning.

Addition to this, greater attention should be paid by state and central government especially on less developed villages in terms of demographic, household, social and economic view point. Therefore, suitable steps should be taken by Sarpanch and block development officer to made available respective essential infrastructural facilities for enhancing the level of development in villages included in very low, low and moderate developed category.

4. Ralegan Sindhi is one of the model villages of eco-friendly development. Hence, eco-friendly development is need of time not only for low developed villages but also high developed villages in Parner tahsil.

5. Attention should paid on high and very high developed villages as well as moderate developed villages for in terms of sustainable development view point such as better example of Ralegan Sindhi.

6. Integrated Village Development Plan should be out lined and typically includes plans for better housing, water and sanitation, health, education, infrastructure such as roads and power-supply, transport and communication linkages, livelihoods improvement, land and watershed treatment, and other related aspects that would together result in improved quality of life for all residents of the village. Ultimately, all the planning strategy should be helpful and lead to development.

1.9. CONCLUSIONS:

1. There is a very high degree of variations in village wise development in terms of demographic (2) household (3) social and (4) economic development in Parner tahsil. Some villages are better-off in terms of demographic development such as Waghunde, Tas, Pimpri Pathar, Bahirobawadi and Akkalwadi. Padali Ranjangaon, Yadavwadi, Wade Gahan, Mawalewadi and Kurund are topmost five villages in terms of household development. According to social development Supa, Dhawalpuri, Bhalwani, Takali Dhokeshwar and

Ralegan Sindhi are top first five villages in tahsil. Economically developed topmost five villages are Morwadi, Dhawanwadi, Sultanpur, Nighoj and Hakigatpur observed in Parner tahsil. Contrasting to these, Sultanpur, Majampur, Kalamkarwadi, Ghanegaon and Palwe Bk. are demographically while Wiroli, Wesdare, Pimpri Pathar, Bhondre and Shri Koldara are socially less developed bottom villages in tahsil.

2. It is concluded from foregoing discussing that village level development has been done when all types of facilities are made available which meet needs of people. In Parner tahsil, the levels of overall development among villages are marked with wide variations due to wide variations found in proportion of available different facilities. Villages such as Wade Gavhan, Nighoj, Ralegan Sindhi, Narayan Gavhan have five toppers while villages like Dongarwadi, Katalwede, Palaspur Hattalkhindi and Pokhari are remains five bottom villages in terms of overall, economic and household development.

3. Attention should paid on high and very high developed on 17 villages as well as moderate developed 49 villages for in terms of sustainable development view point such as better example of Ralegan Sindhi.

4. Ultimately, it is concluded from the foregoing analysis that, there are only 17 villages i.e. about 13 per cent are presently developed either high or very high level. But, contrasting to this, there are 114 villages i.e. about 87 per cent are come under very low, low or moderate level of development. Therefore, greater attention should be paid by government and suitable steps should be taken by Sarpanch and block development officer to made available respective essential infrastructural facilities for enhancing the level of development in villages included in very low, low and moderate developed category.

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