
Public Sector Education Institution's Analysis: A Way Forward to Curtail Rural-Regional Education Accessibility Problems

MIR AFTAB HUSSAIN TALPUR*, FAREED AHMED MEMON**, AND SHABIR HUSSAIN KHAHRO***

RECEIVED ON 10.02.2014 ACCEPTED ON 17.10.2014

ABSTRACT

The availability of accessible educational facilities is essential for the better rural education. However, because of the huge population, lack of resources and absence of proper policy plans; the distance between educational facilities and rural communities is mounting as time progresses. These sorts of problematic circumstances put damaging effects on education standards and become responsible for the declining literacy rate. Hence, the goal of this research is to investigate the lack of educational institutions with respect to indigenous standards. Therefore, in this study, the dearth of education institutions was determined for one of the most deprived sub-regions of Pakistan, i.e. Badin. The data were collected through observations, site visits, and from secondary sources, like census report and other pertinent public sector documents. The outcome of this study can be taken as an input to develop policy plans, targeting the education accessibility issues of backward communities. This research could show a guiding-path to local planning agencies, as these can come-up with the policy plans to trounce the education accessibility issues from the bucolic sub-regions of developing countries.

Key Words: Rural Education, Higher Growth Rate, Policy Plans, Literacy Rate, Deprived Sub-Regions, Education Accessibility, Local Planning Agencies.

1. INTRODUCTION

Absence of transportation services and inaccessibility in the backward sub-regions prolongs depreciation snare, by hampering communities reach to their essential needs. Chambers [1] defined isolation as one of the five factors, i.e. *isolation, powerlessness, vulnerability, poverty and physical weakness*, which contributed to the deprivation state. Among these five factors, isolation is an outcome of a social exclusion process

[2,3]. Transportation is a key component in this process, because it attaches remote settlements to contribute in their socioeconomic activities [4]. Isolation leads to lack of education facilities, together with poor access to essential basic utilities and economic hubs. Isolation through poor accessibility slows down the dispersal of new technologies and techniques, upsurge production costs, and limit access to better living conditions.

* Ph.D. Scholar, Department of Civil Engineering, Universiti Teknologi PETRONAS, Bandar Seri Iskandar, Tronoh 31750, Perak, Malaysia.

** Assistant Professor, Department of Civil Engineering, Mehran University of Engineering & Technology, Jamshoro, Sindh, Pakistan.

*** Lecturer, Department of Civil Engineering, Mehran University of Engineering & Technology, Jamshoro, Sindh, Pakistan.

Thus, the reduction of transport related social exclusion is a significant feature of transport policies [5,6]. In order to plan accessibility for the rural inhabitant's needs, it is imperative to define what actually constitutes basic needs. At the lowest level of basic needs, there are three necessities (*food, shelter and clothing*). For the purposes of transport planning, this definition has to be expanded, in order to cover all the transport elements required to satisfy needs. John Howe [7] mentioned the following striking features about rural-regional movement requirements:

- (a) Health
- (b) Education
- (c) Markets
- (d) Water
- (e) Firewood
- (f) Other Substantial Tasks (Farming).

From these six core necessities; Ian Barwell [8] described health and education as the most important level of accessibility, in the context of remote and deprived rural circumstances. Therefore, this study was aimed to upgrade the tumbling standards of education in the study area, and to improve education accessibility by determining the shortfall with respect to the country's standards. The pedagogy can be improved in this way, which could put positive effects on sub-regional education activities.

2. MATERIALS AND METHOD

To endorse education standards, Badin sub-region was nominated, which was considered as one of the most depressed sub-regions of Sindh province [9, 10]. The sub-region originated the name from its dominant settlement, Badin. It was placed between $24^{\circ} 13'$ and $25^{\circ} 12'$ north latitudes, and $68^{\circ} 21'$ and $69^{\circ} 20'$ east longitudes. The entire geographical area of the Badin sub-region was 694,145 Hectares and the informed area was about 568,851 Hectares. The Badin sub-region included five Talukas; specifically, *Badin, Matli, Golarchi (Shaheed Fazil Rahu), Talhar and TandoBago*. The location map of the Badin sub-region can be seen in Fig. 1.

According to the district census report [12], Badin was the sub-region of 1,136,040 inhabitants in the year 1998; however, in the year 1981, the number was 77,661. The population had grown-up with 46.28% in seventeen years, which specified an average annual growth rate of 2.26%. With this

growth, the population would be doubled in the coming twenty-five years. The average household size in the sub-region was roughly six per house. The rural population of the sub-region was nearly 883,497 that were about 75% of the total population. The rural population growth rate during the years 1998-2012 was 2.86%, which amplified from 2.82% during the years 1981-1998. Information about the demographic characteristics of the Badin sub-region is provided in Table 1.

To project the population characteristics, "Compound Interest Formula" for the population projection [13, 14] was utilized in this research. Mathematical expressions are given as follows:

$$P_1 = P_0 (1+r)^n \quad (1)$$

$$r = (P_1 / P_0)^{1/n} - 1 \quad (2)$$

Where P_1 is Projected Population, P_0 is Current Population, r is Annual Growth Rate, and n is Number of Years

The Equation (1) was used to calculate the number of people (projected), while the Equation (2) assisted in determining the annual growth rate of the sub-regional population. The aim behind the population projection was to understand the demographic characteristics of the sub-region. Hence, it was projected that the population of the Badin sub-region would be doubled-up until the year 2035. The situation could worsen in the future, if proper policy measures would not be adopted for the development of the Badin sub-region.

2.1 Education Standards

The education standards of the country were utilized to determine the current and futuristic public sector education institution's demand, according to available standards. The "National Standards" for the provision of education facilities are given in Table 2.

TABLE 1. BADIN POPULATION (TALUKA WISE)

No.	Name of Taluka	Current Population 2012
1.	Badin	300,707
2.	Talhar	145,868
3.	Matli	255,990
4.	Tando Bago	283,424
5.	Golarchi	192,008
Total Badin Sub-Region		1,177,997

The local standards were compared with the demographic characteristics of the study area. The demand was determined, which could be helpful to formulate a regional transportation policy framework, and enhance the sub-regional education accessibility criterion.

The demographic standards assisted in determining the future shortage of education institutions. This shortage can assist local authorities in providing education facilities, according to the local inhabitants, which could lower-down the distances between the concerned population and basic education services, and ultimately enhance the accessibility criterion for the local population.

Therefore, keeping in view the objective of the study, the data were collected from the study area through personal observations, site visits and from authentic government documents.

3. RESULTS AND DISCUSSION

Rural education is a pivotal sector of social development [16]. Despite all other development issues, the rural sub-region of Badin was also facing the social inaccessibility problem, over the years. It was observed that the local inhabitants of the sub-region were struggling to reach education institutions, because of their scarcity according to



FIG. 1. BADIN SUB-REGION[11]

the local demographic features. This shortage increased the distance between local community and basic education institutions. This situation ultimately heightened the inaccessibility criterion, which eventually raised the issue of inaccessibility.

To counter this problem, the scantiness of education facilities was computed, with respect to the national standards of Pakistan. The existing and futuristic population features are shown in Table 3. The education institution's shortage was determined up to the year 2035. It is believed that by overcoming the shortage of social sector institutions, the distances between the local inhabitants and basic education institutions could be curtailed to a minimum.

The existing and projected population of the Badin sub-region can be seen in Table 3. The population was projected with the help of compound interest formula. The population projection was made with the help of the standard growth rate for each Taluka of the Badin sub-region. The growth rate can be seen in Fig. 2.

The growth rate information as depicted in Fig. 2 was intended, considering past trends of annual growth rates and government policy.

The mean and standard deviation of the population for the years 2012 and 2035 can be shown in Table 4.

TABLE 2. NATIONAL EDUCATION STANDARDS [15]

Institutions	National Standard	
	Male Students	Female Students
Primary School	1\1,800	1\2,400
Secondary School	1\3,900	1\17,000
High School	1\12,400	1\74,000
Degree College	1\Taluka	1\Taluka

TABLE 3. BADIN SUB-REGIONAL POPULATION CHARACTERISTICS

No.	Name of Taluka	Population 2012	Population 2035
1.	Badin	300,707	607,428
2.	Talhar	145,868	274,231
3.	Matli	255,990	488,940
4.	Tando Bago	283,424	538,505
5.	Golarchi	192,008	364,815
Total Badin Sub-Region		1,177,997	2,273,919

The notation "N" in Table 4 highlights the number of Talukas, on which statistical tests were performed. In order to verify the projected population accuracy, a correlation test was performed with SPSS-17.0. This test actually validated the population projection up to the year 2035 (Table 5).

The results showed a strong-positive correlation between the population of the years 2012 and 2035, i.e. ($R=0.996$). Hence, it is proved that the population for the years 2012 and 2035 are extremely correlated. The coefficient of determination (R^2) was also premeditated to check the variance in the population of the year 2035 with respect to the year 2012. The value of (R^2)

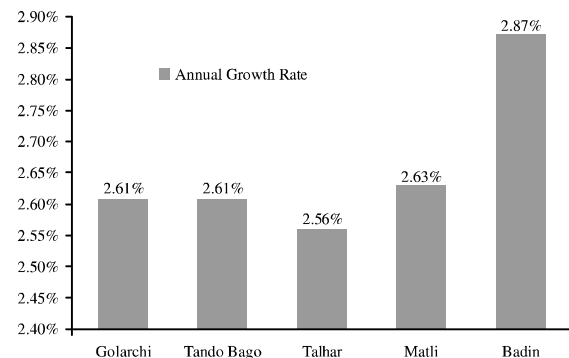


FIG. 2. ANNUAL GROWTH RATE (TALUKA WISE)

TABLE 4. REGIONAL POPULATION DESCRIPTIVE ANALYSIS

Population Features	Mean	Standard Deviation	N
Existing 2012	235599.40	64988.27	5
Projected up to year 2035	454783.80	134322.22	5

TABLE 5. REGIONAL POPULATION CORRELATION ANALYSIS

Correlaton Analysis		Existing Population 2012	Projected Population 2035
Existing Population 2012	Pearson Correlation	1.000	0.996
	Significance (2-tailed)	.	0.000
Projected Population 2035	Pearson Correlation	0.996	1.000
	Significance (2-tailed)	0.000	-
N		5	5

calculated as (0.992), i.e. (99%). Therefore, it is further consolidated the argument that strong-positive correlation was found, and the population for the year 2035 was precisely determined.

3.1 Sub-Regional Education Sector of Badin

To augment the education accessibility, future shortage was calculated according to sub-regional demographic features. This step essentially could assist the concerned rural authority in policy-making. The policies could be made, targeting the

provision of transportation services and overwhelming the lack of education institutions. The national standards were followed to analyze the inadequacy of education institutions. The shortage was determined, according to the population characteristics of each UCs (*Union Councils*) in the sub-region of Badin.

The UC wise education institution's shortfall was intended up to the year 2035, according to their respective Talukas that can be shown in Tables 6-10, respectively.

TABLE 6. AVAILABLE AND REQUIRED EDUCATION INSTITUTIONS (TALUKA BADIN)

UC Name	Primary Schools		Secondary Schools		High Schools	
	Existing	Estimated	Existing	Estimated	Existing	Estimated
Kadhan	09	10	03	04	02	01
MK Burghari	24	37	09	17	03	05
Kadi Kazia	23	36	08	16	03	05
Mathi-III	20	33	07	15	02	05
Badin-II	16	22	05	10	02	03
Bughara Memon	27	37	08	17	03	05
Launwari Sharif	13	24	06	11	02	03
Abdulla Shah	12	13	04	06	01	02
Badin-I	29	36	09	17	03	05
Seerani	17	20	05	09	01	03
Nindo	26	41	10	18	03	06
Badin-III	18	48	06	22	02	07
Total:	234	367	80	162	27	50

TABLE 7. AVAILABLE AND REQUIRED EDUCATION INSTITUTIONS (TALUKA TALHAR)

UC Name	Primary Schools		Secondary Schools		High Schools	
	Existing	Estimated	Existing	Estimated	Existing	Estimated
Talhar	14	20	04	09	01	03
Saeed Pur	18	29	06	13	02	04
Dando	17	25	05	12	02	04
Rajo Khanani	16	24	04	11	01	03
Puro Lashari	17	27	05	12	02	04
Tando Ghulam Hyder	19	26	04	12	01	04
Total:	101	151	28	69	09	22

TABLE 8. AVAILABLE AND REQUIRED EDUCATION INSTITUTIONS (TALUKA MATLI)

UC Name	Primary Schools		Secondary Schools		High Schools	
	Existing	Estimated	Existing	Estimated	Existing	Estimated
Tando Ghulam Ali	14	17	04	08	01	02
Helapota	12	15	03	07	01	02
Ghulam Shah	13	16	04	07	01	02
Matli-I	16	29	07	13	02	04
Dumbalo	08	13	03	06	01	02
Qambrani	09	14	04	06	01	02
Malhan	13	25	06	11	01	03
Nazarpur	15	28	07	13	01	04
Thari	11	20	05	09	01	03
Phalkara	17	30	07	14	02	04
HS Laghari	12	20	05	09	01	03
Laghari	10	19	05	09	01	03
Mati-II	13	24	06	11	01	03
Total:	163	270	66	123	15	37

TABLE 9. AVAILABLE AND REQUIRED EDUCATION INSTITUTIONS (TALUKA TANDO BAGO)

UC Name	Primary Schools		Secondary Schools		High Schools	
	Existing	Estimated	Existing	Estimated	Existing	Estimated
Tando Bago	23	40	07	18	03	06
Pahar Mari	14	25	05	11	01	03
Dada	14	26	04	12	01	04
Khadaro	17	31	08	14	02	04
Chabarlo	15	28	05	13	02	04
Panghario	13	26	06	12	01	04
Khoski	19	35	07	16	02	05
Khairpur	16	31	05	14	02	04
Khalifo Qasim	14	26	07	12	01	04
Dei Jarks	16	29	06	13	02	04
Total:	161	297	60	135	17	42

The computed shortage could curtail the sub-regional educational inaccessibility problem by the year 2035, if policy proposals would be devised by concerned planning and development agencies.

The location also defined here for the existing and the required number of education facilities. The sub-regional education maps were generated, which can be seen in Figs. 3-4 consecutively.

TABLE 10. AVAILABLE AND REQUIRED EDUCATION INSTITUTIONS (TALUKA GOLARCHI)

UC Name	Primary Schools		Secondary Schools		High Schools	
	Existing	Estimated	Existing	Estimated	Existing	Estimated
Ahmed Raho	18	26	07	12	02	04
Dubi	16	23	06	10	01	03
Gharo	20	29	07	13	02	04
Golarchi	16	23	06	10	02	03
Kario Ganhwar	20	27	07	12	02	04
Khorwah	18	28	06	12	01	04
Rahooki	19	24	06	11	01	03
Tarai	17	24	06	11	02	03
Total:	144	202	48	91	13	28

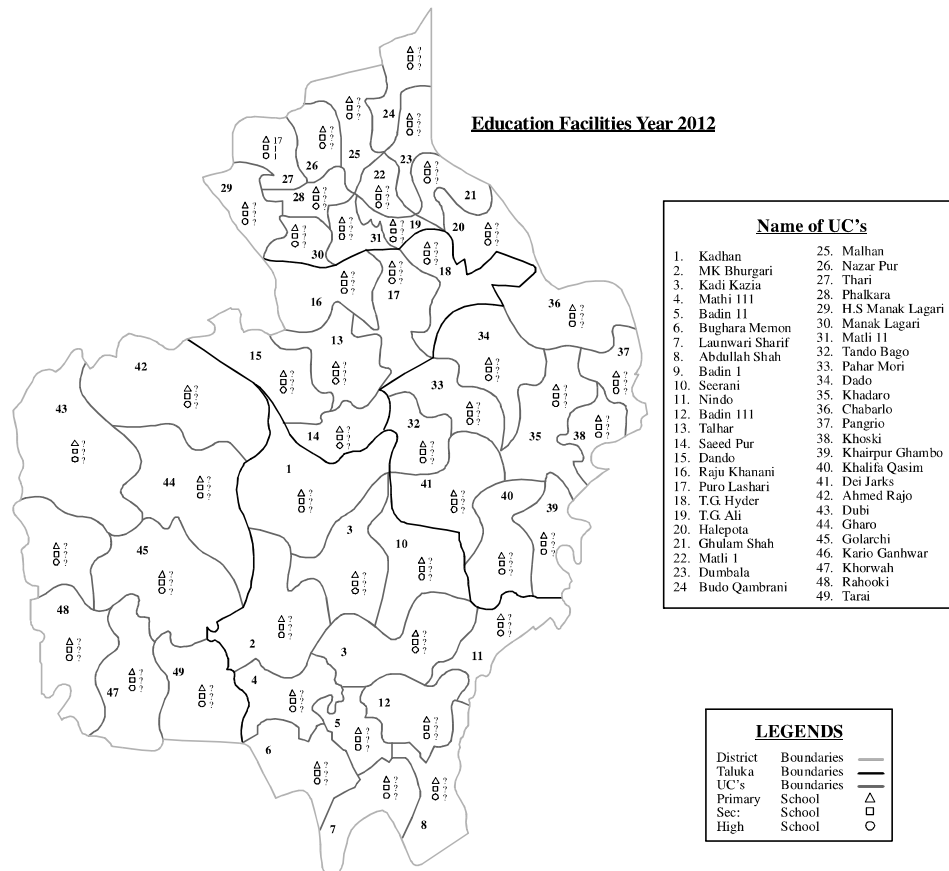


FIG. 3. AVAILABLE SUB-REGIONAL EDUCATION FACILITIES

Nevertheless, the education institution's shortage was determined with respect to local residents, but the government has to put more efforts to ameliorate the standards of education in rural regions. The education syllabus needs to be changed and trained teacher should be appointed in remote regions, to improve education standards and rural literacy rate. The demand was calculated by keeping in view the sub-regional population trends, which can be seen in Fig. 4.

The reason behind the calculation of education institutions, according to sub-regional demography and national standards, is to amplify the education accessibility in the study area. The distances to elementary education institutions would ultimately decrease, when standard education services would be provided. This step could assist regional development authorities to implement the policy

proposals, and pay attention to the basic education sector of the sub-region.

4. CONCLUSION

Accessible education facilities can improve the literacy rate with deprived sub-regions of developing countries. It was found that the population of developing and underdeveloped countries are increasing at a continuous pace, which put a massive burden on the availability of resources and socioeconomic facilities. Within rural areas, the availability of basic services and facilities is a big question mark for local governments, as most of the rural population in developing countries vulnerable to physical, social, economic, and environmental problems. In this regard, this study can be said a step further, which can assist local development authorities and policy makers to provide basic

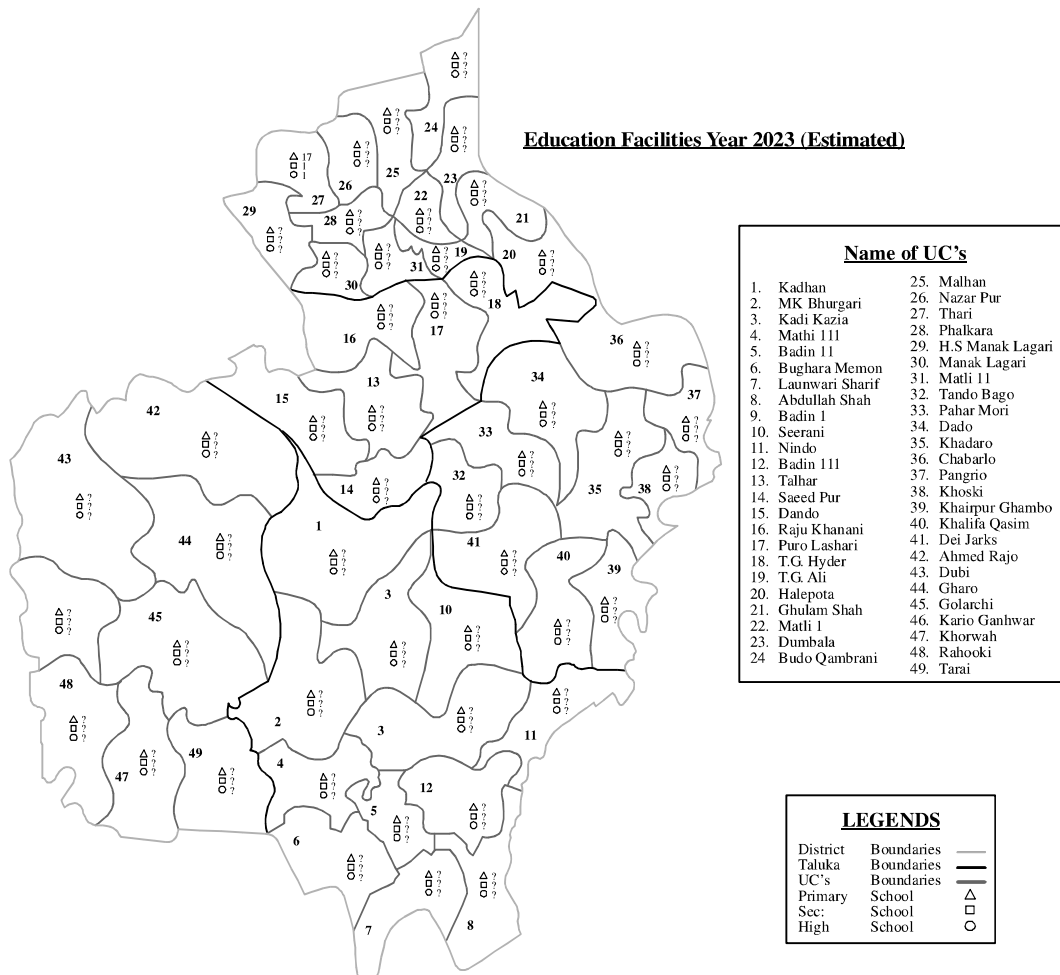


FIG. 4. PROJECTED SUB-REGIONAL EDUCATION FACILITIES

education facilities at the doorstep of the rural population. This research successfully determined the standard basic education institution's shortage, according to the sub-regional demographic features, which could provide an input to policy makers to plan for the future accessible education institutions. The shortage was determined up to the year 2035, which can benefit rural planning agencies in long-term planning of destitute sub-regions of developing countries.

ACKNOWLEDGMENTS

The authors are truly thankful to the concerned authorities of the study area and the Department of City & Regional Planning, Mehran University of Engineering & Technology, Jamshoro, Sindh, Pakistan for their support in the data-collection process and conducting this study.

REFERENCES

- | | |
|--|--|
| <p>[1] Chambers, R., "Rural Development: Putting the Last First", Longman, Harlow, 1983.</p> <p>[2] Burchardt, T., Grand, J.L., and Piachaud, D., "Social Exclusion in Britain 1991-1995", Social Policy & Administration, Volume 33, No. 3, pp. 227-244, 1999.</p> <p>[3] Burchardt, T., Grand, J.L., and Piachaud, D., "Degrees of Exclusion: Developing a Dynamic, Multi-Dimensional Measure", Hills, J., Grand, J.L., and Piachaud, D., Editors, Understanding Social Exclusion, 2002.</p> <p>[4] Church, A., Frost, M., and Sullivan, K., "Transport and Social Exclusion in London", Transport Policy, Volume 7, pp. 195-205, 2000.</p> <p>[5] Casas, I., "Social Exclusion and the Disabled: An Accessibility Approach", The Professional Geographer, Volume 59, pp. 463-477, 2007.</p> | <p>[6] Stanley, J., and Lucas, K., "Social Exclusion: What Can Public Transport Offer?", Research in Transportation Economics, Volume 22, pp. 36-40, 2008.</p> <p>[7] Howe, J., "Conceptual Framework for Defining and Evaluating Improvements to Local Level Rural Transport in Developing Countries", Geneva, 1983.</p> <p>[8] Barewell, I., "Guidelines for Remote Area Transport and Socio-Economic Surveys", 1988.</p> <p>[9] Jamal, H., and Lohano, H.R., "Understanding Rural Poverty Dynamics: The Case of the Poorest District of Sindh, Pakistan", Social Policy and Development Centre, 2008.</p> <p>[10] "District Vision Badin (A Framework for Sustainable Development)", International Union for Conservation of Nature and Natural Resources. The World Conservation Union, Pakistan, Sindh Programme Office, pp. 134, 1-Bath Island Road, Karachi, 2006.</p> <p>[11] HRP (Humanitarian Response Pakistan), United Nations, Edition, Islamabad, Pakistan, United Nations Office for the Coordination of Humanitarian Affairs, Pakistan, http://pakresponse.info/MapDataCenter.aspx, 2011.</p> <p>[12] "Badin", Bureau of Statistics, Government of Pakistan, Islamabad, 1998.</p> <p>[13] Mehta, A.C., "Demographic-Economic Interaction Model for Sub-National Population Projections - A Case Study of Rajasthan", Rajasthan Economic Journal, Volume 17, Jaipur, India, 1996.</p> <p>[14] Roberts, M., "An Introduction to Town Planning Techniques: Hutchinson Educational", 1974.</p> <p>[15] NRM (National Reference Manual) Ministry of Housing, Works, Environmental and Urban Affairs Division, Government of Pakistan, 1986.</p> <p>[16] Talpur, M. A. H., Napiiah, M., Chandio, I. A., and Memon, I. A., "Analyzing Public Sector Education Facilities: A Step Further Towards Accessible Basic Education Institutions in Destitute Subregions," International Education Studies, vol. 7, pp. 110-119, 2014.</p> |
|--|--|