

Original Article

A Case Study of Availability of Infrastructure for Economic Development in Himachal Pradesh

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Abstract - Infrastructure is vital to a region's economic development and prosperity. It supports industrial and agricultural production and foreign and domestic businesses. In the present paper, an attempt has been made to examine the availability of the infrastructural facilities for economic development in 'Other Backward Classes' (OBCs) sample households in the study area of Kangra, Una, Hamirpur and Sirmaur districts of Himachal Pradesh. The focus is to study the transportation facilities, electricity supply, telecommunications services, drinking water supply, sanitation, cooking fuel, and other basic facilities such as PDS (Fair price shop), Market/ Bazaar Kirana/General Market Shop, Bank Branch Office, Credit Co-operative, Post Office, School/Anganwadi, Seed/Pesticide/Fertilizer outlet in the study area. The results show that the availability of transportation services in the Una, Sirmaur, Hamirpur, and Kangra districts of Himachal Pradesh is adequate and t-statistic values indicate statistically significant differences in the availability of transportation facilities between these districts. While analyzing the data on telecommunications, sources of drinking water, sanitation, and cooking fuel among households, it was found that there are significant differences in the availability of these basic necessities in the districts of the study area. The t-statistics values indicate a high level of variability between districts, with some having much better access than others. Further results show a significant difference in the availability of essential facilities, i.e. PDS Shop, Market, Bank, School, Post Office, and Seed/Pesticide/Fertilizer Outlet in the study area. Further, it is observed that the Kangra district has the highest availability of social institutions and other facilities compared to the Una, Sirmaur, and Hamirpur districts. Overall, the data suggests that Kangra district is better equipped with essential facilities and services compared to the other districts in the study. This could have implications for the overall development and quality of life in Kangra compared to Una, Sirmaur, and Hamirpur. The significant differences in availability highlight the need for further investigation into the disparities and potential strategies for improving access to important resources in the less well-equipped districts.

Keywords - PDS, Households, Infrastructure, t-statistics, OBCs, Tele-communication.

1. Introduction

Infrastructure is vital to a region's economic development and prosperity. It supports industrial and agricultural production and foreign and domestic businesses. A good infrastructure makes the work process easier, resulting in positive and high productivity. An economy's infrastructure is pivotal in propelling its progress and setting the stage for future development possibilities. Infrastructure development is crucial to achieve the India 2047 vision for a \$ 40 trillion economy and be reclassified from a developing economy to a developed economy. In the aftermath of COVID-19 and the digitization of the world, the focus rests not only on physical infrastructure but also on digital and social infrastructure. Infrastructure is the set of facilities and systems that serve a country, city, or other area. It encompasses the services and facilities necessary for its economy, households and firms to function. Infrastructure comprises public and private physical structures such as roads, railways, bridges, airports, public

transit systems, tunnels, water supply, sewers, electrical grids, and telecommunications (including Internet connectivity and broadband access). Infrastructure is defined as "the physical components of interrelated systems providing commodities and services essential to enable, sustain, or enhance societal living conditions" and maintain the surrounding environment. Infrastructure is the underlying structure of a country or region, consisting of the physical systems and fixed installations that are required for it to function. In the Indian Constitution, 'Other Backward Classes' are described as socially and educationally backward classes (SEBC), and the government of India is enjoined to ensure their social and educational development. Until 1985, the affairs of the Backward Classes were looked after by the Backward Classes Cell in the Ministry of Home Affairs. A separate Ministry of Welfare was established in 1985 (renamed in 1998 as the Ministry of Social Justice and Empowerment) to attend to matters relating to Scheduled Castes, Scheduled Tribes and



OBCs. The Backward Classes Division of the Ministry looks after the policy, planning and implementation of programmes relating to the social and economic empowerment of OBCs and matters relating to two institutions, namely the National Backward Classes Finance and Development Corporation and the National Commission for Backward Classes set up for the welfare of OBCs. In pursuance of the directions of the Supreme Court in *Indra Sawhney Vs. In the UOI and Other cases*, the Government of India enacted the National Commission for Backward Classes (NCBC) Act, 1993 (Act No. 27 of 1993) dated 1.2.1993, to set up a National Commission for Backward Classes. Under Section 1 of the Act, the jurisdiction of the Act extends to the whole of India except Jammu and Kashmir.

Since the first notification of the Common list on 10.09.93 and the constitution of the NCBC in August 1993, to date, 2479 such entries (by way of castes, their synonyms, sub-castes, etc.) have been notified in the Central List of OBCs through 44 resolutions for 25 States and 6 Union Territories. On the advice of the NCBC, the Central Government changes the Central List of OBCs from time to time. The list of OBCs maintained by the Indian Ministry of Social Justice and Empowerment is dynamic, with castes and communities being added or removed depending on social, educational and economic factors. The functions of the Commission are laid down mainly in Section 9 and Section 11 of this Act. Under Section 9 (1) of the Act, the Commission shall “examine requests for inclusion of any class of citizen as a backward class in such lists and hear complaints of over-inclusion or under-inclusion of any backward class in such lists and tender such advice to the Central Government as it deems appropriate”. Section 9(2) of the Act states that the advice of the Commission shall ordinarily be binding upon the Central Government.

The HP State Commission for Backward Classes was constituted on 30.09.1993. The functions of the HP State Commission for Backward Classes are drawn up under Article 16(4) of the Constitution of India for the inclusion of any backward class of citizens for the purpose of representation in the State services. The functions of the Commission take into sweep the requests for inclusion of any class of citizens as a backward class in the List prepared by the State Government for the purpose of making reservations in services and hear complaints of over-inclusion or under-inclusion or non-inclusion of any backward class in such lists and tender such advice to the State Government as it considers appropriate.

2. Research Methodology

2.1. Rationale and Justification

The backward classes in India present a problem of a complex nature in the socio-economic structure of Indian society, and no study of stratification would be complete without a brief understanding of the historical background of their conditions. As the future lies in the present, the

present conditions are rather moulded on the past. To be purposeful, any attempt towards a planned programme of social change must be preceded by a careful study, analysis and evaluation of its historical background, which in many ways is likely to shed light on the formation of the present structure in the society. Keeping in view this, in this paper, an attempt has been made to examine the availability of transportation facilities, electricity supply, telecommunication services, drinking water supply, sanitation, cooking fuel, other basic facilities such as PDS (Fair price shop), Market/ Bazaar Kirana/General Market Shop, bank branch office, credit co-operative, post office, school/Anganwadi, Seed/Pesticide/Fertilizer outlet. In addition, the availability of mahila mandal, youth club/sports groups, Self-Help Groups, social/festival groups, development groups or NGOs, agricultural co-operative societies, and cable/dish TV has also been analyzed.

2.2. Objectives

In the present paper, an attempt has been made to examine the availability of the infrastructural facilities for economic development in ‘Other Backward Classes’ (OBCs) sample households in the study area of Kangra, Una, Hamirpur and Sirmour districts of Himachal Pradesh. The main focus of the study has been to analyze the availability of infrastructure for human capital formation in the study area. The objectives of the study are:

1. To study the availability of Transportation facilities in the study area
2. To study the availability of electricity, telecommunication, drinking water, sanitation and cooking fuel among OBC Households
3. To study the availability of PDS Shops, Market, Bank, Schools, Post offices, School and Seed/pesticide/fertilizer outlets in the Study area
4. To study the availability of Social Institutions and Groups in the study area

2.3. Hypothesis

Null hypothesis (H_0), i.e., there is no difference in the availability of infrastructural facilities in the study areas. The alternate hypothesis (H_1), i.e., there is a difference in the availability of infrastructural facilities in the study areas.

2.4. Data Collection and Analysis: Multi-Stage Random Sampling

The empirical verification about the present scenario of availability of infrastructural facilities has been done by collecting primary information in the ‘Other Backward Classes’ (OBCs) sample households in the study area of Kangra, Una, Hamirpur and Sirmour districts of Himachal Pradesh. In the present study, districts Kangra, Una, Hamirpur, and Sirmour were selected purposely. These four districts constitute 85.64 per cent of the state's total population of ‘OBCs’. There are 15 blocks in Kangra, 5 in Una and 6 each in Hamirpur and Sirmour. After those 2, blocks from the

Kangra district and one each from the Una, Hamirpur and Sirmaur districts have been selected purposively. The 2 blocks of Kangra district are selected purposively, which have the highest 'OBC' population in the district. Similarly, one block from Una, Hamirpur, and Sirmaur districts were selected purposively based on the 'OBC' population. Thus, a total of 5 development blocks are selected purposively in four districts of Himachal Pradesh. After that, 2 panchayats from 2 selected blocks of Kangra district and one panchayat from each selected block of Una, Hamirpur and Sirmaur district are selected randomly. So, a total of 5 panchayats are selected randomly in 5 blocks of the four districts.

After that, the total number of villages in each selected panchayat is arranged in descending order based on the 'OBC' population, and the top two villages from each panchayat are selected purposively. Thus, a total number of 10 villages are selected from all selected panchayats. The required information pertaining to the availability of transportation facilities, electricity supply, telecommunication services, drinking water supply, sanitation, cooking fuel, other basic facilities such as PDS (Fair price shop), Market/ Bazaar Kirana/General Market Shop, Bank Branch Office, Credit Co-operative, Post Office, School/Anganwadi, Seed/Pesticide/Fertilizer outlet has been collected from the selected household's through questionnaire/schedule by the investigator.

In addition, the availability of mahila mandal, youth club/sports group, Self-Help Groups, social/festival groups, development groups or NGOs, agricultural co-operative societies, and cable/dish TV has also been collected from the selected households. The null hypothesis (H_0) and alternate hypothesis (H_1) with respect to the availability of infrastructural facilities for economic development in the study areas have been tested through a t-test. The formula to calculate the test statistic, t or t -value, for the one sample, is as follows:

$$t = \frac{\bar{x} - \mu}{s_{\bar{x}}}$$

Where \bar{x} is the mean value in the sample, μ is the population or hypothesized mean, and $s_{\bar{x}}$ is the sample's standard error of the mean. The standard error $s_{\bar{x}}$ can be found by using the following formula:

$$s_{\bar{x}} = \frac{s}{\sqrt{n}}$$

Where s is the sample's standard deviation, and n is the number of observations in the sample.

The one-sample t-test should be chosen when one sample is available, and an investigator would like to compare the mean value of a continuous variable in that sample and a population mean value (either real or hypothesized).

Interpreting the sample t-test will allow us to make an inference about whether a sample differs from a population or hypothesized mean value. There are two distinct interpretations depending on which p-value is derived, whether it is a one- or two-tailed test. The two-sided p-value (from the two-tailed test) is usually of more interest as it gives both directions of the effect. In other words, it would interpret whether a difference (in any direction) exists between the sample mean and the hypothesized mean. The one-tailed test would interpret whether the sample mean is larger (*or* smaller) than the hypothesized mean.

3. Infrastructural Facilities in the Study Area

3.1. Availability of Transportation Facilities

The availability of the transportation facilities in the study area has been exhibited in Table 1. It has been observed that 41 (82.00%) OBC households in the Una district, 35 (70.00%) OBC Households in the Sirmaur district, 43 (86.00%) OBC households in Hamirpur district and 92 (92.00) OBC's households in Kangra district reported that the bus facility is adequate in their area. Overall, this value came out to be 211 (84.40%) OBC households who reported adequate availability of bus services.

Further, the availability of taxis/three-wheeler and other mode of transportation is reported by 38 (76.00%) and 15 (30.00%) OBC's households in Una district, 33 (66.66%) and 32 (64.00%) OBC's households in Sirmaur district, 41 (82.00%) and 35 (70.00%) OBC's households in Hamirpur district and 85 (85.00%) and 70 (70.00%) OBC's households in Kangra district. At the overall level, these values came out 197 (78.80%) OBC's households reported taxi/three-wheeler and 152 (60.80%) OBC's households reported adequate availability of another mode of transportation in the study area.

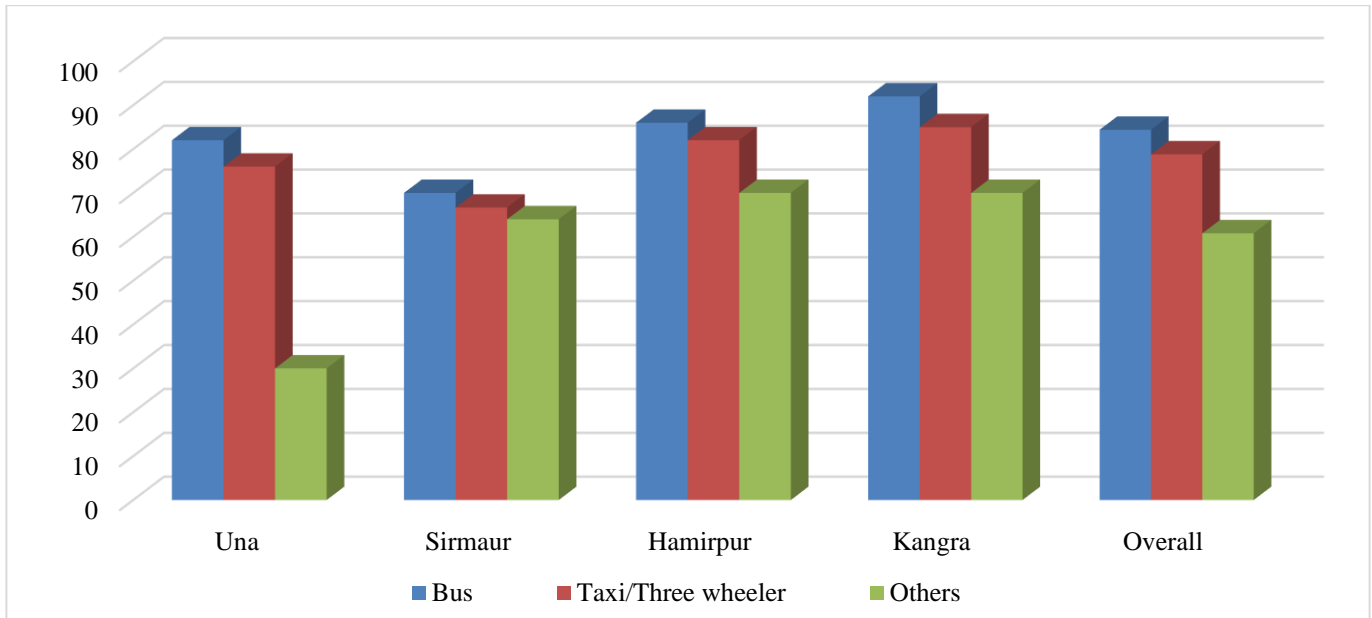
In comparing the availability of transportation services in the Una, Sirmaur, Hamirpur, and Kangra districts of Himachal Pradesh, it is evident from data that the majority of OBC's households from all four districts revealed that the availability of bus services is adequate. Regarding the availability of taxis or three-wheeler services, OBC's household perceptions of its availability in the Kangra district are at the top compared to the Hamirpur, Una and Sirmaur districts.

The data also shows that OBC's people in each district also choose other forms of transportation, with Kangra and Hamirpur districts at the top, followed by Sirmaur and Una districts. Further t-statistic values indicate statistically significant differences in the availability of transportation facilities between the districts. The p-values also confirm the significant difference in transportation between Una, Sirmaur, Hamirpur and Kangra districts. The critical t-values for a one-tail test show that the differences between Una, Sirmaur, Hamirpur and Kangra are statistically significant.

Table 1. Availability of transportation facilities (Adequate)Q

Particulars	Una	Sirmaur	Hamirpur	Kangra	Overall
Bus	41 (82.00)	35 (70.00)	43 (86.00)	92 (92.00)	211 (84.40)
Taxi/Three-wheeler	38 (76.00)	33 (66.66)	41 (82.00)	85 (85.00)	197 (78.80)
Others (two-wheelers)	15 (30.00)	32 (64.00)	35 (70.00)	70 (70.00)	152 (60.80)
Total Households	50	50	50	100	250
t Value	3.625979	31.40021	15.54553	12.41958	10.3995
P(T<=t) one-tail	0.0342	0.0000	0.0021	0.0032	0.0046
t Critical one-tail	2.919986	2.353363	2.919986	2.919986	2.9200

Source: Primary Data Collection through Questionnaires

**Fig. 1 Availability of transportation facilities**

3.2. Availability of Electricity, Telecommunication, Drinking Water, Sanitation and Cooking Fuel

The availability of electricity, telecommunication services, drinking water supply, sanitation and cooking fuel is presented in Table 2. The figures in the table show that an adequate and proper supply of electricity is being reported by 70.00 percent OBC's households in Una, 76.00 percent in Sirmaur, 84.00 percent in Hamirpur and 90.00 percent in Kangra district. While joining all the OBC's households of all the districts together, this value came out to 82.00 percent. The adequacies of telecommunication services are being reported by 68.00 percent of OBC's households in the Una district, 72.00 percent in the Sirmaur district, 82.00 percent in the Hamirpur district and 86.00 percent in the Kangra district. Whereas at the overall level, 78.80 percent of OBC's households have reported the adequacy of the telecommunication services in the study areas. Further, the adequate supply of water and sanitation services is being reported by 70.00, 60.00 and 90.00 percent of OBC's households in the Una district, 84.00 and 68.00 percent in the

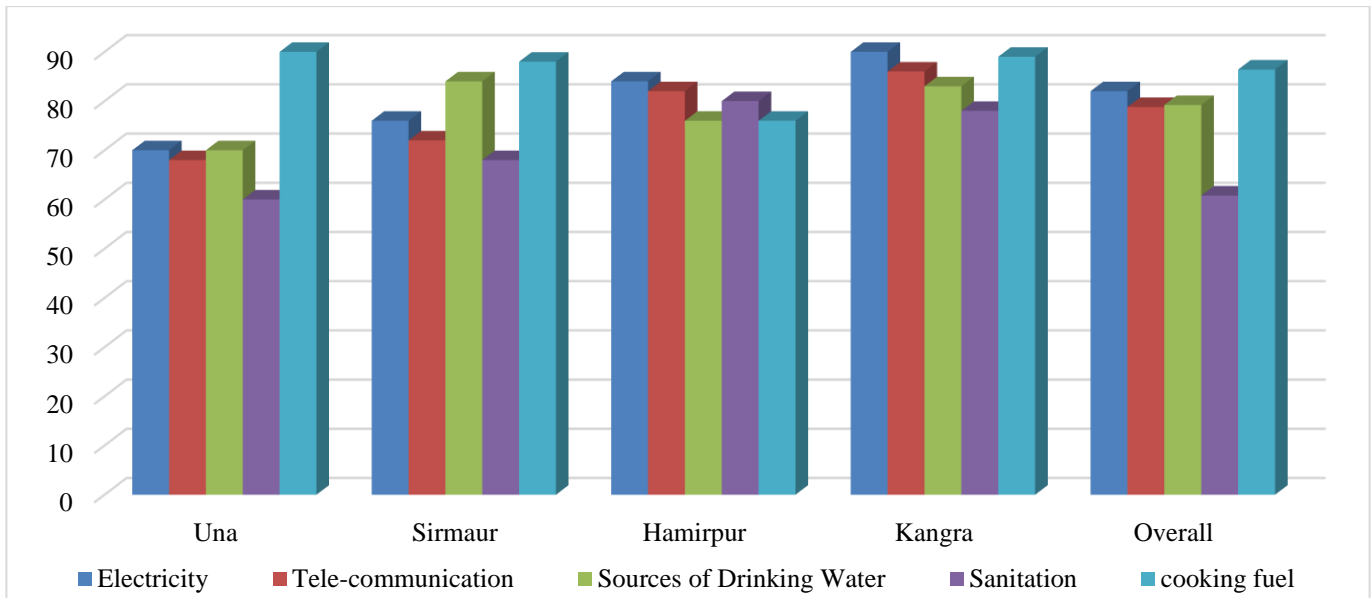
Sirmaur district, 78.00 and 76.00 percent in Hamirpur district and 83.00 and 78.00 percent OBCs households being reported adequate availability these facilities in the study area. At the overall level, these values came to 79.20 percent for drinking water supply and sanitation services. The availability of cooking fuel is being reported as adequate by 90.00 OBC households in the Una district, 88.00 percent in the Sirmaur district, 76.00 percent in the Hamirpur district and 89.00 percent of OBC households in the Kangra district.

At the overall level, this value came out at 86.40 percent. In analyzing the data on telecommunication, sources of drinking water, sanitation, and cooking fuel among households, it is evident from Table 2 that there is a significant difference in the availability of these basic necessities. The t Stat values indicate a high level of variability between districts, with some having much better access than others. Additionally, the P (T<=t) values suggest that the differences observed are statistically significant, further emphasizing the importance of addressing these disparities.

Table 2. Availability of electricity, telecommunications, drinking water, sanitation and cooking fuel (Adequate)

Particulars	Una	Sirmaur	Hamirpur	Kangra	Overall
Electricity	35 (70.00)	38 (76.00)	42 (84.00)	90 (90.00)	205 (82.00)
Tele-communication	34 (68.00)	36 (72.00)	41 (82.00)	86 (86.00)	197 (78.80)
Sources of Drinking Water	35 (70.00)	42 (84.00)	38 (76.00)	83 (83.00)	198 (79.20)
Sanitation	30 (60.00)	34 (68.00)	40 (80.00)	78 (78.00)	152 (60.80)
cooking fuel	45 (90.00)	44 (88.00)	38 (76.00)	89 (89.00)	216 (86.40)
Total Households	50	50	50	100	250
t Value	13.5689	19.4176	40.5979	37.4693	17.5428
P(T<=t) one-tail	0.0001	0.0000	0.0000	0.0000	0.0000
t Critical one-tail	2.1318	2.0150	2.0150	2.1318	2.1318
P(T<=t) two-tail	0.0002	0.0000	0.0000	0.0000	0.0001
t Critical two-tail	2.7764	2.5706	2.5706	2.7764	2.7764

Source: Primary Data Collection through Questionnaires

**Fig. 2 Availability of electricity, telecommunications, drinking water, sanitation and cooking fuel**

3.3. Availability of PDS Shop, Market, Bank, School, Post office, School and Seed/pesticide/fertilizer outlet

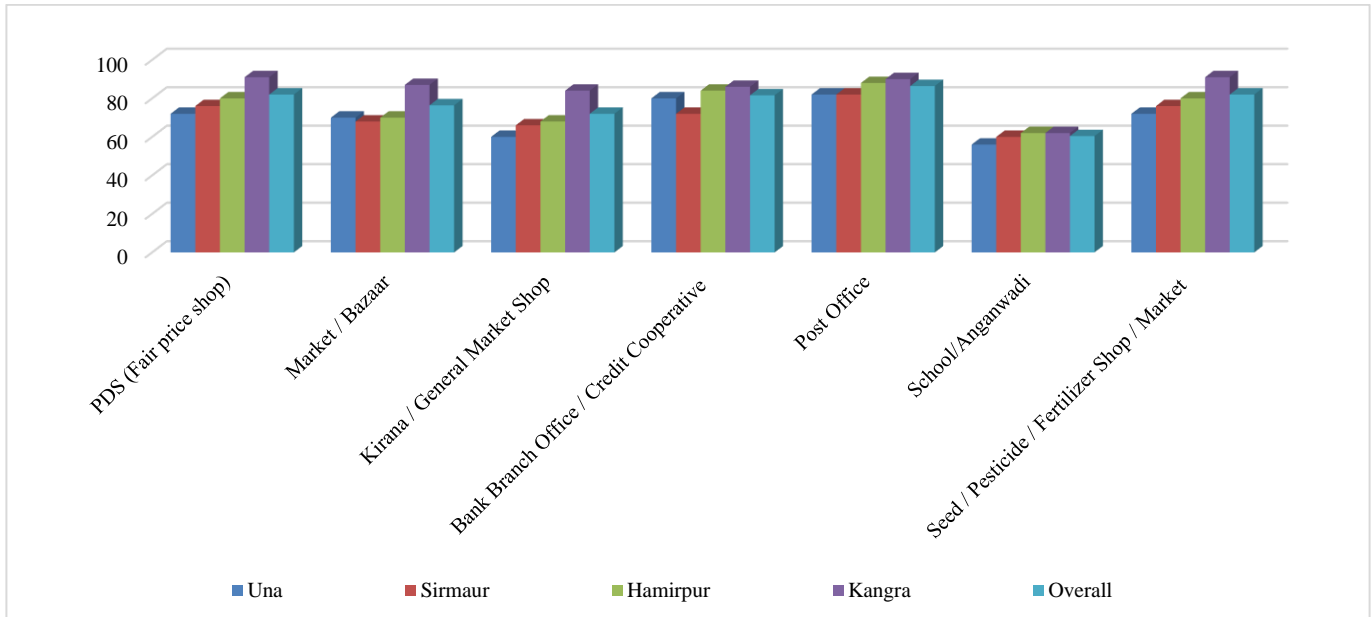
The OBC's household's perceptions about the availability of PDS shops, markets, banks, school/health centres, post offices and seed/pesticide/fertilizer outlets have been depicted in Table 3. It has been observed that 72.00 percent of OBC's households in the Una district, 76.00 percent in the Sirmaur district, 80.00 percent in the Hamirpur district and 91.00 percent in Kangra district reported about the availability of PDS (fair price shop). At the overall level, this percentage came out at 82.00 percent. The availability of kirana/general market shop is being reported by 70.00 percent of OBC's households in the Una district, 68.00 percent in the Sirmaur district, 70.00 percent in the Hamirpur district, and 87.00 percent of OBC's households in Kangra district reported the

availability of kirana/general market shop. At the overall level, this percentage came out at 76.40 percent. Further, the availability of bank branches/credit co-operative offices is being reported by 60.00 percent of OBC's households in the Una district, 66 percent in the Sirmaur district, 68 percent in the Hamirpur district and 84.00 percent of OBC's households in Kangra district reported the availability of bank branch/credit co-operative office. At the overall level, this percentage came out at 72.40 percent. The availability of post office is being reported by 80.00 percent of OBC's households in the Una district, 72.00 percent in the Sirmaur district, 84.00 percent in the Hamirpur district, and 86.00 percent of OBC's households in the Kangra district reported the availability of post office. At the overall level, this percentage came out at 72.40 percent.

Table 3. Availability of PDS Shop, Market, Bank, School, Post office, School and Seed/pesticide/fertilizer outlet (Yes)

Particulars	Una	Sirmaur	Hamirpur	Kangra	
PDS (Fair price shop)	36 (72.00)	38 (76.00)	40 (80.00)	91 (91.00)	205 (82.00)
Market/ Bazaar	35 (70.00)	34 (68.00)	35 (70.00)	87 (87.00)	191 (76.40)
Kirana/General Market Shop	30 (60.00)	33 (66.00)	34 (68.00)	84 (84.00)	181 (72.00)
Bank Branch Office/ Credit Co-operative	40 (80.00)	36 (72.00)	42 (84.00)	86 (86.00)	204 (81.60)
Post Office	41 (82.00)	41 (82.00)	44 (88.00)	90 (90.00)	216 (86.40)
School/Anganwadi	28 (56.00)	30 (60.00)	31 (62.00)	62 (62.00)	151 (60.40)
Seed/Pesticide / Fertilizer Shop/Market	36 (72.00)	38 (76.00)	40 (80.00)	91 (91.00)	205 (82.00)
t Value	17.8085	22.1379	19.8404	21.8563	23.6151
P(T<=t) one-tail	0.0000	0.0000	0.0000	0.0000	0.0000
t Critical one-tail	1.8946	1.8946	1.8946	1.9432	1.9432
P(T<=t) two-tail	0.0000	0.0000	0.0000	0.0000	0.0000
t Critical two-tail	2.3646	2.3646	2.3646	2.4469	2.4469

Source: Primary Data Collection through Questionnaires

**Fig. 3 Availability of PDS Shop, Market, Bank, School, Post office, School and Seed/pesticide/fertilizer outlet**

The availability of school/anganwadi/health centre is being reported by 82.00 percent of OBC's households in the Una district, 82.00 percent in the Sirmaur district, 88.00 percent in the Hamirpur district and 90.00 percent of OBC households in Kangra district reported the availability of school/anganwadi/health centre. At the overall level, this percentage came out at 86.40 percent. The results of Table 3.3 further show that there is a significant difference in the availability of essential services in the study area. The t-statistics for PDS Shops, Market, Bank, Schools, Post offices, and Seed/pesticide/fertilizer outlets are all well above the

critical values, indicating that the differences in their availability are statistically significant.

3.4. Availability of Social Institutions and Groups

The OBC's households' perceptions of the availability of social institutions and groups have been shown in Table 4. It is found that the availability of mahila mandal is being reported by 82.00 percent of OBC's households in the Una district, 78.00 percent of households in the Sirmaur district, 84.00 percent of households in the Hamirpur district and 78.00 percent of households in Kangra district, respectively,

whereas at the overall level, this value came out 80.00 percent. The availability of youth clubs and sports groups in Una, Sirmaur, Hamirpur and Kangra districts is reported by 50.00 percent, 56.00 percent, 62.00 percent and 75.00 percent of OBC's households in Kangra district, respectively, whereas at the overall level, this came out 63.60 percent. The availability Self Help Groups is reported by 76.00 percent of OBC's households in Una district, 80.00 percent in Sirmaur district, 82.00 percent in Hamirpur district and 72.00 percent in Kangra district, respectively. In contrast, at an overall level, this came out to 76.40 percent. Further, the availability of social/festival Groups is being reported by 50.00 percent of OBC's households in the Una district, 82.00 percent in the Sirmaur district, 66.00 percent in the Hamirpur district and 71.00 percent in Kangra district, respectively, whereas overall level this came out 68 percent. The availability of development Groups/NGOs is being reported by 62.00

percent of OBC's households in the Una district, 76.00 percent in the Sirmaur district, 68.00 percent in the Hamirpur district and 68.00 percent in Kangra district, respectively, whereas the overall level, this came out 68.40 percent. The availability of agricultural co-operative societies was reported by 50.00 percent of OBC's households in the Una district, 64.00 percent in the Sirmaur district, 72.00 percent in the Hamirpur district and 70.00 percent in Kangra district, respectively, whereas in the overall level, this came out 65.20 percent. The availability of agricultural co-operative societies is reported by 50.00 percent of OBC's households in the Una district, 64.00 percent in the Sirmaur district, 72.00 percent in the Hamirpur district and 70.00 percent in Kangra district, respectively. In contrast, overall level, this came out 65.20 percent. Further, the availability of cable/TV services is reported by the majority of OBC's households in the Una and Kangra districts, followed by Hamirpur and Sirmaur district OBC households.

Table 4. Availability of social institutions and groups (Yes)

Particulars	Una	Sirmaur	Hamirpur	Kangra	Overall
Mahila Mandal	41 (82.00)	39 (78.00)	42 (84.00)	78 (78.00)	200 (80.00)
Youth Club, Sports Group or Reading Room	25 (50.00)	28 (56.00)	31 (62.00)	75 (75.00)	159 (63.60)
Self-Help Groups	38 (76.00)	40 (80.00)	41 (82.00)	72 (72.00)	191 (76.40)
Social/Festival Group	25 (50.00)	41 (82.00)	33 (66.00)	71 (71.00)	170 (68.00)
Development Group or NGO	31 (62.00)	38 (76.00)	34 (68.00)	68 (68.00)	171 (68.40)
Agricultural Co-operative Society	25 (50.00)	32 (64.00)	36 (72.00)	70 (70.00)	163 (65.20)
Cable/Dish TV.	45 (90.00)	39 (78.00)	44 (88.00)	90 (90.00)	218 (87.20)
t Value	9.6951	18.6381	18.4136	45.4604	26.1889
P(T<=t) one-tail	0.0000	0.0000	0.0000	0.0000	0.0000
t Critical one-tail	1.9432	1.8946	1.9432	1.9432	2.0150

Source: Primary Data Collection through Questionnaires

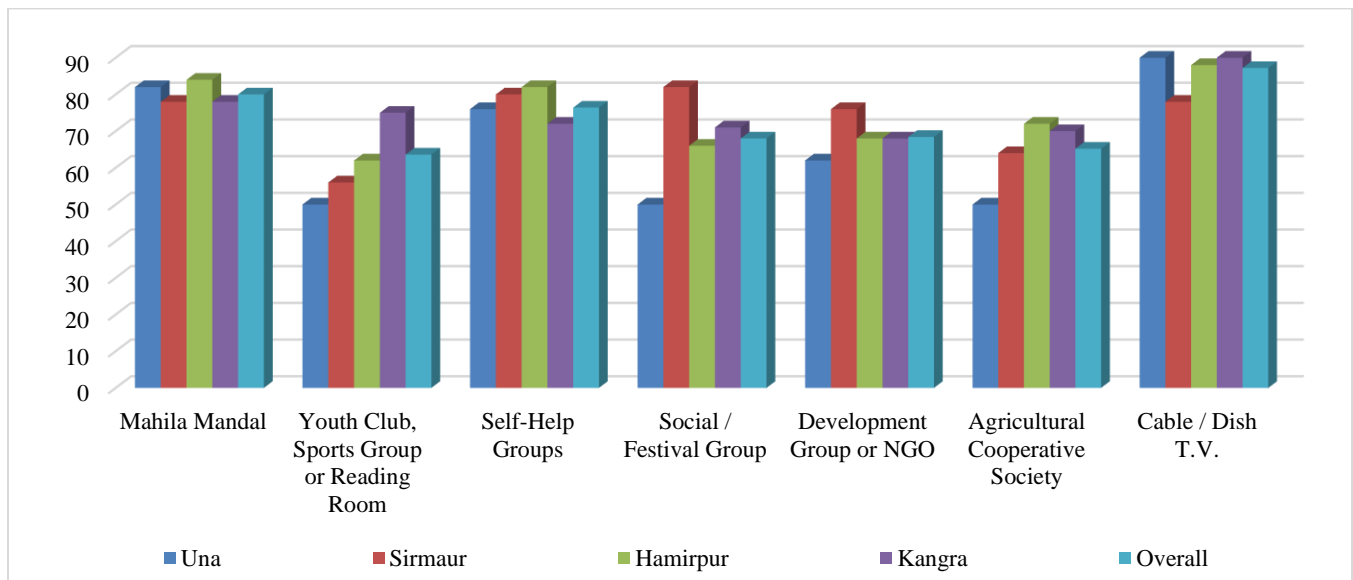


Fig. 4 Availability of social institutions and groups

Based on the data presented in Table 3.4, it is evident that Kangra has the highest availability of social institutions and groups compared to Una, Sirmaur, and Hamirpur districts. The t-statistic values also indicate significant differences in the availability of social institutions among these districts. This suggests that Kangra may have more robust social networks and support systems in place, which could positively impact the overall well-being and quality of life of its residents. Further research and analysis are needed to explore the specific factors contributing to these disparities and their implications for social development in these regions.

4. Hypothesis Testing

The t-statistic values in the availability of infrastructural facilities, as per OBC households' perceptions, indicate significant differences in the availability of infrastructural facilities in the study areas of selected districts. Thus, the Null hypothesis (H_0), i.e., there is no difference in the availability of infrastructural facilities in the study areas, is rejected, and the Alternate hypothesis (H_1), i.e., there is the difference in the availability of infrastructural facilities in the study areas.

5. Conclusion and Policy Implications

The availability of transportation services in the Una, Sirmaur, Hamirpur, and Kangra districts of Himachal Pradesh is adequate, and t-statistic values indicate statistically significant differences in the availability of transportation facilities between these districts. The p-values also confirm

the significant difference in transportation facilities between Una, Sirmaur, Hamirpur, and Kangra districts. The critical t-values for a one-tail test show that the differences between Una, Sirmaur, Hamirpur, and Kangra are statistically significant. While analyzing the data on telecommunication, sources of drinking water, sanitation, and cooking fuel among households, it was found that there are significant differences in the availability of these basic necessities. The t-stat values indicate a high level of variability between districts, with some having much better access than others. Further results show a significant difference in the availability of essential facilities (PDS Shop, Market, Bank, School, Post Office, and Seed/Pesticide/Fertilizer Outlet) in the study area. The t-statistics for these facilities are well above the critical values, indicating that the differences in their availability are statistically significant. Further, it is observed that the Kangra district has the highest availability of social institutions and other facilities compared to the Una, Sirmaur, and Hamirpur districts. The t-statistic values also indicate significant differences in the availability of social institutions/groups and other facilities among these districts. Overall, the data suggests that Kangra district is better equipped with essential facilities and services compared to the other districts in the study. This could have implications for the overall development and quality of life in Kangra compared to Una, Sirmaur, and Hamirpur. The significant differences in availability highlight the need for further investigation into the disparities and potential strategies for improving access to important resources in the less well-equipped districts.

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