

Chapter – 6

ANALYSIS OF PRIMARY DATA

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Chapter – 6

ANALYSIS OF PRIMARY DATA

This chapter analyses responses received based on primary data collection on administering the questionnaire. The criteria used for the selection of these sampled villages and respondents were: the residents of the head, middle and tail end of the water supply scheme. The geographical coverage should be representative of the schemes. Based on these criteria of geographical region for a given scheme, the sample village list was prepared which fulfilled the criteria. From the sample villages, households were selected with a predetermined sample size for each village which was arrived at on the basis of the village population as discussed in the chapter on Research Methodology. A total of 2,247 households were selected for the interview in 55 villages under the four regional water supply schemes. For the purpose of analysis this chapter is divided into two sections: Section – I relates to Data Analysis and Interpretation and Section – II relates to Hypotheses Testing.

SECTION – I

DATA ANALYSIS AND INTERPRETATION

6.1 SAMPLE DESIGN

In this particular section discussion about the selection of the four selected schemes is presented.

6.1.1 Sample Selection Based on Population

Sample selection was based on population wise distribution of villages for four schemes.

Table 6.1 Population wise Distribution of Sampled HHs for Four Schemes

Population	Number of villages	Percentage	Sampled HHs	Percentage	Total Actual Respondents	Percentage
Iswariya RRWSS : Amreli						
≤1000	2	18.18	30	23.08	60	12.71
1001 - 3000	6	54.55	40	30.77	240	50.85
>3000	3	27.27	60	46.15	172	36.44
Total	11	100	130	100	472	100
Gadhada RRWSS : Bhavnagar						
≤1000	4	33.33	30	25.00	120	25.05
1001 – 3000	4	33.33	40	33.33	159	33.19
>3000	4	33.33	50	41.67	200	41.75
Total	12	100	120	100	479	100
Mandvi RRWSS : Kutch						
≤1000	7	58.33	30	25.00	213	49.19
1001 - 3000	3	25.00	40	33.33	120	27.71
>3000	2	16.67	50	41.67	100	23.10
Total	12	100	120	100	433	100
Variyav RRWSS: Surat						
≤1000	4	20.00	30	25.00	120	13.90
1001- 3000	9	45.00	40	33.33	360	41.72
>3000	7	35.00	50	41.67	383	44.38
Total	20	100	120	100	863	100
Total of Four Schemes						
≤1000	17	30.91	120	24.49	513	22.83
1001- 3000	22	40.00	160	32.65	879	39.12
>3000	16	29.09	210	42.86	855	38.05
Total	55	100	490	100	2,247	100

(Source: Prepared from responses)

From table 6.1 it can be observed that, there are variations in 4 schemes for the population wise village coverage. Overall, it can be observed that 40% of the villages pertain to 1001 to 3000 population group and about 42.86% of Households pertain to villages having population greater than 3000. About 23% of respondents belong to villages having population less than 1000 and 39% and 38% respectively to population range 1001- 3000 and greater than 3000. In case of Variyav scheme, highest number of villages i.e. seven villages were selected with population greater than 3000.

6.1.2 Sample Selection Based on Geographical Region

Over and above population of villages sample selection was also based on geographical region.

Table 6.2 Distribution of Sampled Villages Based on Geographical Region

Population	Head	Percentage	Middle	Percentage	Tail	Percentage	Total	Percentage
Iswariya RRWSS : Amreli								
≤ 1000	1	50.00	1	20.00	0	0.00	2	18.18
1001 - 3000	1	50.00	3	60.00	2	50.00	6	54.55
>3000	0	0.00	1	20.00	2	50.00	3	27.27
Total	2	100	5	100	4	100	11	100
Gadhada RRWSS : Bhavnagar								
≤ 1000	3	100	1	25.00	0	0.00	4	33.33
1001 - 3000	0	0.00	2	50.00	2	40.00	4	33.33
>3000	0	0.00	1	25.00	3	60.00	4	33.34
Total	3	100	4	100	5	100	12	100
Mandvi RRWSS : Kutch								
≤ 1000	1	20.00	2	66.67	4	100	7	58.33
1001 - 3000	2	40.00	1	33.33	0	0	3	25.00
>3000	2	40.00	0	0	0	0	2	16.67
Total	5	100	3	100	4	100	12	100
Variyav RRWSS: Surat								
≤ 1000	4	50.00	0	0	0	0	4	20.00
1001 - 3000	2	25.00	5	55.56	2	66.67	9	45.00
>3000	2	25.00	4	44.44	1	33.33	7	35.00
Total	8	100	9	100	3	100	20	100
Total of Four Schemes								
≤ 1000	9	50.00	4	19.05	4	25.00	17	30.91
1001 - 3000	5	27.78	11	52.38	6	37.50	22	40.00
>3000	4	22.22	6	28.57	6	37.50	16	29.09
Total	18	100	21	100	16	100	55	100

(Source: Prepared from responses)

Table 6.1 and 6.2 describe the population wise distribution of sampled HHs and distribution of sampled villages based on geographical region of the RRWSS. For the Iswariya scheme, 472 households were selected for interview. The households were selected from all the sampled villages i.e. 30 households from the villages having a population of 1000 (2 villages), 40 households from those villages which had a population between 1001 and 3000 (6 villages) and 50 households from the villages having a population of more than 3000 (3 villages). It is observed that the highest percentage of villages 50.85% is found between population slots of 1001-3000. Two of the sampled villages lie in the head region of the water supply scheme; five are in middle while four villages are selected from the tail end of the scheme. It is observed that the highest percentages of selected villages (54.55%) are found with a population between 1001-3000.

In the beneficiaries of the Gadhada RRWSS in Bhavnagar number of households selected for interviews was 479. As above, households were selected from all the sampled villages i.e. 30 households from the villages having a population of less than 1000 (4 villages), 40 households from those villages having population between 1001 and 3000 (4 villages) and 50 households from the villages having a population of more than 3000 (4 villages). It is observed that the highest percentage is 41.75% of respondents are from villages having population greater than 3000. Three of the sampled villages lie in the head region of the water supply scheme; four are in middle while five villages have been selected from the tail end of the scheme. It is observed that almost the same percentages of villages (33.33%) are selected for all 3 population slots. For the Mandvi RRWSS in Kutch, the number of households selected for interviews were 433. The households were selected from all the sampled villages i.e. 30 households from the villages having a population of 1000 (7 villages), 40 households from those villages which had a population between 1001 and 3000 (3 villages) and 50 households from the villages having a population of more than 3000 (2 villages). It is observed that the highest percentage is 49.19% found for the villages having population less than 1000. Five of the sampled villages lie in the head region of the water supply scheme; three are in middle while four villages have been selected from the tail of the scheme. The highest percentages of villages (58.33%) are having population of less than 1000.

For the Variyav RRWSS of Surat, the number of households selected for interviews was 863. The households were selected from all the sampled villages i.e. 30 households from the villages having a population of 1000 (4 villages), 40 households from those villages which had a population above 1001 to 3000 (9 villages) and 50 households from the villages having a population of more than 3000 (7 villages). It is observed that the highest percentages of respondents (44.38%) are found from villages having the population of more than 3000. Eight of the sampled villages lie near the head of the main head works of the water supply scheme; nine are in middle while three villages are selected from the tail end of the scheme. Overall, it is observed that 40 % of selected villages are having population slot of 1001 to 3000.

6.1.3 Taluka wise Distribution of Sample Households

Taluka wise distribution of sampled households for four selected RRWSS is presented in Table 6.3.

Table 6.3 Taluka wise Distribution of Sampled Households

Taluka	Total No. of Villages	Percentage	No. of Sampled Villages	Percentage	Sampled Respondents	Percentage
Iswariya RRWSS : Amreli						
Amreli	21	42.86	6	54.55	220	46.61
Liliya	18	36.73	3	27.27	132	27.97
Lathi	10	20.41	2	18.18	120	25.42
Total	49	100	11	100	472	100
Gadhada RRWSS : Bhavnagar						
Gadhada	67	100.00	12	100.00	479	100.00
Mandvi RRWSS : Kutch						
Mandvi	71	100.00	12	100.00	433	100.00
Variyav RRWSS: Surat						
Chorasi	52	33.33	8	40.00	383	44.38
Olpad	104	66.67	12	60.00	480	55.62
Total	156	100	20	100	863	100
Total of Four Schemes						
Amreli	21	6.12	6	10.91	220	9.79
Liliya	18	5.25	3	5.45	132	5.88
Lathi	10	2.92	2	3.64	120	5.34
Gadhada	67	19.53	12	21.82	479	21.32
Mandvi	71	20.70	12	21.82	433	19.27
Chorasi	52	15.16	8	14.55	383	17.04
Olpad	104	30.32	12	21.82	480	21.36
Total	343	100	55	100	2,247	100

(Source: Prepared from responses)

Table 6.3 presents the details about talukas covered under each of the selected RRWSS. The number of villages were selected out of total benefited villages and number of respondents selected from each of the selected village. As explained in table 6.1 and 6.2 the selection of village was based on the region from headwork of the respective RRWSS and the selection of number of respondents was based on the total population of the selected village. The table 6.3 further provides the details about the taluka from where these respondents are selected.

Table 6.3 presents that in Iswariya RRWSS a total number of 472 beneficiaries from 11 villages were selected out of 49 villages, randomly to conduct interview for the collection of data, it is observed that the total percentage 21.01% (9.79%,

5.88%, and 5.34%) of the total respondents. In case of Gadhada RRWSS, a total number of 479 beneficiaries from 12 villages were selected out of 67 villages. These are 21.32% of the total respondents. In case of Mandvi RRWSS, a total number of 433 beneficiaries from 12 villages were selected out of 71 villages. It is observed that this is 19.27% of total respondents. In case of Variyav RRWSS a total number of 863 beneficiaries from 20 villages were selected out of 156 villages. It is observed that the highest percentages 38.40% (17.04% and 21.36%) are selected for this scheme. However, it is worth noting that the number of villages benefitted from the schemes is also highest from this scheme.

Having discussed the sample design in detail the remaining chapter deals with the analysis of the responses. The analysis is divided into respondent profile, size of family, demographic profile, infrastructure, water collection and storage, water shortages and coping mechanism and water charges. Twenty nine questions were set in the questionnaire for a total of 2,247 respondents. First nine questions relate to respondent's personal information such as name, village, sex, caste, education, economical class, and membership in committee, profession and number of family members. During the procedure of getting the questionnaire filled some questions remained unanswered due the reservation of the respondents. There questions were 7, 11, 19 and 21 it was noted that respondents did not answered. Hence, no data is available for the same.

6.2 RESPONDENT PROFILE

6.2.1 Sample Coverage

The four regional rural water supply schemes cater to the villages of Amreli, Bhavnagar, Kutch and Surat District. The selections of villages were done, to not only cover the geographical extents of the scheme but were also planned to cover villages having different demographic compositions and falling under different geographic region of the Head, Middle and Tail end of the scheme.

Table 6.4 Geographical Region wise Distribution of Respondents

Population	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS								
≤ 1000	30	42.86	30	14.29	0	0.00	60	12.71
1001 -3000	40	57.14	120	57.14	80	41.67	240	50.85
> 3000	0	0.00	60	28.57	112	58.33	172	36.44
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS								
≤ 1000	90	100.00	30	18.87	0	0.00	120	25.05
1001 -3000	0	0.00	79	49.69	80	34.78	159	33.19
> 3000	0	0.00	50	31.45	150	65.22	200	41.75
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS								
≤ 1000	30	14.29	60	60.00	123	100.00	213	49.19
1001 -3000	80	38.10	40	40.00	0	0.00	120	27.71
> 3000	100	47.62	0	0.00	0	0.00	100	23.09
Total	210	100	100	100	123	100	433	100
Variyav RRWSS								
≤ 1000	120	40.00	0	0.00	0	0.00	120	13.90
1001 -3000	80	26.67	200	46.19	80	61.54	360	41.71
> 3000	100	33.33	233	53.81	50	38.46	383	44.38
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
≤ 1000	270	40.30	120	13.30	123	18.22	513	22.83
1001 -3000	200	29.85	439	48.67	240	35.56	879	39.12
> 3000	200	29.85	343	38.03	312	46.22	855	38.05
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

Table 6.4 presents geographical region wise population distribution of respondents. For Iswariya scheme 472 respondents were selected for interview. The respondents were selected from head, middle and tail regions. 30 respondents from the head region having a population of less than 1000, 120 households from middle region which had a population slot of 1001 - 3000 and 112 households from tail region having a population more than 3000. It is observed that the highest percentages of respondents are from the tail region (58.33%) for villages having population more than 3000.

For Gadhada scheme 479 respondents were selected for interviews. 90 respondents were selected from the head region having a population up to 1000, 79 respondents from middle region which had a population slot of 1001 - 3000 and 150 respondents from the tail region having a population more than 3000. It can be seen that the highest percentage of respondents in tail region are selected

from villages having population more than 3000. For Mandvi scheme 433 respondents were selected for interview, 100 respondents from the head region from village having a population more than 3000, 123 respondents from the tail region from village having population up to 1000.

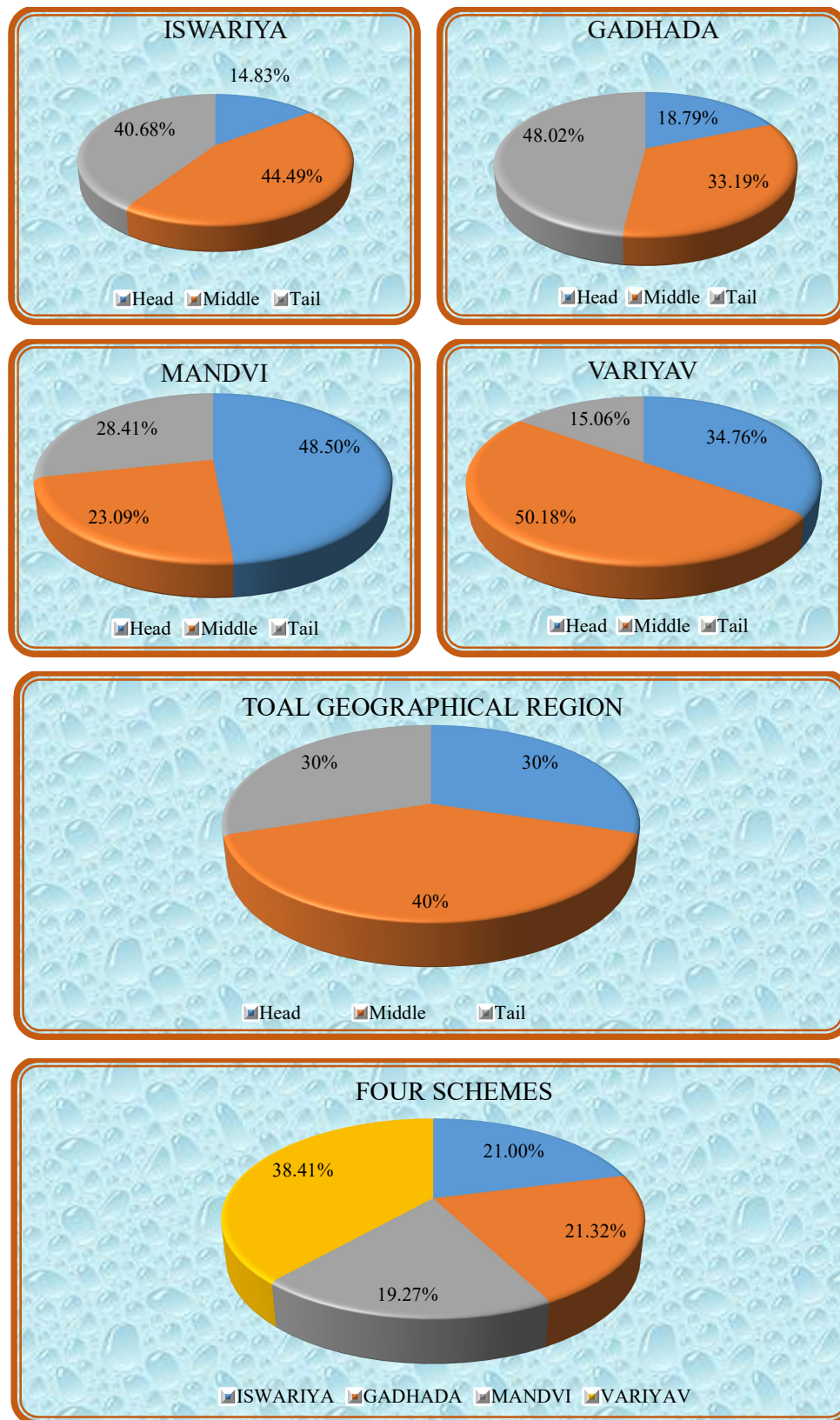
For Variyav scheme 863 were selected for interview. 120 respondents from the head region from village (40%) having a population up to 1000 and 233 respondents from the middle region from village (53.81%) having population more than 3000. 80 respondents from the tail region from the village (61.54%) having a population slot of 1001 - 3000. It can be seen that the highest percentage of respondents in tail region are selected from village having population slot of 1001 - 3000.

Table 6.5 Sample Coverage

Schemes	Head		Middle		Tail		Total	Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	%	<i>f</i>	%
Iswariya	70	14.83	210	44.49	192	40.68	100	472	21.00
Gadhada	90	18.79	159	33.19	230	48.02	100	479	21.32
Mandvi	210	48.50	100	23.09	123	28.41	100	433	19.27
Variyav	300	34.76	433	50.17	130	15.06	100	863	38.41
Total	670	29.82	902	40.14	675	30.04	100	2,247	100

(Source: Prepared from responses)

A total of 2,247 respondents were selected for the study with almost 30% of the respondents at the head region of the scheme, 40% in the middle region and 30% at the tail end of the scheme. The proportion of coverage of 4 schemes was 21%, 21.32%, 19.27% and 38.41% for Iswariya scheme, Gadhada scheme, Mandvi scheme, and Variyav scheme respectively. As is apparent for Variyav scheme the proportion of sample was highest, where as for other 3 schemes the sample size was almost same. This was attributable to the highest number of villages covered in the scheme (Refer Table 6.3). The Graph 6.1, puts the sample coverage for each scheme as divided for the geographical region.

Graph: 6.1 Sample Coverage of Different Districts

6.2.2 Size of Family

To begin with, the size of the family is examined based on the responses. Table 6.6 presents the details of family size in analytical form for each scheme as divided according to the geographic region. The table reveals that in Iswariya RRWSS, the households on an average had a mean family size of 6 members. The maximum number of members in the selected households was 16 apart from some households which were single member households.

Table 6.6 District wise, Size of Family

	Head	Middle	Tail	Total
Iswariya RRWSS : Amreli				
Mean	6	6	5	6
Minimum	1	2	1	1
Maximum	12	16	15	16
Mode	6	6	4	6
Gadhada RRWSS : Bhavnagar				
Mean	6	6	6	6
Minimum	1	1	2	1
Maximum	23	15	15	23
Mode	5	5	5	5
Mandvi RRWSS : Kutch				
Mean	6	6	6	6
Minimum	1	1	1	1
Maximum	22	17	23	23
Mode	4	4	5	4
Variyav RRWSS: Surat				
Mean	5	6	6	6
Minimum	1	1	1	1
Maximum	19	32	11	32
Mode	5	4	4	4
Total all Sour Schemes				
Mean	6	6	6	6
Minimum	1	1	1	1
Maximum	23	32	23	32
Mode	5	4	5	5

(Source: Prepared from responses)

In Gadhada RRWSS, the households on an average had a mean family size of 6 members. The maximum number of members in the selected households was 23 apart from some households which were single member households. In Mandvi RRWSS, the households on an average had a mean family size of 6 members. The maximum number of members in the selected households was 23 apart from some households which were single member households. In Variyav RRWSS the households on an average had a mean family size of 5 members. The

maximum number of members in the selected households was 32 apart from some households which were single member households. Overall, maximum members in household were found in Variyav scheme. While examining the average family members according to geographic region, it was found to be 6 (six) for all Head, Middle and Tail. For all schemes except that it was 5 for Tail region of 'Iswariya' and Head region of 'Variyav' scheme.

6.2.3 Demographic Profile of Respondents

Demographic profile of the respondents is classified into: Gender, Caste, Educational profile, Economic status and Economic activities.

Gender classification: Table 6.7 describe the classification of males and females of each selected RRWSS. The classification shows frequency of males and females for scheme. In Iswariya scheme out of 472 respondents, 277 are males, and 195 are females. In Gadhada scheme out of 479 respondents, 265 are males, and 214 are females. In Mandvi scheme out of 433 respondents, 246 are males and 187 are females. In Variyav scheme out of 863 respondents, 737 are males, and 126 are females.

Table 6.7 Gender wise Classification

Schemes	Male	Percentage	Female	Percentage	Total
Iswariya	277	58.69	195	41.31	472
Gadhada	265	55.32	214	44.68	479
Mandvi	246	56.81	187	43.19	433
Variyav	737	85.40	126	14.60	863
Total	1,525	67.87	722	32.13	2,247

(Source: Prepared from responses)

Caste: The responses received regarding the caste of respondent are tabulated, in Table 6.8. With reference to the table 6.8, following observations can be noted. In Iswariya scheme out of 472 respondents, 253 belong to General category, followed by SC/ST 65 and Baxi panch and Minority 154. In case of Gadhada scheme out of 479 respondents, 238 belong to General category, followed by SC/ST 71 and Baxi panch and Minority 170. For Mandvi scheme out of 433 respondents, 115 belong to General category, followed by SC/ST 34 and Baxi

panch and Minority 284 and for Variyav scheme out of 863 respondents, 113 belong to General category, followed by SC/ST 38 and Baxi panch and Minority 712.

Table: 6.8 Caste wise Distributions of Respondents

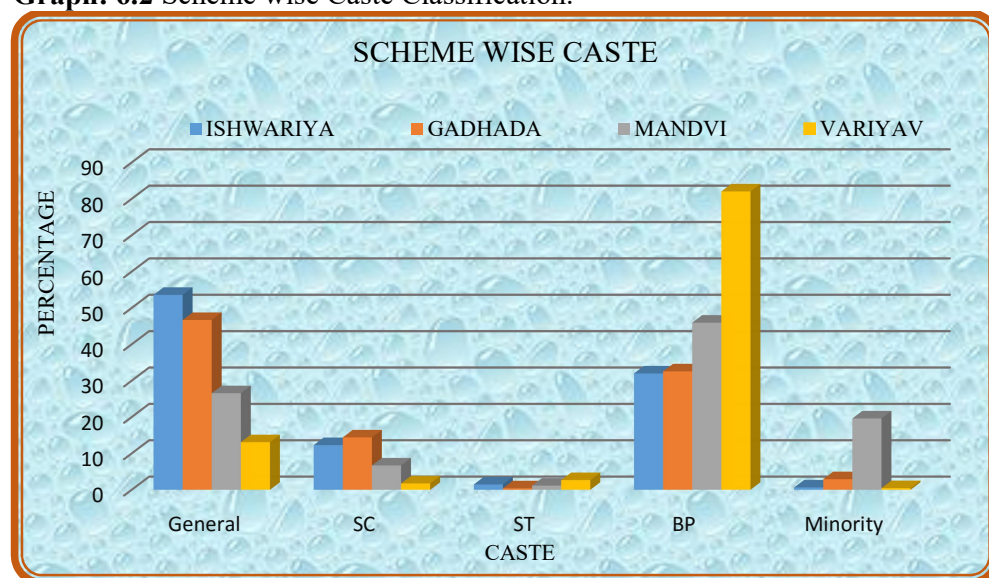
Caste	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS: Amreli								
General	41	58.57	119	56.67	93	48.44	253	53.60
Schedule Caste	13	18.57	26	12.38	19	9.90	58	12.29
Schedule Tribe	0	0.00	3	1.43	4	2.08	7	1.48
Baxi Panch	16	22.86	62	29.52	73	38.02	151	31.99
Minority	0	0.00	0	0.00	3	1.56	3	0.64
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS: Bhavnagar								
General	30	33.33	83	52.20	125	54.35	238	46.69
Schedule Caste	7	7.78	28	17.61	34	14.78	69	14.41
Schedule Tribe	2	2.22	0	0.00	0	0.00	2	0.42
Baxi Panch	44	48.89	47	29.56	65	28.56	156	32.57
Minority	7	7.78	1	0.63	6	2.61	14	2.92
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS: Kutch								
General	67	31.90	26	26.00	22	17.89	115	26.56
Schedule Caste	21	10.00	6	6.00	2	1.63	29	6.7
Schedule Tribe	1	0.48	3	3.00	1	0.81	5	1.15
Baxi Panch	95	45.24	24	24.00	80	65.04	199	45.96
Minority	26	12.38	41	41.00	18	14.63	85	19.63
Total	210	100	100	100	123	100	433	100
Variyav RRWSS: Surat								
General	59	19.67	54	12.47	0	0	113	13.09
Schedule	12	4.00	1	0.23	2	1.54	15	1.74
Schedule Tribe	13	4.33	9	2.08	1	0.77	23	2.67
Baxi Panch	215	71.67	366	84.53	127	97.69	708	82.04
Minority	1	0.33	3	0.69	0	0	4	0.46
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
General	197	29.40	282	31.26	240	35.56	719	31.99
Schedule Caste	53	7.91	61	6.72	57	8.44	171	7.61
Schedule Tribe	16	2.39	15	1.66	6	0.89	37	1.65
Baxi Panch	370	55.22	499	55.32	345	51.11	1,214	54.03
Minority	34	5.08	45	4.99	27	4	106	4.72
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

It was observed from the data collected that the overall proportion of respondents was highest for Baxi panch followed by General category. SC,

Minority and ST. However, for Variyav scheme (82.04%) it was observed that Baxi panch respondents were higher than the other schemes. Overall, it was observed that Baxi panch respondents were greater than the other caste (54.03%). Graph 6.2 presents the caste wise distribution of respondents. When the caste wise proportion is examined geographic region wise overall it is highest for Baxi panch for all regions viz. head, middle and tail. However, for Iswariya scheme highest proportions of respondents in head region belong to general caste (58.57%) and for Variyav scheme for tail region highest proportion of respondents belong to Baxi panch (97.69%).

Graph: 6.2 Scheme wise Caste Classification.



Educational profile: On analysing the educational profile of the respondents, it is observed that for Iswariya scheme 236 (50%) respondents are illiterate, 185 (39.19%) respondents are with less than seventh standard and 10.80% are with 10th or 12th standard of education. This shows very low level of education among respondents. In case of Gadhada scheme, 265 (55.32%) respondents are illiterate, 134 (27.97%) are having less than seventh standard education. Only 30 respondents had education beyond 10th and 12th standard. Similarly in case of Mandvi scheme, 208 (48.04%) respondents are illiterate, 187 (43.19%) are having education less than seventh standard. In case of Variyav scheme 92 (10.66%) respondents are illiterate, 387 (44.84%) respondents are having education less seventh standard. 128 respondents had education level more than

10th and 12th standard. From the responses it is observed that highest percentage of response are for less than 7th standard, followed by illiterate and followed by education up to 10th and beyond 12th standard. It is surprising to note that even though Baxi panch respondents are highest for Variyav scheme the proportion of illiterate respondents is lowest. And even though the proportion of general category responds highest for Iswariya scheme the illiterate respondents proportion is highest.

Table: 6.9 Education Level for Each Scheme and with Geographical Region

Education	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS: Amreli								
Illiterate	40	57.14	116	55.24	80	41.67	236	50.00
Less than 7	25	35.71	76	36.19	84	43.75	185	39.19
Greater than 10	3	4.29	15	7.14	16	8.33	34	7.20
Greater than 12	2	2.86	3	1.43	12	6.25	17	3.60
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS : Bhavnagar								
Illiterate	56	62.22	99	62.26	110	47.83	265	55.32
Less than 7	24	26.67	44	27.67	66	28.70	134	27.97
Greater than 10	4	4.44	8	5.03	38	16.52	50	10.44
Greater than 12	6	6.67	8	5.03	16	6.96	30	6.26
Total	90	100	159	100	192	100	479	100
Mandvi RRWSS : Kutch								
Illiterate	78	37.14	53	53	77	62.60	208	48.04
Less than 7	109	51.90	37	37	41	33.33	187	43.19
Greater than 10	19	9.05	7	7	2	1.6	28	6.47
Greater than 12	4	1.90	3	3	3	2.44	10	2.31
Total	210	100	100	100	123	100	433	100
Variyav RRWSS: Surat								
Illiterate	21	7	67	15.47	4	3.08	92	10.66
Less than 7	114	38	226	52.19	47	36.15	387	44.84
Greater than 10	120	40	96	22.17	40	30.77	256	29.66
Greater than 12	45	15	44	10.16	39	30	128	14.83
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
Illiterate	195	29.10	337	37.28	271	40.15	801	35.65
Less than 7	272	40.48	383	42.37	238	35.26	893	39.74
Greater than 10	146	21.79	126	13.94	96	14.22	368	16.38
Greater than 12	57	8.51	58	64.16	70	10.37	185	8.23
Total	670	100	904	100	675	100	2,247	100

(Source: Prepared from responses)

Economic Status: Table 6.10 presents economic status of the respondents in terms of respondents living above poverty line or below poverty line. For four schemes and according to their region of head, middle and tail, it is revealed from the Table that highest number of respondents were below poverty line in Mandvi and Gadhada scheme with approximately 25%, followed by Iswariya scheme with 17% of respondents and only 10% in Variyav scheme. Amongst the respondents contacted, highest percentage of respondents are found, APL residing in the middle region in Variyav scheme. Considering geographic region for given scheme the percentage of respondents APL range from 77% to 85% in Iswariya, 58% to 81% in Gadhada, 77% to 82% in Mandvi and 86% to 94% in Variyav schemes. It is also seen that the highest proportion of respondents BPL are from head region of Gadhada scheme with 41% of respondents for the scheme. In Variyav scheme overall respondents BPL ranged from 6% to 14% whereas in Iswariya scheme it ranged from 14% to 22%, and in Mandvi scheme from 18% to 32%.

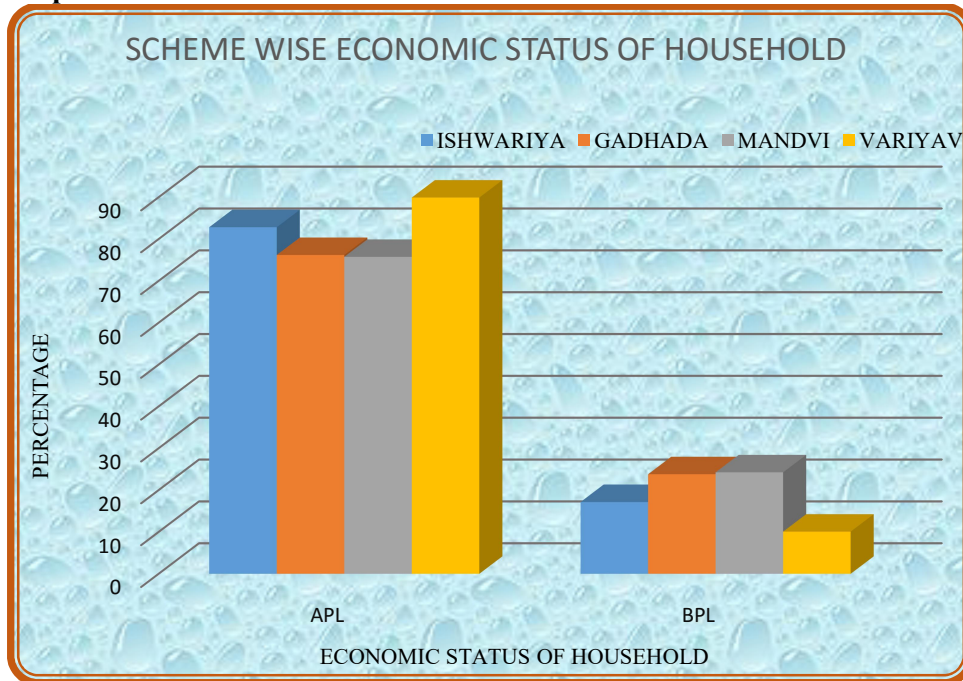
Table 6.10 Economic Status of Household

Economic Class	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS : Amreli								
APL	54	77.14	179	85.24	158	82.29	391	82.84
BPL	16	22.86	31	14.76	34	17.71	81	17.16
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS: Bhavnagar								
APL	53	58.89	125	78.62	187	81.30	365	76.20
BPL	37	41.11	34	21.38	43	18.70	114	23.80
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS : Kutch								
APL	163	77.62	82	82.00	83	67.48	328	75.75
BPL	47	22.38	18	18.00	40	32.52	105	24.25
Total	210	100	100	100	123	100	433	100
Variyav RRWSS: Surat								
APL	257	85.67	406	93.76	113	86.92	776	89.92
BPL	43	14.33	27	6.24	17	13.08	87	10.08
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
APL	527	78.66	792	87.80	541	80.15	1,860	82.78
BPL	143	21.34	110	12.20	134	19.85	387	17.22
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

Thus, overall for Variyav scheme the respondents were coming from economically sound background. The scheme wise economic status is graphically presented in Graph 6.3.

Graph: 6.3 Scheme wise Economic Status of Household

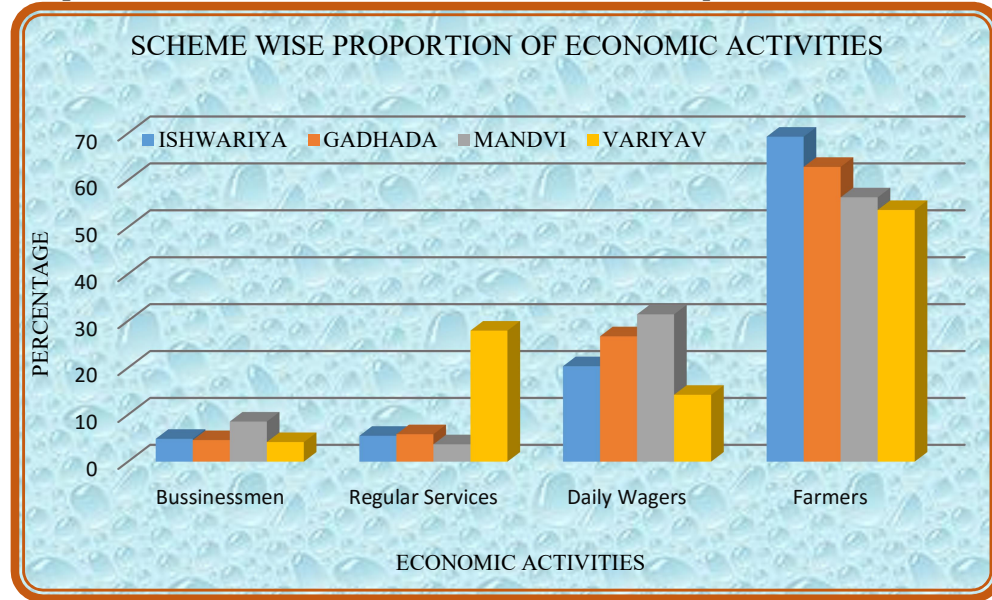


Economic activities: Economic activities of the respondents are mainly divided into business, service, daily wager and farming. On analysing the economic activities, it is observed that the four RRWSS cater only to the rural areas and the sample households belong to the villages. Therefore, a very large proportion of the respondents were engaged in Agriculture and allied activities. Thus on the whole about 59% of respondents are farmers, followed by daily wagers (21.50%), followed by regular services (14%) followed by businessmen (5.25%). Iswariya and Gadhada schemes have higher proportion of farmers as compared to overall average. Daily wagers are higher than overall average, for Gadhada and Mandvi schemes. Regular services category is the highest for Variyav scheme and businessmen are higher than overall average for Mandvi scheme. For all the schemes uniformly, farmers are highest percentage of respondents. A comparative for all 4 schemes according to economic activities is presented graphically in Graph no. 6.4

Table 6.11 Economic Activities wise Distribution of Sampled Households

Economic activities	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS :Amreli								
Businessmen	2	2.86	6	2.86	15	7.81	23	4.87
Regular Services	2	2.86	14	6.67	10	5.21	26	5.51
Daily Wagers	10	14.29	39	18.57	47	24.48	96	20.34
Farmers	56	80	151	71.90	120	62.50	327	69.28
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS : Bhavnagar								
Businessmen	4	4.44	9	5.66	9	3.91	22	4.59
Regular Services	5	5.56	10	6.29	13	5.65	28	5.85
Daily Wagers	15	16.67	49	30.82	64	27.83	128	26.72
Farmers	66	73.33	91	57.23	144	62.61	301	62.84
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS: Kutch								
Businessmen	22	10.48	3	3	12	9.76	37	8.55
Regular Services	9	4.29	2	2	5	4.07	16	3.70
Daily Wagers	76	36.19	34	34	26	21.14	136	31.41
Farmers	103	49.05	61	61	80	65.04	244	56.35
Total	210	100	100	100	123	100	433	100
Variyav RRWSS: Surat								
Businessmen	11	3.67	24	5.54	1	0.77	36	4.17
Regular Services	76	25.33	107	24.71	58	44.62	241	27.93
Daily Wagers	27	9.00	66	15.24	30	23.08	123	14.25
Farmers	186	62.00	236	54.50	41	31.54	463	53.65
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
Businessmen	39	5.82	42	4.66	37	5.48	118	5.25
Regular Services	92	13.73	133	14.75	86	12.74	311	13.84
Daily Wagers	128	19.10	188	20.84	167	24.74	483	21.50
Farmers	411	61.34	539	59.76	385	57.03	1,335	59.41
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

Graph 6.4 Economic Activities wise Distribution of Sampled Households

6.3 INFRASTRUCTURE

In the second part of the questionnaire on 'Infrastructure' six questions are asked to know respondents views regarding infrastructure available for domestic water supply. Question wise analysis is carried out for all these questions. 'Source of water from where the respondent family fetch the drinking water, distance from source to residences, of water whether the respondent is satisfied about source of water and reasons for their satisfaction and dissatisfaction were further inquired.

Source of water supply: Amongst the various sources used for water, 10 sources were identified in the questionnaire. They were Tap, Public tap, Hand pump, Bore well, Well, Step well, River, Pond, and Tanker. As the respondents may be using more than one source of water supply, the total of frequency of various sources for each scheme is higher than the respondents for that scheme. The numbers of responses are 783, 735, 604 and 1,259 for Iswariya, Gadhada, Mandvi and Variyav schemes respectively. Thus, total responses were 3,427 against the total respondents of 2,247.

On the whole it is observed that Tap, Public tap, Well, Bore well and Hand Pumps are major source and remaining are quite minor sources of water supply. There are certain variations observed in the water source used by the

respondents of the respective scheme. For Iswariya scheme, Step Well, Well and Tanker are not used at all as water source. Hand Pump is used as a minor source by Mandvi and Variyav scheme whereas Well is used by higher proportion of respondents as compared to overall average. The details from the responses are presented in Table 6.12 and to have comparative analysis, the frequency is converted into percentage.

Table 6.12 Various Sources Used for Drinking Water

Sources	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS: Amreli								
Tap	28	20.14	165	48.39	135	44.55	328	41.89
Public Tap	42	30.22	85	24.93	79	26.07	206	26.31
Hand Pump	38	27.34	39	11.44	31	10.23	108	13.79
Bore Well	28	20.14	36	10.56	47	15.51	111	14.18
Well	2	1.44	8	2.35	9	2.97	19	2.43
Step Well	0	0	0	0	0	0	0	0
River	0	0	0	0	0	0	0	0
Pond	1	0.72	8	2.35	2	0.66	11	1.4
Tanker	0	0	0	0	0	0	0	0
Total	139	100	341	100	303	100	783	100
Gadhada RRWSS : Bhavnagar								
Tap	84	51.53	142	57.72	152	46.63	378	51.43
Public Tap	36	22.09	49	19.92	63	19.33	148	20.14
Hand Pump	30	18.40	26	10.57	48	14.72	104	14.15
Bore Well	3	1.84	14	5.69	22	6.75	39	5.31
Well	4	2.45	13	5.28	27	8.28	44	5.99
Step Well	0	0	1	0.41	3	0.92	4	0.54
River	2	1.23	1	0.41	5	1.53	8	1.09
Pond	3	1.84	0	0	5	1.53	8	1.09
Tanker	1	0.61	0	0	1	0.31	2	0.27
Total	163	100	246	100	326	100	735	100
Mandvi RRWSS: Kutch								
Tap	155	63.52	58	40.56	13	5.99	226	37.42
Public Tap	75	30.74	44	30.77	49	22.58	168	27.81
Hand Pump	0	0	1	0.7	3	1.38	4	0.66
Bore Well	12	4.92	14	9.79	28	12.90	54	8.94
Well	2	0.82	4	2.80	67	30.88	73	12.09
Step Well	0	0	0	0	8	3.69	8	1.32
River	0	0	0	0	2	0.92	2	0.33
Pond	0	0	21	14.69	35	16.13	56	9.27
Tanker	0	0	1	0.7	12	5.53	13	2.15
Total	244	100	143	100	217	100	604	100

Table – 6.12 Continued

Sources	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Variyav RRWSS: Surat								
Tap	294	60.99	410	73.21	113	52.07	817	64.90
Public Tap	1	0.21	32	5.71	8	3.69	41	3.26
Hand Pump	1	0.21	0	0	1	0.46	2	0.16
Bore Well	31	6.43	45	8.04	21	9.68	97	7.70
Well	136	28.22	44	7.86	42	19.35	222	17.63
Step Well	1	0.21	0	0	8	3.69	9	0.71
River	2	0.41	0	0	0	0	2	0.16
Pond	3	0.62	0	0	2	0.92	5	0.40
Tanker	13	2.70	29	5.18	22	10.14	64	5.08
Total	482	100	560	100	217	100	1,259	100
Total of Four Schemes								
Tap	561	54.57	775	60.08	413	38.85	1749	51.73
Public Tap	154	14.98	210	16.28	199	18.72	563	16.65
Hand Pump	69	6.71	66	5.12	83	7.80	218	6.45
Bore Well	74	7.20	109	8.45	118	11.10	301	8.90
Well	144	14.00	69	5.35	145	13.64	358	10.59
Step Well	1	0.09	1	0.08	19	1.78	21	0.62
River	4	0.38	1	0.08	7	0.66	12	0.36
Pond	7	0.68	29	2.23	44	4.13	80	2.36
Tanker	14	1.36	30	2.33	35	3.29	79	2.34
Total	1,028	100	1,290	100	1,063	100	3,381	100

(Source: Prepared from responses)

Even though wide variations are observed in percentage of respondents using 'Tap' as a source of water in all the schemes it is used by highest proportion of respondents, followed by Public tap as a source except for Variyav scheme where 'Well' is next in position.

As no responses are received for the distance travelled between water source and residence, no analysis could be carried out for the same.

Government source or village source: In this question the water sources are divided as Government source and village source. The responses for the same are summarised in Table 6.13. The Government source is Tap, Public Tap, Hand Pump and Tanker and village source is well, bore well, step well, river, pond.

Table 6.13 tabulates the responses for use of Government sources, village sources and both sources. In case of Iswariya scheme 25.21% respondents used only government source, 8.69% used only village source. In case of Gadhada

scheme 22.12% respondents used only government source, 14.20% used only village source. For Mandvi scheme 8.78% respondents used only government source and 32.10% used village source. In case of Variyav scheme 48.55% used government source and 1.73% respondents used village source. Overall result indicates that the majority respondents are using both the sources, (57.95%) followed by Government source only (30.35%). When examined region wise highest percentage of respondents in the head region (67.16%) and tail regions (65.19%) uses both sources and in middle region highest percentage of respondents (46.45%) are using the Government source. For Iswariya scheme the highest proportion of respondents use both the sources (66.10%), however, for Variyav schemes 49.71% of respondents are using both the sources.

Table 6.13 Classification of Source of Water as Government / Village

Source	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS : Amreli								
Government	8	11.43	53	25.23	58	30.21	119	25.21
Village	10	14.29	16	7.6	15	7.81	41	8.69
Both	52	74.29	141	67.14	119	61.98	312	66.10
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS: Bhavnagar								
Government	19	21.11	45	28.30	42	18.26	106	22.13
Village	4	4.40	7	4.40	57	24.78	68	14.20
Both	67	74.44	107	67.29	131	56.96	305	63.67
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS: Kutch								
Government	5	2.38	13	13.00	20	16.26	38	8.78
Village	63	30.00	35	35.00	41	33.33	139	32.10
Both	142	67.62	52	52.00	62	50.41	256	59.12
Total	210	100	100	100	123	100	433	100
Variyav RRWSS: Surat								
Government	109	36.33	308	71.13	2	1.53	419	48.55
Village	2	0.67	13	3.00	0	0	15	1.73
Both	189	63.00	112	25.87	128	98.46	429	49.71
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
Government	141	21.05	419	46.45	122	18.07	682	30.35
Village	79	11.79	71	7.87	113	16.74	263	11.70
Both	450	67.16	412	45.68	440	65.19	1,302	57.95
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

Status of satisfaction with government sources of water: This section deals with the status of satisfaction with government sources of water for the selected RRWSS.

Table 6.14 Satisfaction with the Present RRWSS

Source	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS : Amreli								
Yes	32	45.71	159	75.71	110	57.29	301	63.77
No	38	54.29	51	24.29	82	42.71	171	36.23
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS: Bhavnagar								
Yes	85	94.44	61	38.36	122	53.04	268	55.95
No	5	5.56	98	61.64	108	46.96	211	44.05
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS: Kutch								
Yes	159	75.71	41	41.00	13	10.57	213	49.19
No	51	24.29	59	59.00	110	89.43	220	50.81
Total	210	100	100	100	123	100	433	100
Variyav RRWSS: Surat								
Yes	188	62.67	381	87.99	123	94.62	692	80.19
No	112	37.33	52	12.01	7	5.38	171	19.81
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
Yes	464	69.25	642	71.18	368	54.52	1,474	65.59
No	206	30.75	260	28.82	307	45.48	773	34.41
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

The table 6.14 presents the proportion of satisfied respondents towards selected RRWSS. It is observed that for Iswariya scheme 63.77% of respondents are satisfied for Gadhada scheme 55.95% respondents are satisfied, for Mandvi scheme 49.19% respondents are satisfied and for Variyav scheme 80.19% of respondents are satisfied. Examining region wise, for head region highest proportion of respondents (94.44%) are satisfied for Gadhada scheme. For the middle and tail region Variyav scheme has the highest proportion of respondents satisfied at 87.99% and 94.62%. In all the four RRWSS proportion of satisfied respondents varies. Taking all 4 schemes together, it is observed that the proportion of respondents satisfied is higher than those of not satisfied. For each scheme individually also, the proportion of satisfied respondents is higher except Mandvi scheme where it is marginally lower than those not satisfied. The highest percentage of satisfied respondents is for tail region of Variyav scheme.

Reasons for satisfaction: The reasons for satisfaction of Government source of supply of water (RRWSS) were also inquired. For this purpose 7 reasons viz., water available as per requirement, water available regularly, clean water

available, water available near house, saving in time and work, positive effects on education of the children and change in lifestyle were identified. The respondents were required to put tick mark for the reasons leading to satisfaction. As there can be multiple reasons for satisfaction of the respondents, the total of response for all 4 schemes individually and for all 4 schemes taken together is higher than the number of respondents. The numbers of responses are 1,368, 952, 933, and 3,343 for Iswariya, Gadhada, Mandvi and Variyav scheme. Thus, total responses were 6,596 against the total respondents satisfied of 1,474. (Refer table 6.14)

Table: 6.15 Reasons for Satisfaction of Water Supply Scheme

Reasons	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS : Amreli								
Water available as per requirement	25	23.58	143	18.77	95	19.00	263	19.23
Water available regularly	17	16.04	119	15.62	84	16.80	220	16.08
Clean water available	21	19.81	136	17.85	94	18.80	251	18.35
Water available near house	17	16.04	131	17.19	83	16.60	231	16.89
Saving in time and work	13	12.26	106	13.91	64	12.80	183	13.38
Positive effects on education of the children	11	10.38	90	11.81	61	12.20	162	11.84
Change in lifestyle	2	1.89	37	4.86	19	3.80	58	4.24
Total	106	100	762	100	500	100	1,368	100
Gadhada RRWSS: Bhavnagar								
Water available as per requirement	79	22.83	51	23.72	97	24.81	227	23.84
Water available regularly	59	17.05	36	16.74	60	15.35	155	16.28
Clean water available	59	17.05	45	20.93	67	17.14	171	17.96
Water available near house	68	19.65	34	15.81	84	21.48	186	19.54
Saving in time and work	42	12.14	21	9.77	39	9.97	102	10.71
Positive effects on education of the children	23	6.65	15	6.98	27	6.91	65	6.83
Change in lifestyle	16	4.62	13	6.05	17	4.35	46	4.83
Total	346	100	215	100	391	100	952	100
Mandvi RRWSS: Kutch								
Water available as per requirement	159	20.87	33	21.57	4	22.22	196	21.01
Water available regularly	151	19.82	28	18.30	4	22.22	183	19.61
Clean water available	138	18.11	36	23.53	6	33.33	180	19.29
Water available near house	116	15.22	25	16.34	2	11.11	143	15.33
Saving in time and work	86	11.29	13	8.50	1	5.56	100	10.72
Positive effects on education of the children	78	10.24	11	7.19	1	5.56	90	9.65
Change in lifestyle	34	4.46	7	4.58	0	0.00	41	4.39
Total	762	100	153	100	18	100	933	100

Table – 6.15 Continued

Reasons	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Variyav RRWSS: Surat								
Water available as per requirement	156	19.31	316	15.97	126	22.66	598	17.89
Water available regularly	174	21.53	382	19.30	125	22.48	681	20.37
Clean water available	142	17.57	348	17.58	124	22.30	614	18.37
Water available near house	96	11.88	290	14.65	54	9.71	440	13.16
Saving in time and work	81	10.02	254	12.83	41	7.37	376	11.25
Positive effects on education of the children	71	8.79	228	11.52	42	7.55	341	10.20
Change in lifestyle	88	10.89	161	8.14	44	7.91	293	8.76
Total	808	100	1,979	100	556	100	3,343	100
Total of Four Schemes								
Water available as per requirement	419	20.72	543	17.47	322	21.98	1,284	19.46
Water available regularly	401	19.83	565	18.17	273	18.63	1,239	18.78
Clean water available	360	17.80	565	18.17	291	19.86	1,216	18.43
Water available near house	297	14.69	480	15.44	223	15.22	1,000	15.16
Saving in time and work	222	10.98	394	12.67	145	9.89	761	11.54
Positive effects on education of the children	183	9.05	344	11.06	131	8.94	658	9.98
Change in lifestyle	140	6.92	218	7.01	80	5.46	438	6.64
Total	2,022	100	3,109	100	1,465	100	6,596	100

(Source: Prepared from responses)

It is found that for three schemes Iswariya, Gadhada and Mandvi water availability as per requirement is main reason of satisfaction. For all regions in Iswariya and Gadhada; in head region in Mandvi and in tail end of Variyav scheme respondents opined that availability is prime consideration for satisfaction for use of Government source. For all four schemes water availability as per requirement, its regularity and cleanliness is highly important consideration ranking first three reasons out of seven reasons identified. Positive effect on education and change in lifestyle are of less consideration.

Reasons for Dissatisfaction with the water supply: If the response to satisfaction for RRWSS was negative then, reasons for the dissatisfaction for use of Government source of water were inquired into. Eleven reasons for dissatisfaction were identified for putting tick mark in the questionnaire. These were: no house connection, insufficient water availability, crowding at the time of water availability, unhygienic condition surrounding public tap, socially not

reachable, tap water taste is not good, salty water, insufficient pressure of water, less duration of water supply, Water charges is high and frequent breakage in pipeline. As the respondents may have more than one reason of dissatisfaction the total frequency of responses for each scheme is higher than the respondents for that scheme. The numbers of responses are 687, 125, 714, and 613 for Iswariya, Gadhada, Mandvi and Variyav scheme. Thus, total responses were 2,140 against the total dissatisfied respondents of 773.

Table: 6.16 Reasons for Dissatisfaction with Water Supply Scheme

Reasons	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS : Amreli								
No house connection	38	29.69	57	33.14	68	17.57	163	23.73
In sufficient water availability	27	21.09	28	16.28	51	13.18	106	15.43
Crowding at the time of water availability	25	19.53	21	12.21	52	13.44	98	14.26
Unhygienic condition surrounding public tap	28	21.88	16	9.30	58	14.99	102	14.85
Socially not reachable	3	0.00	3	1.74	26	6.72	32	4.66
Tap water taste is not good	0	0.00	4	2.33	2	0.52	6	0.87
Salty water	0	0.00	12	6.98	17	4.39	29	4.22
Insufficient pressure of water	0	0.00	9	5.23	26	6.72	35	5.09
Less duration of water supply	2	1.56	6	3.49	35	9.04	43	6.26
Water charges is high	1	0.78	1	0.58	6	1.55	8	1.16
Frequent breakage in pipeline	4	3.13	15	8.72	46	11.89	65	9.46
Total	128	100	172	100	387	100	687	100
Gadhada RRWSS: Bhavnagar								
No house connection	1	25.00	11	15.28	7	14.29	19	15.20
In sufficient water availability	0	0.00	9	12.50	5	10.20	14	11.20
Crowding at the time of water availability	0	0.00	10	13.89	5	10.20	15	12.00
Unhygienic condition surrounding public tap	0	0.00	11	15.28	3	6.12	14	11.20
Socially not reachable	0	0.00	11	15.28	3	6.12	14	11.20
Tap water taste is not good	1	25.00	1	1.39	9	18.37	11	8.80
Salty water	0	0.00	2	2.78	1	2.04	3	2.40
Insufficient pressure of water	1	25.00	5	6.94	7	14.29	13	10.40
Less duration of water supply	0	0.00	1	1.39	1	2.04	2	1.60
Water charges is high	0	0.00	4	5.56	5	10.20	9	7.20
Frequent breakage in pipeline	1	25.00	7	9.72	3	6.12	11	8.80
Total	4	100	72	100	49	100	125	100

Table – 6.16 Continued

Reasons	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Mandvi RRWSS: Kutch								
No house connection	43	23.12	51	28.65	106	30.29	200	28.01
In sufficient water availability	25	13.44	34	19.10	61	17.43	120	16.81
Crowding at the time of water availability	28	15.05	26	14.61	51	14.57	105	14.71
Unhygienic condition surrounding public tap	25	13.44	18	10.11	39	11.14	82	11.48
Socially not reachable	2	1.08	14	7.87	19	5.43	35	4.90
Tap water taste is not good	3	1.61	3	1.69	7	2.00	13	1.82
Salty Water	47	25.27	7	3.93	23	6.57	77	10.78
Insufficient pressure of water	5	2.69	3	1.69	6	1.71	14	1.96
Less duration of water supply	7	3.76	18	10.11	21	6.00	46	6.44
Water charges is high	0	0.00	2	1.12	6	1.71	8	1.12
Frequent breakage in pipeline	1	0.54	2	1.12	11	3.14	14	1.96
Total	186	100	178	100	350	100	714	100
Variyav RRWSS: Surat								
No house connection	31	7.71	2	0.99	2	25.00	35	5.71
In sufficient water availability	76	18.91	27	13.30	1	12.50	104	16.97
Crowding at the time of water availability	36	8.96	29	14.29	1	12.50	66	10.77
Unhygienic condition surrounding public tap	24	5.97	22	10.84	0	0.00	46	7.50
Socially not reachable	19	4.73	6	2.96	1	12.50	26	4.24
Tap water taste is not good	53	13.18	13	6.40	0	0.00	66	10.77
Salty water	40	9.95	28	13.79	0	0.00	68	11.09
Insufficient pressure of water	16	3.98	28	13.79	1	12.50	45	7.34
Less duration of water supply	41	10.20	26	12.81	1	12.50	68	11.09
Water charges is high	46	11.44	14	6.90	1	12.50	61	9.95
Frequent breakage in pipeline	20	4.98	8	3.94	0	0.00	28	4.57
Total	402	100	203	100	8	100	613	100
Total of Four Schemes								
No house connection	113	15.69	121	19.36	183	23.01	417	19.49
In sufficient water availability	128	17.78	98	15.68	118	14.89	344	16.07
Crowding at the time of water availability	89	12.36	86	13.76	109	13.71	284	11.21
Unhygienic condition surrounding public tap	77	10.69	67	10.72	101	12.70	245	11.45
Socially not reachable	24	3.33	34	5.44	49	6.16	107	5.00
Tap water taste is not good	57	7.92	21	3.36	18	2.26	96	4.49
Salty water	87	12.08	49	7.84	41	5.16	177	8.27
Insufficient pressure of water	22	3.05	45	7.2	40	5.03	107	0.05
Less duration of water supply	50	6.94	51	8.16	58	7.29	159	7.43
Water charges is high	47	6.53	21	3.36	18	2.26	86	4.02
Frequent breakage in pipeline	26	3.61	32	5.12	60	7.55	118	5.51
Total	720	100	625	100	795	100	2,140	100

(Source: Prepared from responses)

Table 6.16 presents the frequency distribution for identified reasons for dissatisfaction for selected RRWSS. From the table it is observed that on the whole ‘No house connection,’ ‘Insufficient water availability,’ and ‘Unhygienic condition surrounding public tap’ are the main reasons leading to dissatisfaction followed by ‘Crowding’, ‘Salty water’ and ‘Less duration of water supply’ etc. When responses for each scheme are examined, highest percentage has responded for ‘No house connection’, as the reason for dissatisfaction for all schemes except Variyav scheme. ‘Insufficient water availability’ stands at a 2nd rank for Iswariya and Mandvi schemes. Thus, by providing house connection or increasing the water availability, level of satisfaction can be improved.

6.4 WATER COLLECTION AND STORAGE

In this part 3 questions were asked relating to use of water for purposes other than domestic purpose, timing of the water supply and the aspects affected in case timing of water supply are not fixed.

Use of water for other purpose: In the first question use of water for purpose other than domestic use such as animal husbandry, dairy industries, poultry rearing and other home industries was inquired.

The table 6.17 presents the details about various business uses for the water in selected RRWSS. For this question response is not received from all the respondents. As against 2,247 total respondents, responses are received from only 1,238 respondents. In case of Iswariya scheme 52.29% were using water for animal husbandry business, 40.37% were in dairy industry, 7.34% were in poultry rearing business. In case of Gadhada scheme 94.76% were in animal husbandry business, with other 3 industries having negligible use. In case of Mandvi scheme 99.38% were in animal husbandry business, with very negligible use for other business purpose. In case of Variyav scheme 92.18% were using water for animal husbandry business, again with negligible use for other business. Overall results indicate that in all four schemes, highest proportion of respondents used the water for animal husbandry business.

Table: 6.17 Use of Water for Business in RRWSS

Business	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS : Amreli								
Animal Husbandry	18	29.51	37	100.00	59	49.17	114	52.29
Dairy Industry	38	62.30	0	0.00	50	41.67	88	40.37
Poultry Rearing	5	8.20	0	0.00	11	9.17	16	7.34
Home Industries	0	0.00	0	0.00	0	0.00	0	0.00
Total	61	100	37	100	120	100	218	100
Gadhada RRWSS : Bhavnagar								
Animal Husbandry	71	91.03	122	99.19	187	93.50	380	94.76
Dairy Industry	3	3.85	1	0.81	3	1.50	7	1.75
Poultry Rearing	2	2.56	0	0.00	4	2.00	6	1.50
Home Industries	2	2.56	0	0.00	6	3.00	8	2.00
Total	78	100	123	100	200	100	401	100
Mandvi RRWSS : Kutch								
Animal Husbandry	151	98.69	73	100.00	99	100.00	323	99.38
Dairy Industry	1	0.65	0	0.00	0	0.00	1	0.31
Poultry Rearing	1	0.65	0	0.00	0	0.00	1	0.31
Home Industries	0	0.00	0	0.00	0	0.00	0	0.00
Total	153	100	73	100	99	100	325	100
Variyav RRWSS : Surat								
Animal Husbandry	120	93.02	70	95.89	81	88.04	271	92.18
Dairy Industry	2	1.55	2	2.74	0	0.00	4	1.36
Poultry Rearing	2	1.55	1	1.37	11	11.96	14	4.76
Home Industries	5	3.88	0	0.00	0	0.00	5	1.70
Total	129	100	73	100	92	100	294	100
Total of Four Schemes								
Animal Husbandry	360	85.51	302	98.69	426	83.37	1,088	87.88
Dairy Industry	44	10.45	3	0.98	53	10.37	100	8.08
Poultry Rearing	10	2.38	1	0.33	26	5.09	37	2.99
Home Industries	7	1.66	0	0.00	6	1.17	13	1.05
Total	421	100	306	100	511	100	1,238	100

(Source: Prepared from responses)

Water Timing of Water supply Scheme: This section studies the timing of the water supply scheme. In case of Iswariya scheme 30.08% received regular water. 28.81% received irregular water and 41.10% faced changeable time of the water supply. In case of Gadhada scheme 21.09% received regular water. 64.09% received irregular water and 14.82% faced changeable time. In case of Mandvi scheme 59.12% received regular water. 30.48% received irregular water

and 10.39% faced changeable time of the water supply. In case of Variyav scheme 80.07% received regular water, 19.93% received irregular water. Moreover, variations in responses are also observed with change in geographical region. For Gadhada, Mandvi and Variyav schemes highest proportion of respondents in Head region responded for regular water timing. The highest proportion of respondents located in tail region responded for irregular water timing (except Iswariya scheme). Taking the overall, scenario for all four schemes together, highest proportion of respondents, informed 'regular water timing'. However, on examining region this was true for only head region. For tail region highest proportion of respondents stated 'irregular water timing'.

Table: 6.18 Water Timing of the Water Supply Scheme

Water Timing	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS : Amreli								
Regular	24	34.29	47	22.38	71	36.98	142	30.08
Irregular	25	35.71	65	30.95	46	23.96	136	28.81
Changeable	21	30.00	98	46.67	75	39.06	194	41.10
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS: Bhavnagar								
Regular	51	56.67	15	9.43	35	15.22	101	21.09
Irregular	31	34.44	106	66.67	170	73.91	307	64.09
Changeable	8	8.89	38	23.90	25	10.87	71	14.82
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS : Kutch								
Regular	189	90.00	38	38.00	29	23.58	256	59.12
Irregular	12	5.71	47	47.00	73	59.35	132	30.48
Changeable	9	4.29	15	15.00	21	17.07	45	10.39
Total	210	100	100	100	123	100	433	100
Variyav RRWSS : Surat								
Regular	266	88.67	402	92.84	23	17.69	691	80.07
Irregular	34	11.33	31	7.16	107	82.31	172	19.93
Changeable	0	0.00	0	0.00	0	0.00	0	0.00
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
Regular	530	79.10	502	55.65	158	23.41	1,190	52.96
Irregular	102	15.22	249	27.61	396	58.67	747	33.24
Changeable	38	5.67	151	16.74	121	17.93	310	13.80
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

Various effects of change in time of supply of water by RRWSS: The next question attempted to examine the effect of timing of water supply on various aspects like routine life, business, education of children or any other. Table 6.19

presents the summary of the responses. The respondents have some times indicated that timing of the water supply may affect to more than one of the options given in the questionnaire. Hence, the total of the responses is greater than total respondents. The numbers of responses are 582, 761, 682 and 1,471 for Iswariya, Gadhada, Mandvi and Variyav scheme. Thus, total responses were 3,496 against the total respondents of 2,247.

Table 6.19 Various Effects of Change in Time for Supply of Water by RRWSS

Various Effects	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS : Amreli								
Routine Life	40	36.70	81	40.70	97	35.40	218	37.46
Business	37	33.94	78	39.20	93	33.94	208	35.74
Education of Children	32	29.36	40	20.10	76	27.74	148	25.43
Others	0	0.00	0	0.00	8	2.92	8	1.37
Total	109	100	199	100	274	100	582	100
Gadhada RRWSS : Bhavnagar								
Routine Life	30	37.04	96	32.88	128	32.99	254	33.38
Business	33	40.74	113	38.70	138	35.57	284	37.32
Education of Children	15	18.52	70	23.97	107	27.58	192	25.23
Others	3	3.70	13	4.45	15	3.87	31	4.07
Total	81	100	292	100	388	100	761	100
Mandvi RRWSS : Kutch								
Routine Life	60	42.86	73	31.88	100	31.95	233	34.16
Business	52	37.14	68	29.69	96	30.67	216	31.67
Education of Children	27	19.29	67	29.26	94	30.03	188	27.57
Others	1	0.71	21	9.17	23	7.35	45	6.60
Total	140	100	229	100	313	100	682	100
Variyav RRWSS : Surat								
Routine Life	171	35.48	250	32.68	74	33.04	495	33.65
Business	153	31.74	237	30.98	75	33.48	465	31.61
Education of Children	130	26.97	224	29.28	52	23.21	406	27.60
Others	28	5.81	54	7.06	23	10.27	105	7.14
Total	482	100	765	100	224	100	1,471	100
Total of Four Schemes								
Routine Life	301	37.07	500	33.67	399	33.28	1,200	34.32
Business	275	33.87	496	33.40	402	33.53	1,173	33.55
Education of Children	204	25.12	401	27.00	329	27.44	934	26.72
Others	32	3.94	88	5.93	69	5.75	189	5.41
Total	812	100	1,485	100	1,199	100	3,496	100

(Source: Prepared from responses)

The table 6.19 reveals that timing of the water supply affects the day to day routine of the household. Irregularity and conflict with the other work especially in case of public stand posts where the members have to spend considerable time on collecting water is a complaint by many respondents. The table studies the effects of change in time of water supply. 37.46% of responses relate to effect on routine life for Iswariya scheme and 25.43% are noted for effect on children's education. 36% responses are for effect on business. For Gadhada scheme it is observed that 37% of responses are for effect on business, 33% of responses are for effect on routine life and 25% of responses are for effect on education of children. For Mandvi scheme it is observed that 31% of responses are for effect on business, 34% of responses are for effect on routine life and 27% of responses are for effect on education of children. For Variyav scheme it is observed that 31% of responses are for effect on business, 33% of responses are for effect on routine life and 27% of responses are for effect on education of children. Overall, change in timing affected routine lives and business in all three regions, head, middle and tail of the scheme. It includes various effects of change in water supply by RRWSS. This is studied by knowing effect of time change on routine life, business and education of children. For Iswariya, Mandvi and Variyav scheme change in time of supply of water, seems to have more effect on routine life. In Gadhada scheme compared to routine life, responses proportion is higher for business.

6.5 WATER SHORTAGES AND COPING MECHANISM

Part 4 of the questionnaire mainly deals with water shortage. The question intends to gather data about solution for water shortage, expenditure for getting water (p.a), daily expenditure, duration for purchase of water, as well as employments affected due to water shortages. Responses were received for all questions except question number nineteen and twenty one no answer received about shortage practices and money spent for water in water scarce period. The following para attempts to analyse the responses for the same. One of the question deals with the businesses affected due to water shortage such as

agriculture, animal husbandry, labour work or traditional professions. This is inquired to judge the effects of scarcity of water.

Purchase of water: Question number twenty attempts to inquire regarding purchase of water. The following para looks at how the scheme is dependent on purchase of water.

Table: 6.20 Purchase of Water

Expenditure	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS : Amreli								
Yes	14	20.00	33	15.71	51	26.56	98	20.76
No	49	70.00	167	79.52	126	65.63	342	72.46
No Responses	7	10.00	10	4.76	15	7.81	32	6.78
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS : Bhavnagar								
Yes	11	12.22	87	54.72	117	50.87	215	44.89
No	67	74.44	62	38.99	77	33.48	206	43.01
No Responses	12	13.33	10	6.29	36	15.65	58	12.11
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS : Kutch								
Yes	51	24.29	42	42.00	25	20.33	118	27.25
No	150	71.43	55	55.00	95	77.24	300	69.28
No Responses	9	4.29	3	3.00	3	2.44	15	3.46
Total	210	100	100	100	123	100	433	100
Variyav RRWSS : Surat								
Yes	78	26.00	75	17.32	30	23.08	183	21.21
No	139	46.33	85	19.63	92	70.77	316	36.62
No Responses	83	27.67	273	63.05	8	6.15	364	42.18
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
Yes	154	22.98	237	26.27	223	33.03	614	27.33
No	405	60.44	369	40.91	390	57.77	1,164	51.80
No Responses	111	16.56	296	32.82	62	9.18	469	20.87
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

Table 6.20 illustrates that most respondents across all four schemes, do not purchase water. In middle and tail region of Gadhada scheme more percentage of respondents opined that they need to buy water. It is interesting to observe that very high percentage of tail end region respondents of Iswariya, Mandvi and Variyav schemes are not required to purchase water. All these indicate that there must be some secondary sources of water available to these respondents. And hence, they get water from those sources in the time of scarcity.

Duration of water purchase: This section studies responses to question number twenty two regarding time of water purchase requirement in order to learn about the reliability of the scheme in terms of availability. The frequency of water purchased reported by respondents ranged from the days to occasional purchase. Water could be purchased occasionally, when timing of water supply does not suit the respondent's requirement.

Table: 6.21 Duration of Water Purchase

Duration	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS: Amreli								
Days	0	0.00	0	0.00	1	0.73	1	0.33
Month	0	0.00	3	2.48	8	5.84	11	3.62
Whole Year	0	0.00	2	1.65	3	2.19	5	1.64
Occasionally	43	93.48	114	94.21	124	90.51	281	92.43
Others	3	6.52	2	1.65	1	0.73	6	1.97
Total	46	100	121	100	137	100	304	100
Gadhada RRWSS : Bhavnagar								
Days	1	2.94	5	4.35	6	3.61	12	3.81
Month	3	8.82	20	17.39	35	21.08	58	18.41
Whole Year	0	0.00	5	4.35	19	11.45	24	7.62
Occasionally	30	88.24	75	65.22	100	60.24	205	65.08
Others	0	0.00	10	8.70	6	3.61	16	5.08
Total	34	100	115	100	166	100	315	100
Mandvi RRWSS : Kutch								
Days	0	0.00	1	0.93	1	0.98	2	0.50
Month	3	1.59	9	8.41	2	1.96	14	3.52
Whole Year	2	1.06	11	10.28	7	6.86	20	5.03
Occasionally	181	95.77	79	73.83	87	85.29	347	87.19
Others	3	1.59	7	6.54	5	4.90	15	3.77
Total	189	100	107	100	102	100	398	100
Variyav RRWSS: Surat								
Days	6	9.84	29	35.80	3	75.00	38	26.03
Month	0	0.00	2	2.47	0	0.00	2	1.37
Whole Year	0	0.00	3	3.70	0	0.00	3	2.05
Occasionally	24	39.34	40	49.38	0	0.00	64	43.84
Others	31	50.82	7	8.64	1	25.00	39	26.71
Total	61	100	81	100	4	100	146	100
Total of Four Schemes								
Days	7	2.12	35	8.25	11	2.69	53	4.56
Month	6	1.82	34	8.02	45	11	85	7.31
Whole Year	2	0.61	21	4.95	29	7.09	52	4.47
Occasionally	278	84.24	308	72.64	311	76.04	897	77.13
Others	37	11.21	26	6.13	13	3.18	76	6.53
Total	330	100	424	100	409	100	1,163	100

(Source: Prepared from responses)

The table 6.21 describes frequency of requirement of water purchase during scarcity. It is found that most respondents across all four schemes, purchase water occasionally. For three schemes viz. Iswariya, Gadhada and Mandvi majority of respondents have opined that they need purchase of water occasionally. In Variyav scheme no responses were found in this regards from the tail end region respondents. As numbers of respondents have not responded, to this question, total of responses is only 1,163, far less than total respondents.

Various employments affected due to water shortages: Through this question various employments affected due to water shortages are studied. Five employments were identified viz. agriculture, animal husbandry, home industries, labour work and traditional profession.

The table 6.22 describes the various employments affected due to water shortages. Mixed response is observed for this question. The total of responses is higher than the total of respondents for Iswariya, Gadhada and Mandvi schemes. However, in case of Variyav scheme, the numbers of responses are far low as compared to total number of respondents for the scheme. In Iswariya scheme 49.70% responses are for effect on the agriculture business, 25.55% for animal husbandry, 2.01% for home industries, 15.69% for labour work and 7.04% for traditional profession. For Gadhada scheme 38.29% of responses are for effect on the agriculture business, 33.51% for animal husbandry, 4.66% for home industries, 20.05% for labour work and 3.49 % for traditional profession. For Mandvi scheme 33.71% responses are for effect on the agriculture business, 29.21% for animal husbandry, 1.61% for home industries, 32.58% for labour work and 2.89% for traditional profession. For Variyav scheme 46.84% responses are for effect on the agriculture business, 41.14% for animal husbandry, 1.27% for home industries, 5.06% for labour work and 5.70% for traditional profession.

Thus, it is found that effect of water shortages is most significant and acute on agriculture and animal husbandry. Labour work, home industries and traditional professions are least or very less affected by the water shortages. In Iswariya, Gadhada and Variyav schemes water shortages seems to have affected

agricultural and animal husbandry maximum compared to labour work where as in Mandvi scheme its effect on labour work is comparatively significant.

Table 6.22 Various Employments Affected due to Water Shortages

Employment Affected	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS: Amreli								
Agriculture	42	53.16	118	52.91	87	44.62	247	49.70
Animal Husbandry	20	25.32	62	27.80	45	23.08	127	25.55
Home Industries	2	2.53	5	2.24	3	1.54	10	2.01
Labour Work	15	18.99	28	12.56	35	17.95	78	15.69
Traditional Profession	0	0.00	10	4.48	25	12.82	35	7.04
Total	79	100	223	100	195	100	497	100
Gadhada RRWSS : Bhavnagar								
Agriculture	60	43.48	81	34.47	155	38.75	296	38.29
Animal Husbandry	55	39.86	69	29.36	135	33.75	259	33.51
Home Industries	4	2.90	19	8.09	13	3.25	36	4.66
Labour Work	19	13.77	53	22.55	83	20.75	155	20.05
Traditional Profession	0	0.00	13	5.53	14	3.50	27	3.49
Total	138	100	235	100	400	100	773	100
Mandvi RRWSS: Kutch								
Agriculture	100	34.01	44	32.12	66	34.38	210	33.71
Animal Husbandry	85	28.91	38	27.74	59	30.73	182	29.21
Home Industries	0	0.00	4	2.92	6	3.13	10	1.61
Labour Work	101	34.35	50	36.50	52	27.07	203	32.58
Traditional Profession	8	2.72	1	0.73	9	4.69	18	2.89
Total	294	100	137	100	192	100	623	100
Variyav RRWSS: Surat								
Agriculture	61	44.85	3	33.33	10	76.92	74	46.84
Animal Husbandry	61	44.85	3	33.33	1	7.69	65	41.14
Home Industries	1	0.74	0	0.00	1	7.69	2	1.27
Labour Work	7	5.15	0	0.00	1	7.69	8	5.06
Traditional Profession	6	4.41	3	33.33	0	0.00	9	5.70
Total	136	100	9	100	13	100	158	100
Total of Four Schemes								
Agriculture	263	40.65	246	40.73	318	39.75	827	40.32
Animal Husbandry	221	34.16	172	28.48	240	30.00	633	30.86
Home Industries	7	1.08	28	4.64	23	2.88	58	2.85
Labour Work	142	21.95	131	21.68	171	21.37	444	21.65
Traditional Profession	14	2.16	27	4.47	48	6.00	89	4.34
Total	647	100	604	100	800	100	2,051	100

(Source: Prepared from responses)

6.6 WATER CHARGES

In part - 5 six questions were posed to the respondents. The questions related to existence of payment of water charges, amount paid, as water charges, water connection charges, affordability, satisfaction about water supply and charges and disagreement about payment of water charges. The following para presents analysis of the responses to the questions.

Payment of water charges: Question number twenty four relates to the payment of water charges.

Table 6.23 Water Charges Payment for Getting Water Under RRWSS: Geographic Region wise

Water Charges	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS: Amreli								
Yes	42	60.00	181	86.19	171	89.06	394	83.47
No	26	37.14	29	13.81	16	8.33	71	15.04
No Responses	2	2.86	0	0.00	5	2.60	7	1.48
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS : Bhavnagar								
Yes	83	92.22	147	92.45	165	71.74	395	82.46
No	4	4.44	9	5.66	61	26.52	74	15.45
No Responses	3	3.33	3	1.89	4	1.74	10	2.09
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS: Kutch								
Yes	201	95.71	72	72.00	41	33.33	314	72.52
No	9	4.29	27	27.00	57	46.34	93	21.48
No Responses	0	0.00	1	1.00	25	20.33	26	6.00
Total	210	100	100	100	123	100	433	100
Variyav RRWSS: Surat								
Yes	288	96.00	321	74.13	128	98.46	737	85.40
No	10	3.33	107	24.71	0	0.00	117	13.56
No Responses	2	0.67	5	1.15	2	1.54	9	1.04
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
Yes	614	91.64	721	79.93	505	74.81	1,840	81.88
No	49	7.3	172	19.06	134	19.85	355	15.80
No Responses	7	1.04	9	1.01	36	5.33	52	2.31
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

Table 6.23 presents payment or otherwise of water charges by the respondents. In the huge outstanding and non- payment of dues reported by GWSSB, when respondent households were asked about the water charges, 83.47%, 82.46%,

72.52% and 85.40% reported paying water charges to the Panchayat or the Water committee in case of Iswariya scheme, Gadhada scheme, Mandvi scheme and Variyav scheme respectively. When the status of payment of water charges is examined geographic region wise the response is found highest for payment of water charges for tail region of Iswariya scheme, middle region of Gadhada scheme and head region of Mandvi and Variyav scheme. The facts revealed from the data collection contradict information obtained from the various officials, field workers and NGOs¹.

When status of the water charges payment was observed according to the economic activities, it is revealed that majority of respondents have paid water charges.

Table 6.24 Water Charges Payment for Getting Water Under RRWSS: Economic Activities

Connection Charges	Business men	%	Regular Services	%	Daily Wagers	%	Farmers	%	Total	%
Iswariya RRWSS: Amreli										
Yes	20	86.96	23	88.46	77	80.21	274	83.79	394	83.47
No	0	0.00	3	11.54	19	19.79	49	14.98	71	15.04
No Responses	3	13.04	0	0.00	0	0.00	4	1.22	7	1.48
Total	23	100	26	100	96	100	327	100	472	100
Gadhada RRWSS: Bhavnagar										
Yes	21	95.45	24	85.71	92	71.88	258	85.71	395	82.46
No	0	0.00	4	14.29	31	24.22	39	12.96	74	15.45
No Responses	1	4.55	0	0.00	5	3.91	4	1.33	10	2.09
Total	22	100	28	100	128	100	301	100	479	100
Mandvi RRWSS: Kutch										
Yes	25	67.57	11	68.75	94	69.12	184	75.41	314	72.52
No	4	10.81	5	31.25	39	28.68	45	18.44	93	21.48
No Responses	8	21.62	0	0.00	3	2.21	15	6.15	26	6.00
Total	37	100	16	100	136	100	244	100	433	100
Variyav RRWSS: Surat										
Yes	27	75.00	192	79.67	113	91.87	405	87.47	737	85.40
No	8	22.22	47	19.50	10	8.13	52	11.23	117	13.56
No Responses	1	2.78	2	0.83	0	0.00	6	1.30	9	1.04
Total	36	100	241	100	123	100	463	100	863	100
Total of Four Schemes										
Yes	93	78.81	250	80.39	376	77.85	1,121	83.97	1,840	81.89
No	12	10.17	59	18.97	99	20.50	185	13.86	355	15.80
No Responses	13	11.02	2	0.64	8	1.66	29	2.17	52	2.31
Total	118	100	311	100	483	100	1,335	100	2,247	100

(Source: Prepared from responses)

The highest percentage of respondents paying water charges were observed for businessmen in Gadhada scheme. Similarly, highest percentages of respondents paying water charges were observed for regular services in Iswariya schemes. For Mandvi and Variyav schemes highest proportion of farmers, have given positive response for payment of water charges. If number wise response is observed then even for Iswariya and Gadhada schemes also highest numbers of farmers are paying water charges. Over all, it is observed that the highest percentage of respondents paying water charges were farmers (83.97%), followed by regular services (80.39%), businessmen (78.81%) and daily wagers (77.85%).

Average amount paid per year: The next question inquired about amount of water charges paid per year by each household. Table 6.25 presents the Mean, Mode, Maximum amount and Minimum amount paid by the respondents.

Table 6.25 Average Amount of Water Charges Paid per Year per Household

Water Charges	Head (₹)	Middle (₹)	Tail (₹)	Total (₹)
Iswariya RRWSS: Amreli				
Mean	198	191	122	164
Minimum	100	100	100	100
Maximum	250	700	250	700
Mode	250	150	100	250
Gadhada RRWSS: Bhavnagar				
Mean	146	197	222	194
Minimum	18	100	10	10
Maximum	600	750	500	750
Mode	200	200	200	200
Mandvi RRWSS : Kutch				
Mean	162	124	183	159
Minimum	100	90	100	90
Maximum	360	250	360	360
Mode	150	100	168	168
Variyav RRWSS : Surat				
Mean	173	155	145	159
Minimum	100	100	100	100
Maximum	250	300	200	300
Mode	100	165	100	100
Total of Four Schemes				
Mean	169	167	168	168
Minimum	18	90	10	10
Maximum	600	750	500	750
Mode	100	100	100	100

(Source: Prepared from responses)

Table 6.25 indicates the average water charges paid along with minimum and maximum amount paid for Head, Middle and Tail regions for all four schemes. The average amount paid is found to be highest for Gadhada scheme, where for tail region the mean was as high as ₹222 per annum per household. The maximum amount paid is also found to be highest for Gadhada scheme for middle region at ₹750 per annum per household. Examining average amount of water charges paid for geographic region, when four schemes are considered together no major difference is found, however, for Iswariya and Variyav schemes amount paid by head region is the highest and for Gadhada and Mandvi schemes amount paid by tail region is the highest.

Table 6.26 presents the frequency distribution for amount of water charges paid, according to economic activities and geographic region for each of the scheme.

Table 6.26 Amount of Water Charges Paid per Year per Household:
Economic Activities

Amount(₹)	Businessmen			Regular Services			Daily Wagers			Farmers			Total
	Head	Middle	Tail	Head	Middle	Tail	Head	Middle	Tail	Head	Middle	Tail	
Iswariya RRWSS: Amreli													
0-100	0	2	9	0	0	6	1	3	33	4	15	79	152
101-200	1	2	2	1	12	2	1	22	5	9	97	28	182
201-300	1	1	1	0	1	1	4	5	2	20	11	3	50
301-400	0	0	0	0	0	0	0	0	0	0	2	0	2
401-500	0	1	0	0	0	0	0	0	0	0	4	0	5
501-600	0	0	0	0	0	0	0	0	0	0	1	0	1
601-700	0	0	0	0	0	0	0	1	0	0	1	0	2
Total	2	6	12	1	13	9	6	31	40	33	131	110	394
Gadhada RRWSS: Bhavnagar													
0-100	0	3	2	1	1	1	2	3	5	26	6	13	63
101-200	3	4	5	4	6	5	12	41	20	33	72	89	294
201-300	0	1	2	0	1	3	0	3	6	0	5	12	33
301-400	0	0	0	0	0	0	0	0	0	0	0	1	1
401-500	0	0	0	0	0	1	0	0	0	1	0	0	2
501-600	1	0	0	0	0	0	0	0	0	0	0	0	1
601-700	0	0	0	0	0	0	0	0	0	0	0	0	0
701-800	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	4	8	9	5	9	10	14	47	31	60	83	115	395
Mandvi RRWSS : Kutch													
0-100	3	2	0	2	2	0	17	18	6	7	39	5	101
101-200	12	1	0	6	0	0	44	1	2	73	7	19	165
201-300	4	0	0	0	0	0	2	0	0	19	2	4	31
301-400	3	0	0	1	0	0	4	0	0	4	0	5	17
Total	22	3	0	9	2	0	67	19	8	103	48	33	314

Table – 6.26 Continued

Amount(₹)	Businessmen			Regular Services			Daily Wagers			Farmers			Total
	Head	Middle	Tail	Head	Middle	Tail	Head	Middle	Tail	Head	Middle	Tail	
Variyav RRWSS : Surat													
0-100	8	6	0	39	42	37	9	50	21	55	67	12	346
101-200	1	9	1	15	22	19	5	7	9	52	116	29	285
201-300	2	0	0	18	0	0	12	0	0	72	2	0	106
Total	11	15	1	72	64	56	26	57	30	179	185	41	737
Total of Four Schemes													
0-100	11	13	11	42	45	44	29	74	65	92	127	109	662
101-200	17	16	8	26	40	26	62	71	36	167	292	165	926
201-300	7	2	3	18	2	4	18	8	8	111	20	19	220
301-400	3	0	0	1	0	0	4	0	0	4	2	6	20
401-500	0	1	0	0	0	1	0	0	0	1	4	0	7
501-600	1	0	0	0	0	0	0	0	0	0	1	0	2
601-700	0	0	0	0	0	0	0	1	0	0	1	0	2
701-800	0	0	0	0	1	0	0	0	0	0	0	0	1
Total	39	32	22	87	88	75	113	154	109	375	447	299	1,840

(Source: Prepared from responses)

From the table 6.26 it can be observed that for all the schemes the highest numbers of respondents are paying water charges in the range of ₹101 - ₹200. This is also apparent from the Table 6.25, where through 'mode' it is indicated that for all the schemes and within that for all the regions maximum respondents are paying up to ₹200 only except the head region of Iswariya scheme where it is ₹250. Maximum respondents are farmers. An important point worth noting is that out of total 220 respondents, paying water charges between ₹201- ₹300 highest numbers of respondents 150 are farmers; of which 74 belong to Variyav scheme. Out of 247 respondents only 1,840 are paying the water charge and therefore, the amount paid for water charges (Table 6.26) relates to only 1,840.

Table 6.27 presents amount paid per year by the household of respondents with classification according to economic activities for all four schemes together. From the Table 6.27, it can be observed that for all the economic activities, highest numbers of respondents are paying water charges in the range of ₹101 to ₹200, (50.33%). When examined for each economic activity separately then also, highest proportion of respondents are paying water charges between ₹101 to ₹200 except for regular services where highest proportion of respondents are paying up to ₹100. Hardly 3% of the respondents are paying charges beyond ₹300 where mainly they are the farmers.

Table 6.27 Total of the Four Schemes Amount Paid per Year by the Respondents: Economic Activity wise

Amount (₹)	Businessmen		Regular Services		Daily Wagers		Farmers		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
0-100	35	37.63	131	52.40	168	44.68	328	29.26	662	35.98
101-200	41	44.09	92	36.80	169	44.95	624	55.66	926	50.33
201-300	12	12.90	24	9.60	34	9.04	150	13.38	220	11.96
301-400	3	3.23	1	0.40	4	1.06	12	1.07	20	1.09
401-500	1	1.08	1	0.40	0	0.00	5	0.45	7	0.38
501-600	1	1.08	0	0.00	0	0.00	1	0.09	2	0.11
601& above	0	0.00	1	0.40	1	0.27	1	0.09	3	0.16
	93	100.00	250	100.00	376	100.00	1,121	100.00	1,840	100.00

(Source: Prepared from responses)

Table 6.28 presents the amount paid per year by the household of respondents with classification according to geographical region for all four schemes together. From the Table 6.28, it can be observed that for all regions, highest numbers of respondents are paying water charges in the range of ₹101 to ₹200. On the whole hardly 3% of the respondents are paying charges beyond ₹300. For all geographic regions, separately also, i.e. for head, middle and tail highest proportion of respondents are paying between ₹101 to ₹200. Thus, even though the highest amount of water charges per year per household goes up to ₹750, very few are paying beyond ₹300.

Table 6.28 Total of the Four Schemes Amount Paid per Year by the Respondent: Geographic Region wise

Amount (₹)	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
0-100	174	28.34	259	35.92	229	45.35	662	35.98
101-200	272	44.30	419	58.11	235	46.53	926	50.33
201-300	154	25.08	32	4.44	34	6.73	220	11.96
301-400	12	1.95	2	0.28	6	1.19	20	1.09
401-500	1	0.16	5	0.69	1	0.20	7	0.38
501-600	1	0.16	1	0.14	0	0.00	2	0.11
601& above	0	0.00	3	0.42	0	0.00	3	0.16
	614	100.00	721	100.00	505	100.00	1,840	100.00

(Source: Prepared from responses)

Table 6.29 indicates mean of water charges paid according to economic activities for a given scheme. It can be observed that for each economic activity, the respondents of Gadhada scheme are paying highest charges. When average water charges paid, as per the economic activities are examined, it is found that farmers are paying highest amount on an average.

Table: 6.29 Mean of Water Charges Paid According to Economic Activities

Scheme	Businessmen	Regular Services	Daily Wagers	Farmers	Total
Iswariya	155	158	161	166	164
Gadhada	200	236	206	185	194
Mandvi	174	174	148	163	159
Variyav	155	149	135	172	159
Total	169	159	163	172	167

(Source: Prepared from responses)

Water connection charges at the time of connection: In addition to the payment of water charges, a further inquiry was also made about payment or otherwise of the water connection charges.

Table 6.30 Status for Payment of Water Connection Charges: Geographic Region wise

Connection Charges	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS: Amreli								
Yes	38	54.29	186	88.57	143	74.48	367	77.75
No	26	37.14	19	9.05	37	19.27	82	17.37
No Responses	6	8.57	5	2.38	12	6.25	23	4.87
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS: Bhavnagar								
Yes	75	83.33	145	91.19	154	66.96	374	78.08
No	7	7.78	8	5.03	54	23.48	69	14.40
No Responses	8	8.89	6	3.77	22	9.57	36	7.52
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS: Kutch								
Yes	196	93.33	56	56.00	37	30.08	289	66.74
No	12	5.71	22	22.00	78	63.41	112	25.87
No Responses	2	0.95	22	22.00	8	6.50	32	7.39
Total	210	100	100	100	123	100	433	100
Variyav RRWSS: Surat								
Yes	222	74.00	249	57.51	44	33.85	515	59.68
No	57	19.00	164	37.88	80	61.54	301	34.87
No Responses	21	7.00	20	4.62	6	4.62	47	5.45
Total	300	100	433	100	130	100	863	100
Total of four Schemes								
Yes	531	79.25	636	70.50	378	56.00	1,545	68.76
No	102	15.22	213	23.61	249	36.89	564	25.00
No Responses	37	5.53	53	5.89	48	7.11	138	6.14
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

The table 6.30 reveals information about respondents who paid water connection charges for four schemes individually with its classification according to geographic region. Out of total 2,247 respondents, 138 respondents have not given any information. It is observed that majority of respondents have paid the water connection charges. Highest percentage of respondents paying water connection charges were observed for Gadhada scheme in Middle region (91.19%). On the whole it is observed that highest percentage (78.08%) of respondents of Gadhada scheme have paid water connection charges followed by Iswariya (77.75%), Mandvi (66.74%) and Variyav (59.68%). Overall highest percentage of head region respondents (79.25%) paid water connection charges followed by middle region (70.50%) and tail region (56%).

When status of the water connection charges payment or otherwise was examined according to the economic activities, it is revealed that majority of respondents have paid the water connection charges.

Table: 6.31 Status for Payment of Water Connection Charges:
Economic Activity wise

Connection Charges	Business men	%	Regular Services	%	Daily Wagers	%	Farmers	%	Total	%
Iswariya RRWSS: Amreli										
Yes	15	65.22	21	80.77	81	84.38	250	76.45	367	77.75
No	5	21.74	5	19.23	11	11.46	61	18.65	82	17.37
No Responses	3	13.04	0	0	4	4.17	16	4.89	23	4.88
Total	23	100	26	100	96	100	327	100	472	100
Gadhada RRWSS: Bhavnagar										
Yes	20	90.91	21	75.00	87	67.97	246	81.73	374	78.08
No	0	0	4	14.29	29	22.66	36	11.96	69	14.40
No Responses	2	9.09	3	10.71	12	9.38	19	6.31	36	7.52
Total	22	100	28	100	128	100	301	100	479	100
Mandvi RRWSS: Kutch										
Yes	22	59.46	10	62.5	91	66.91	166	68.03	289	66.74
No	13	35.14	3	18.75	33	24.26	63	25.82	112	25.87
No Responses	2	5.40	3	18.75	12	8.82	15	6.15	32	7.39
Total	37	100	16	100	136	100	244	100	433	100
Variyav RRWSS: Surat										
Yes	22	61.11	123	51.04	84	68.28	286	61.77	515	59.68
No	10	27.78	104	43.15	35	28.46	152	32.83	301	34.88
No Responses	4	11.11	14	5.81	4	3.25	25	5.40	47	5.45
Total	36	100	241	100	123	100	463	100	863	100
Total of Four Schemes										
Yes	79	66.95	175	56.27	343	71.04	948	71.01	1,545	68.76
No	28	23.73	116	37.30	108	22.36	312	23.37	564	25.10
No Responses	11	9.32	20	6.43	32	6.60	75	5.62	138	6.14
Total	118	100	311	100	483	100	1,335	100	2,247	100

(Source: Prepared from responses)

Highest percentage of respondents paying water connection charges were observed for daily wagers in Iswariya scheme and Variyav scheme. In case of Gadhada scheme highest proportion of businessmen have paid and for Mandvi scheme highest proportion of farmers have paid the water connection charges. Over all, it is found that highest percentage of respondents paying water connection charges were observed for daily wagers (71.04%) and farmers (71.01%), followed by businessmen (66.95%) and respondents with regular services at 56.27%.

Affordability of water charges: The table 6.32 describes whether charges are affordable or not. The payment or non- payment of charges has various reasons. The economic capacity is but only one of the various aspects which determine whether a person would pay or not. Other than that, willingness to pay irrespective of the amount levied plays a key role in determining whether water charges is paid or not.

Table: 6.32 Affordability of Water Charges: Geographic Region wise

Charges Affordable	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS: Amreli								
Yes	25	35.71	135	64.29	104	54.17	264	55.93
No	9	12.86	17	8.10	22	11.46	48	10.17
No Responses	36	51.43	58	27.62	66	34.38	160	33.90
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS: Bhavnagar								
Yes	67	74.44	98	61.64	106	46.08	271	56.58
No	7	7.78	21	13.21	49	21.32	77	16.08
No Responses	16	17.78	40	25.16	75	32.60	131	27.34
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS: Kutch								
Yes	137	65.24	61	61.00	13	10.57	211	48.73
No	37	17.62	18	18.00	50	40.65	105	24.25
No Responses	36	17.14	21	21.00	60	48.78	117	27.02
Total	210	100	100	100	123	100	433	100
Variyav RRWSS: Surat								
Yes	275	91.67	306	70.67	127	97.69	708	82.04
No	12	4.00	107	24.71	0	0.00	119	13.79
No Responses	13	4.33	20	4.62	3	2.31	36	4.17
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
Yes	504	75.22	600	66.52	350	51.85	1,454	64.71
No	65	9.7	163	18.07	121	17.93	349	15.53
No Responses	101	15.08	139	15.41	204	30.22	444	19.76
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

The table 6.32 presents the responses about affordability of the water charges. About 20% of respondents are silent about opinion for affordability. It is found that significant percentage of respondents of Variyav (82.04%) considered water charges as affordable where non-response is limited to 4% only, followed by Gadhada (56.58%) where non-response is about 27% and Iswariya (55.93%) where non-response is about 34%. Maximum proportions of non-responses are observed in the Iswariya scheme compared to other three schemes studied.

Table: 6.33 Affordability of Water Charges: Economic Activity wise

Charges affordable	Business men	%	Regular Services	%	Daily Wagers	%	Farmers	%	Total	%
Iswariya RRWSS: Amreli										
Yes	13	56.52	14	53.85	50	52.08	187	57.19	264	55.93
No	2	8.69	0	0	10	10.42	36	11.01	48	10.17
No Responses	8	34.79	12	46.15	36	37.5	104	31.80	160	33.90
Total	23	100	26	100	96	100	327	100	472	100
Gadhada RRWSS: Bhavnagar										
Yes	18	81.82	19	67.86	56	43.75	178	59.14	271	56.58
No	3	13.64	6	21.43	29	22.66	39	12.96	77	16.08
No Responses	1	4.55	3	10.71	43	33.59	84	27.90	131	27.34
Total	22	100	28	100	128	100	301	100	479	100
Mandvi RRWSS: Kutch										
Yes	15	40.54	7	43.75	71	52.21	118	48.36	211	48.73
No	18	48.65	3	18.75	21	15.44	63	25.82	105	24.25
No Responses	4	10.81	6	37.5	44	32.35	63	25.82	117	27.02
Total	37	100	16	100	136	100	244	100	433	100
Variyav RRWSS: Surat										
Yes	24	66.67	189	78.42	113	91.87	382	82.50	708	82.04
No	7	19.44	45	18.67	10	8.13	57	12.31	119	13.79
No Responses	5	13.89	7	2.91	0	0	24	5.19	36	4.17
Total	36	100	241	100	123	100	463	100	863	100
Total of Four Schemes										
Yes	70	59.32	229	73.63	290	60.04	865	64.79	1,454	64.71
No	30	25.43	54	17.36	70	14.49	195	14.61	349	15.53
No Responses	18	15.25	28	9.01	123	25.47	275	20.60	444	19.76
Total	118	100	311	100	483	100	1,335	100	2,247	100

(Source: Prepared from responses)

Table 6.33 presents the responses for the affordability of the water charges with reference to economic activities. In case of Variyav scheme greater percentages of farmers (82.50%) believe that the water charges are affordable. No wide

variations are observed between economic activities, regarding affordability for Iswariya scheme. However, for Gadhada scheme out of about 95% businessmen responding, 81% of the respondents conveyed their affordability. In Gadhada scheme, level of non-response was high for daily wagers (34%). Thus out of about 66% respondents, 44% of respondents conveyed their affordability. For Mandvi scheme the percentage of respondents conveying their affordability were minimum. However, the point to be noted is, that the higher number of businessmen respondents conveyed their non-affordability for payment of water charges. For Variyav scheme the level of non-response was very low and highest percentage of daily wagers conveyed their affordability for payment of water charges.

Satisfaction with the 'water supply' and 'water charges' payment: This question examines the status of respondents about satisfaction or otherwise for with 'water supply' and 'water charges' paid.

Table: 6.34 Satisfaction with the Water Supply and Water Charges Payment: Geographic Region wise

Water Supply Satisfactory	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS: Amreli								
Yes	38	54.29	175	83.33	142	73.96	355	75.21
No	10	14.29	25	11.90	16	8.33	51	10.81
No Responses	22	31.43	10	4.76	34	17.71	66	13.98
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS: Bhavnagar								
Yes	72	80.00	126	79.25	127	55.22	325	67.85
No	8	8.89	24	15.09	75	32.61	107	22.34
No Responses	10	11.11	9	5.66	28	12.17	47	9.81
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS: Kutch								
Yes	165	78.57	59	59.00	41	33.33	265	61.20
No	34	16.19	24	24.00	41	33.33	99	22.86
No Responses	11	5.24	17	17.00	41	33.33	69	15.94
Total	210	100	100	100	123	100	433	100
Variyav RRWSS: Surat								
Yes	285	95.00	280	64.67	126	96.92	691	80.07
No	7	2.33	141	32.56	1	0.77	149	17.27
No Responses	8	2.67	12	2.77	3	2.31	23	2.67
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
Yes	560	83.58	640	70.95	436	64.59	1,636	72.81
No	59	8.81	214	23.73	133	19.70	406	18.07
No Responses	51	7.61	48	5.32	106	15.71	205	9.12
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

The table 6.34 presents the responses about this. It is observed that 75.21%, 67.85%, 61.20%, and 80.07% of the respondents are satisfied with water supply in relation to water charges for Iswariya, Gadhada, Mandvi and Variyav schemes. Thus, it is seen in general that majority of the respondents in head, middle and tail region for all the four schemes studied are satisfied with the level of water supply and water charges they pay for the same. Highest proportion of respondents (95%) of Variyav scheme amongst four schemes and head region respondents, considering region wise responses revealed satisfaction.

Table: 6.35 Satisfaction with the Water Supply and Water Charges Payment: Economic Activity wise

Connection Charges	Business men	%	Regular Services	%	Daily Wagers	%	Farmers	%	Total	%
Iswariya RRWSS: Amreli										
Yes	13	56.52	18	69.23	77	80.21	247	75.53	355	75.21
No	4	17.39	4	15.38	7	7.29	36	11.01	51	10.81
No Responses	6	26.09	4	15.38	12	12.5	44	13.46	66	13.98
Total	23	100	26	100	96	100	327	100	472	100
Gadhada RRWSS: Bhavnagar										
Yes	17	77.27	18	64.29	71	55.47	219	72.76	325	67.85
No	4	18.18	7	25	37	28.91	59	19.60	107	22.34
No Responses	1	4.55	3	10.71	20	15.62	23	7.64	47	9.81
Total	22	100	28	100	128	100	301	100	479	100
Mandvi RRWSS: Kutch										
Yes	22	59.46	10	62.5	78	57.35	155	63.52	265	61.20
No	12	32.43	2	12.5	25	18.38	60	24.59	99	22.86
No Responses	3	8.11	4	25	33	24.26	29	11.89	69	15.94
Total	37	100	16	100	136	100	244	100	433	100
Variyav RRWSS: Surat										
Yes	24	66.67	177	73.44	107	86.99	383	82.72	691	80.07
No	8	22.22	58	24.07	15	12.20	68	14.69	149	17.27
No Responses	4	11.11	06	2.49	1	0.81	12	2.59	23	2.66
Total	36	100	241	100	123	100	463	100	863	100
Total of Four Schemes										
Yes	76	64.41	223	71.70	333	68.94	1,004	75.21	1,636	72.81
No	28	23.73	71	22.83	84	17.39	223	16.70	406	18.07
No Responses	14	11.86	17	5.47	66	13.67	108	8.09	205	9.12
Total	118	100	311	100	483	100	1,335	100	2,247	100

(Source: Prepared from responses)

The table 6.35 reveals the information about satisfaction classifying the data according to economic activities. Overall, result indicates that most of the respondents were satisfied across the four regional rural water supply schemes. Highest proportion of farmers (75.21%) followed by regular services (71.70%), daily wagers (68.94%) and businessmen (64.41%) are satisfied. The proportion of non-response is highest for daily wagers and lowest for regular services.

When scheme wise proportion of satisfied respondents is found, it is observed that for Iswariya scheme and Variyav scheme daily wagers have highest proportion (80.21%) and (86.99%), for Gadhada scheme, businessmen have highest proportion (77.27%) and for Mandvi scheme, farmers have highest proportion (63.52%). Thus, it is seen in general that majority of the respondents businessmen, regular services, daily wagers and farmers are satisfied with level of water supply and charges they pay for the same.

Disagreement with payment of water charges: The next question related to the respondents disagreeing to the payment of water charges. As discussed in the preceding para as the level of satisfaction was high, the disagreement level was observed to be quite low. For this question the level of non-response was observed to be about 14%. This was high to the tune of 20% for Iswariya scheme and low at 8% for Variyav scheme.

Table: 6.36 Disagreement for Payment of Water Charges:
Geographic Region wise

Disagree with Payment	Head		Middle		Tail		Total	
	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%	<i>f</i>	%
Iswariya RRWSS: Amreli								
Yes	2	2.86	39	18.57	42	21.88	83	17.58
No	41	58.57	144	68.57	108	56.25	293	62.08
No Responses	27	38.57	27	12.86	42	21.88	96	20.34
Total	70	100	210	100	192	100	472	100
Gadhada RRWSS: Bhavnagar								
Yes	11	12.22	43	27.04	39	16.96	93	19.42
No	61	67.78	107	67.30	150	65.22	318	66.39
No Responses	18	20.00	9	5.66	41	17.83	68	14.20
Total	90	100	159	100	230	100	479	100
Mandvi RRWSS: Kutch								
Yes	33	15.71	16	16.00	27	21.95	76	17.55
No	162	77.14	77	77.00	45	36.59	284	65.59
No Responses	15	7.14	7	7.00	51	41.46	73	16.86
Total	210	100	100	100	123	100	433	100
Variyav RRWSS: Surat								
Yes	68	22.67	64	14.78	101	77.69	233	27.00
No	209	69.67	325	75.06	27	20.77	561	65.01
No Responses	23	7.67	44	10.16	2	1.54	69	8.00
Total	300	100	433	100	130	100	863	100
Total of Four Schemes								
Yes	114	17.01	162	17.96	209	30.96	485	21.58
No	473	70.60	653	72.39	330	48.89	1,456	64.80
No Responses	83	12.39	87	9.65	136	20.15	306	13.62
Total	670	100	902	100	675	100	2,247	100

(Source: Prepared from responses)

The table 6.36 reveals that only 17.58%, 19.42%, 17.55% and 27% disagreed with payment of water charges for Iswariya, Gadhada, Mandvi and Variyav scheme respectively. Thus, on the whole it can be said that most of the respondents agree with payment of water charges.

Table 6.37 tabulates the disagreement with payment of water charges with economic activities. In case of Iswariya scheme 21.88% daily wagers disagreed with the payment of water charges. In case of Gadhada scheme 22.73% of businessmen disagreed with the payment of water charges. In case of Mandvi and Variyav schemes 25.00% and 27.80% of respondents engaged in regular services disagreed with the payment of water charges.

Table: 6.37 Disagreement for Payment of Water Charges:
Economic Activity wise

Connection Charges	Business men	%	Regular Services	%	Daily Wagers	%	Farmers	%	Total	%
Iswariya RRWSS: Amreli										
Yes	2	8.69	4	15.38	21	21.88	56	17.13	83	17.58
No	14	60.87	16	61.54	57	59.38	206	62.99	293	62.08
No Responses	7	30.43	6	23.08	18	18.75	65	19.88	96	20.34
Total	23	100	26	100	96	100	327	100	472	100
Gadhada RRWSS: Bhavnagar										
Yes	5	22.73	3	10.71	23	17.97	62	20.60	93	19.42
No	13	59.09	20	71.43	84	65.62	201	66.78	318	66.38
No Responses	4	18.18	5	17.86	21	16.41	38	12.12	68	14.20
Total	22	100	28	100	128	100	301	100	479	100
Mandvi RRWSS: Kutch										
Yes	8	21.62	4	25.00	21	15.44	43	17.62	76	17.55
No	21	56.76	7	43.75	89	65.44	167	68.44	284	65.59
No Responses	8	21.62	5	31.25	26	19.12	34	13.93	73	16.86
Total	37	100	16	100	136	100	244	100	433	100
Variyav RRWSS: Surat										
Yes	6	16.67	67	27.80	32	26.20	128	27.65	233	26.99
No	26	72.22	156	64.73	85	69.10	294	63.50	561	65.01
No Responses	4	11.11	18	7.47	6	4.88	41	8.86	69	8.00
Total	36	100	241	100	123	100	463	100	863	100
Total of Four Scheme										
Yes	21	17.80	78	25.08	97	20.08	289	21.65	485	21.58
No	74	62.71	199	63.99	315	65.22	868	65.02	1,456	64.80
No Responses	23	19.49	34	10.93	71	14.70	178	13.33	306	13.62
Total	118	100	311	100	483	100	1,335	100	2,247	100

(Source: Prepared from responses)

SECTION – II

TESTING OF HYPOTHESES

6.7 TESTING OF HYPOTHESES

Section II of the chapter relates to testing of the hypotheses. Based on the questions, certain hypotheses are framed (para 4.6 of chapter 4). The following para presents the testing of hypotheses and its discussion. Testing of hypotheses is divided in the five parts *viz*, Reason for satisfaction and dissatisfaction, water charges, water connection charges, affordability of water charges, satisfaction with the ‘water supply’ and ‘water charges’.

6.7.1 Reasons for Satisfaction and Dissatisfaction with Use of Government Water Source

Table 6.15 and 6.16 presents the frequency and percentage for reasons for satisfaction and dissatisfaction for government water source according to scheme and according to geographic region. Here, we intend to examine whether the reasons for satisfaction or dissatisfaction are similar between different schemes and geographic region or not. For this purpose ranks are assigned based on percentage, as highest percentage having rank 1. Thereafter Rank Correlation Coefficients are computed, taking two schemes at a time to examine the hypotheses H_{01} to H_{04} . The 1st hypothesis is,

H_{01} : There is no significant correlation between the schemes regarding the response for reasons for satisfaction with the use of Government sources of water.

From the table 6.38 it is observed that for all 6 situations RCC is greater than 0.5. This indicates that the reasons for satisfaction are almost same across the selected 4 schemes.

Table 6.38 Results of Testing of Hypotheses: Reasons for Satisfaction: Scheme wise

Between Scheme	Value of RCC	Calculated Value t	Result of Null Hypotheses
Iswariya and Gadhada	0.96	7.66*	Rejected
Iswariya and Variyav	0.75	2.54	Accepted
Iswariya and Mandvi	0.89	4.36*	Rejected
Gadhada and Variyav	0.67	2.01	Accepted
Gadhada and Mandvi	0.85	3.61**	Rejected
Mandvi and Variyav	0.89	4.36*	Rejected

* t = 1% level of significant** t = 5% level of significant

On applying the t -test, to examine whether these RCCs are significant or not, out of 6, for 4 situations RCCs are found to be significant of which three are at 1% level of significance (Iswariya and Gadhada, Iswariya and Mandvi, Mandvi and Variyav) and one is at 5% level of significance (Gadhada and Mandvi). Hence, null hypothesis of having no significant correlation was rejected in 4 situations. For two situations Iswariya and Variyav and Gadhada and Variyav on running t -test calculated value of t was found higher than the table value of t (Table value of t 2.57) at 5% level of significance. Hence, the null hypothesis of having no significant correlation between the schemes was accepted. Thus, it can be inferred that the reasons for satisfaction from Government water scheme are similar between 4 schemes and not similar between 2 schemes.

H₀₂: There is no significant correlation in the response for reasons for satisfaction with the use of Government water sources between the geographical regions.

Table 6.39 Results of Testing of Hypotheses: Reasons for Satisfaction: Geographic Region wise

Regions	Value of RCC	Calculated Value t	Result of Null Hypotheses
Head and Middle	0.88	4.15*	Rejected
Head and Tail	0.96	7.66*	Rejected
Middle and Tail	0.88	4.14*	Rejected

* t = 1% level of significant

When the same aspect is examined with reference to the geographic region, (table 6.39) it is observed that there exists a significant correlation in the ranking of the reasons on account of which the respondents are satisfied between the

geographical regions. This is indicated by t - value being greater than the table value of t and thereby null hypothesis (H_{02}) stands rejected.

H_{03} and H_{04} relates to the reasons for dissatisfaction.

H_{03} : There is no significant correlation between the schemes regarding responses for reasons for dissatisfaction with use of government source of water.

Table 6.40 Results of Testing of Hypotheses: Reasons for Dissatisfaction: Scheme wise

Between Scheme	Value of RCC	Calculated Value t	Result of Null Hypotheses
Iswariya and Gadhada	0.67	2.70**	Rejected
Iswariya and Variyav	0.04	0.12	Accepted
Iswariya and Mandvi	0.84	4.64*	Rejected
Gadhada and Variyav	0.33	1.04	Accepted
Gadhada and Mandvi	0.62	2.37	Accepted
Mandvi and Variyav	0.23	0.70	Accepted

* t = 1% level of significant

** t = 5% level of significant

Rank Correlation Co-efficient gives mixed results in table 6.40. It ranges between from 0.84 to 0.04. On running t - test it was observed that calculated value of t was higher than the table value of t (Table value of t 3.25) at 1% level of significance for Iswariya and Mandvi and for 1 situation (Iswariya and Gadhada) it was significant of at 5% level of significance (Table value of t 2.62). Hence, null hypothesis of having no significant correlation was rejected for 2 situations, indicating that in case of 2 situations out of 6, reasons for dissatisfaction between those schemes were correlated. For the remaining 4 situations, RCC was not found to be significant, leading to acceptance of null hypotheses.

H_{04} : There is no significant correlation in the responses for reasons for dissatisfaction with use of Government sources between the geographical regions.

From the table 6.41 it is observed that there exists significant correlation for reasons on account of which the respondents are not satisfied between the geographical regions.

Table 6.41 Results of Testing of Hypotheses: Reasons for Dissatisfaction: Geographic Region wise

Regions	Value of RCC	Calculated Value t	Result of Null Hypotheses
Head and Middle	0.73	3.25*	Rejected
Head and Tail	0.65	2.57**	Rejected
Middle and Tail	0.88	5.56*	Rejected

* t = 1% level of significant** t = 5% level of significant

This is indicated by t - value being greater than the table value of t at 1% level of significance and at 5% level of significance and thereby null hypothesis of having no significant correlation was rejected. This indicates that the reasons for dissatisfaction do not differ with change in geographical region.

6.7.2 Payment of Water Charges

To study the difference in proportions of water charges paid by respondents classified on different basis, Z test is applied. Three hypotheses are tested under three major factors viz. 'between the schemes', 'between regions' and 'between the economic activities'. Table 6.23 presents the frequency and percentage for respondents paying water charges or otherwise. For this purpose to examine the difference between the proportions Z test is applied to test the following hypotheses. Here we intend to examine the difference in proportion of respondents paying water charges between the schemes.

H₀₅: There is no significant difference in the proportion of respondents paying the water charges between the schemes.

Table 6.42 Result of Testing of Hypotheses: Water Charges: Scheme wise

Between the Schemes	Calculated Value of Z	Decision Regarding Null Hypotheses
Iswariya and Gadhada	0.41	Accepted
Iswariya and Variyav	0.94	Accepted
Iswariya and Mandvi	3.98*	Rejected
Gadhada and Variyav	1.42	Accepted
Gadhada and Mandvi	3.60*	Rejected
Mandvi and Variyav	5.59*	Rejected

* Z = 2.58 @ 1% level of significance

From the table 6.42 it is observed that there are 6 situations in the proportion of respondents paying water charges between the schemes. On computation of Z, the value of Z was found to be higher than the table value at 1% level of

significance in 3 situations. This indicates that there is a significant difference for 3 situations in the proportion of respondents paying the water charges between the schemes.

H₀₆: There is no significant difference in the proportion of respondents paying the water charges located at different geographic regions irrespective of schemes.

Table 6.43 Result of Testing of Hypotheses: Water Charges: Geographic Region wise

Regions	Calculated Value of Z	Decision Regarding Null Hypotheses
All Head and All Middle	6.41 [*]	Rejected
All Head and All Tail	2.03 ^{**}	Rejected
All Middle and All Tail	2.11 ^{**}	Rejected

* Z = 2.58 @ 1% level of significance;

** Z = 1.96 @ 5% level of significance

The table 6.43 presents Z value for difference in proportion of respondents paying water charges between 2 geographical regions irrespective of schemes. It is observed that the computed value of Z is higher than the table value at 1% level of significance in 1 situation (All Head and All Middle) and for 2 situations (All Head and All Tail, All Middle and All Tail) Z value is found to be higher than the table value at 5% level of significance. Thus, null hypothesis for these three situations is rejected. This indicates that there is a difference in proportion of respondents paying the water charges located at different regions irrespective of schemes.

H₀₇: There is no significant difference in the proportion of respondents paying the water charges depending upon their economic activities irrespective of scheme.

The table 6.24 presents the frequency of the respondents paying water charges according to economic activities considering schemes together. From the table 6.44 it is observed that there are 6 situations for the proportion of respondents paying water charges depending upon their economic activities irrespective of scheme. On computation of the value of Z, it is found to be higher than the table value at 1% level of significance in 1 situation out of 6. Hence, null hypothesis for this 1 situation is rejected.

Table 6.44 Result of Testing of Hypotheses: Water Charges: Economic Activities wise

Economic Activities	Calculated Value of Z	Decision Regarding Null Hypotheses
All Businessmen and All Regular Services	0.36	Accepted
All Businessmen and All Daily Wagers	0.23	Accepted
All Businessmen and All Farmers	1.45	Accepted
All Regular Services and All Daily Wagers	0.86	Accepted
All Regular Services and All Farmers	1.52	Accepted
All Daily Wagers and All Farmers	3.22*	Rejected

* Z = 2.58 @ 1% level of significance

This indicates that there is a significant difference in the proportion of respondents paying water charges for daily wagers and farmers. For the remaining 5 situations there is no significant difference in proportion.

H₀₈: There is no significant difference in the proportion of respondents paying water charges located at two different geographical regions of the same scheme.

Table 6.45 Results of Testing of Hypotheses: Water Charges: Between Geographic Region within Scheme

Sr. No.	Regions	Calculated Value Z	Decision Regarding Null Hypotheses
Iswariya RRWSS :Amreli			
1	Head and Middle	4.71*	Rejected
2	Head and Tail	5.34*	Rejected
3	Middle and Tail	0.87	Accepted
Gadhada RRWSS :Bhavnagar			
4	Head and Middle	0.07	Accepted
5	Head and Tail	3.95*	Rejected
6	Middle and Tail	5.04*	Rejected
Mandvi RRWSS : Kutch			
7	Head and Middle	6.02*	Rejected
8	Head and Tail	12.33*	Rejected
9	Middle and Tail	5.74*	Rejected
Variyav RRWSS : Surat			
10	Head and Middle	7.76*	Rejected
11	Head and Tail	1.32	Accepted
12	Middle and Tail	5.92*	Rejected

* Z = 2.58 @ 1% level of significance

Table 6.45 presents the calculated value of Z to examine difference in proportion of respondents paying water charges, between 2 geographical regions within scheme. There are total 12 situations. It is observed that for 9 situations there exists at 1% level of significance, difference in proportion of respondents paying water charges located at two different geographical regions of the same scheme. This indicates that the proportion of respondents paying water charges differs according to geographical region even within the scheme.

After examining difference in proportion of respondents paying water charges between schemes, between geographic regions, between economic activities and between geographic within the scheme we intend to examine difference in proportion of respondents paying water charges between two schemes having similar geographic region.

H₀₉: There is no significant difference in the proportion of respondents paying water charges between two schemes having similar geographical region.

Table 6.46 Results of Testing of Hypotheses: Water Charges: Between Schemes for Similar Geographic Region

Sr. No.	Between Scheme	Calculated Value Z	Decision Regarding Null Hypotheses
Head Region			
1	Iswariya and Gadhada	4.89*	Rejected
2	Iswariya and Variyav	8.73*	Rejected
3	Iswariya and Mandvi	7.65*	Rejected
4	Mandvi and Gadhada	1.23	Accepted
5	Mandvi and Variyav	7.64*	Rejected
6	Gadhada and Variyav	1.46	Accepted
Middle Region			
7	Iswariya and Gadhada	1.89	Accepted
8	Iswariya and Mandvi	3.49*	Rejected
9	Iswariya and Variyav	3.46*	Rejected
10	Mandvi and Gadhada	4.43*	Rejected
11	Mandvi and Variyav	0.44	Accepted
12	Gadhada and Variyav	4.85*	Rejected
Tail Region			
13	Iswariya and Gadhada	4.40*	Rejected
14	Iswariya and Mandvi	10.29*	Rejected
15	Iswariya and Variyav	3.21*	Rejected
16	Mandvi and Gadhada	6.97*	Rejected
17	Mandvi and Variyav	9.98*	Rejected
18	Gadhada and Variyav	4.85*	Rejected

* Z = 2.58 @ 1% level of significance

The table 6.46 presents the calculated value of Z. The table 6.46 indicates that out of 18 situations, for 14 situations Z value is significant at 1% level of significance. Hence, null hypothesis for the head, middle and tail region was rejected for majority of situation indicating significant difference in the proportion of respondents paying water charges between two schemes having similar geographical region.

6.7.3 Payment of Water Connection Charges

Table 6.30 and 6.31 presented details in the form of frequency and percentage for payment or otherwise for water connection charges for given scheme, according to geographical region and economic activities. This para attempts to examine the difference in proportion of respondents paying water connection charges between schemes, between geographical regions, and for economic activities.

H₀₁₀: There is no significant difference in the proportion of respondents paying water connection charges between the schemes.

The table 6.47 shows that totally 6 situations exist for examining the difference in proportion of respondents paying water connection charges.

Table 6.47 Result of Testing of Hypotheses: Water Connection Charges: Scheme wise

Between the Schemes	Calculated Value of Z	Decision Regarding Null Hypotheses
Iswariya and Gadhada	0.24	Accepted
Iswariya and Variyav	6.29*	Rejected
Iswariya and Mandvi	3.84*	Rejected
Gadhada and Variyav	6.83*	Rejected
Gadhada and Mandvi	7.69*	Rejected
Mandvi and Variyav	3.71*	Rejected

*Z = 2.58 @ 1% level of significance

On computation of Z value, it is found to be higher than the table value at 1% level of significance for 5 situations. This indicates that there is a significant difference in the proportion of respondents paying the water connection charges between the schemes.

H₀₁₁: There is no significant difference in the proportion of respondents paying water connection charges between different geographical regions irrespective of scheme.

Table 6.48 Result of Testing of Hypotheses: Water Connection Charges: Geographic Region wise

Regions	Calculated Value of Z	Decision Regarding Null Hypotheses
All Head and All Middle	3.92*	Rejected
All Head and All Tail	9.11*	Rejected
All Middle and All Tail	5.95*	Rejected

*Z = 2.58 @ 1% level of significance

From the table 6.48 it is observed that value of Z is found to be higher than the table value 1% level of significance for all 3 situations. Thus, null hypothesis is rejected. This indicates that there is a significant difference in proportion of respondents paying the water connection charges between the geographical regions.

H₀₁₂: There is no significant difference in the proportion of respondents paying water connection charges depending upon economic activities irrespective of scheme.

Table 6.49 Result of Testing of Hypotheses: Water Connection Charges: Economic Activities wise

Economic Activities	Calculated Value of Z	Decision Regarding Null Hypotheses
All Businessmen and All Regular Services	2.22**	Rejected
All Businessmen and All Daily Wagers	0.87	Accepted
All Businessmen and All Farmers	0.93	Accepted
All Regular Services and All Daily Wagers	4.27*	Rejected
All Regular Services and All Farmers	5.03*	Rejected
All Daily Wagers and All Farmers	0.01	Accepted

*Z = 2.58 @ 1% level of significance;

** Z = 1.96 @ 5% level of significance

From the table 6.49 it is observed that out of 6 situations the computed value of Z is found to be higher than the table value at 1% level of significance for 2 situations (All Regular Services and All Farmers, All Regular Services and All Daily Wagers) and in 1 situation (All Businessmen and All Regular Services), Z value is found to be higher than the table value at 5% level of significance. Hence, null hypothesis for these 3 situations is rejected, indicating that there

exists a significant difference in proportion of respondents paying water connection charges depending upon their economic activities.

The next hypothesis attempts to examine difference in proportion if any, between two geographical regions within the scheme.

H₀₁₃: There is no significant difference in the proportion of respondents paying water connection charges for the different geographical region within the scheme.

Table 6.50 Results of Testing of Hypotheses: Water Connection Charges: Between Geographic Region within Scheme

Sr. No.	Regions	Calculated Value Z	Decision Regarding Null Hypotheses
Iswariya RRWSS: Amreli			
1	Head and Middle	6.22*	Rejected
2	Head and Tail	3.13*	Rejected
3	Middle and Tail	3.67*	Rejected
Gadhada RRWSS: Bhavnagar			
4	Head and Middle	1.86	Accepted
5	Head and Tail	3.04*	Rejected
6	Middle and Tail	4.35*	Rejected
Mandvi RRWSS: Kutch			
7	Head and Middle	7.89*	Rejected
8	Head and Tail	12.15*	Rejected
9	Middle and Tail	3.91*	Rejected
Variyav RRWSS: Surat			
10	Head and Middle	4.59*	Rejected
11	Head and Tail	7.88*	Rejected
12	Middle and Tail	4.74*	Rejected

*Z = 2.58 @ 1% level of significance

When the difference is examined for 3 different regions of a given scheme and there by total 12 situations, it is observed that the computed value of Z is higher than the table value at 1% level of significance in 11 situations. There exists a significant difference in proportion of respondent paying water connection charges within a scheme for different geographical region. (Table 6.50)

H₀₁₄: There is no significant difference in the proportion of respondents paying water connection charges for the similar geographical region of two different schemes.

Table 6.51 Results of Testing of Hypotheses: Water Connection Charges: Between Schemes for Similar Geographic Region

Sr. No.	Between Scheme	Calculated Value Z	Decision Regarding Null Hypotheses
Head Region			
1	Iswariya and Gadhada	4.00*	Rejected
2	Iswariya and Mandvi	7.66*	Rejected
3	Iswariya and Variyav	3.26*	Rejected
4	Mandvi and Gadhada	2.68*	Rejected
5	Mandvi and Variyav	5.45*	Rejected
6	Gadhada and Variyav	1.82	Accepted
Middle Region			
7	Iswariya and Gadhada	0.82	Accepted
8	Iswariya and Mandvi	6.48*	Rejected
9	Iswariya and Variyav	7.89*	Rejected
10	Mandvi and Gadhada	6.61*	Rejected
11	Mandvi and Variyav	0.27	Accepted
12	Gadhada and Variyav	7.69*	Rejected
Tail Region			
13	Iswariya and Gadhada	1.68	Accepted
14	Iswariya and Mandvi	7.80*	Rejected
15	Iswariya and Variyav	7.25*	Rejected
16	Mandvi and Gadhada	6.62*	Rejected
17	Mandvi and Variyav	0.64	Accepted
18	Gadhada and Variyav	6.07*	Rejected

*Z = 2.58 @ 1% level of significance;

Table 6.51 presents the calculated value Z for 18 situations. The table indicates that out of 18 situations for 13 situations the difference is found to be significant. Thus, it can be concluded that there exists a significant difference in the proportion of respondents paying water connection charges for similar geographical region between various schemes.

6.7.4 Affordability of Water Charges

Table 6.32 and 6.33 presented the details for the response about affordability for water charges.

This para attempts to examine the difference in proportion of respondents, about the affordability of water charges. The differences are examined between the schemes, between the geographical regions, between economic activities,

between geographical regions within scheme, between schemes for similar geographical region, between schemes for similar economic activities.

H₀₁₅: There is no significant difference in the proportion of respondents about the affordability for water charges between the schemes.

Table 6.52 Result of Testing of Hypotheses: Affordability of Water Charges: Scheme wise

Between the Schemes	Calculated Value of Z	Decision Regarding Null Hypotheses
Iswariya and Gadhada	0.20	Accepted
Iswariya and Variyav	10.25*	Rejected
Iswariya and Mandvi	2.17**	Rejected
Gadhada and Variyav	10.05*	Rejected
Gadhada and Mandvi	2.37**	Rejected
Mandvi and Variyav	12.45*	Rejected

*Z = 2.58 @ 1% level of significance;

** Z = 1.96 @ 5% level of significance

Table 6.52 presents the computed value of Z. The Z value is higher than the table value at 1% level of significance in 3 situations and in 2 situations calculated value of Z is found to be higher than the table value at 5% level of significance. This indicates that there is a significant difference for 5 situations out of 6 in the proportion of respondents about the affordability for water charges between the schemes.

H₀₁₆: There is no significant difference in the proportion of respondents about the affordability for water charges between geographical regions irrespective of scheme.

Table 6.53 Result of Testing of Hypotheses: Affordability of Water Charges: Geographic Region wise

Regions	Calculated Value of Z	Decision Regarding Null Hypotheses
All Head and All Middle	3.73*	Rejected
All Head and All Tail	8.90*	Rejected
All Middle and All Tail	5.89*	Rejected

*Z = 2.58 @ 1% level of significance

Table 6.53 indicates that the calculated value of Z is higher than the table value at 1% level of significance for all 3 situations. Thus, null hypothesis is rejected.

This indicates that there is a significant difference in proportion of respondents about the affordability for water charges between geographical regions.

H₀₁₇: There is no significant difference in the proportion of respondents about the affordability for water charges depending upon economic activities irrespective of scheme.

Table 6.54 Result of Testing of Hypotheses: Affordability of Water Charges: Economic Activities wise

Economic Activities	Calculated Value of Z	Decision Regarding Null Hypotheses
All Businessmen and All Regular Services	2.88*	Rejected
All Businessmen and All Daily Wagers	1.33	Accepted
All Businessmen and All Farmers	1.18	Accepted
All Regular Services and All Daily Wagers	3.92*	Rejected
All Regular Services and All Farmers	2.73*	Rejected
All Daily Wagers and All Farmers	1.86	Accepted

*Z = 2.58 @ 1% level of significance

Table 6.54 indicates that out of 6 situations the computed value of Z is higher than the table value at 1% level of significance in 3 situations (All Regular Services and All Farmers, All Businessmen and All Regular Services, All Regular Services and All Daily wagers). Hence, null hypothesis for these 3 situations is rejected, indicating that there exists a significant difference in proportion of respondents about the affordability for water charges between these economic activities.

H₀₁₈: There is no significant difference in the proportion of respondents about the affordability for water charges between two geographical regions within a given scheme.

For examining difference in proportion of respondents about affordability of water charges between different geographical regions, within a given scheme 12 situations exist. Here, it is observed that there exists significant difference in this proportion for 7 situations at 1% level of significance and for 2 situations at 5% level of significance. It was only between middle and tail region of 'Iswariya' scheme and of 'Gadhada' scheme and head - middle region of 'Mandvi' scheme that no such significant difference was observed. (Table 6.55)

Table 6.55 Results of Testing of Hypotheses: Affordability of Water Charges: Between Geographic Region within Scheme

Sr. No.	Regions	Calculated Value Z	Decision Regarding Null Hypotheses
Iswariya RRWSS : Amreli			
1	Head and Middle	4.18*	Rejected
2	Head and Tail	2.64*	Rejected
3	Middle and Tail	2.06	Accepted
Gadhada RRWSS: Bhavnagar			
4	Head and Middle	2.02**	Rejected
5	Head and Tail	5.29*	Rejected
6	Middle and Tail	1.26	Accepted
Mandvi RRWSS: Kutch			
7	Head and Middle	0.73	Accepted
8	Head and Tail	5.64*	Rejected
9	Middle and Tail	7.95*	Rejected
Variyav RRWSS: Surat			
10	Head and Middle	6.89*	Rejected
11	Head and Tail	2.32**	Rejected
12	Middle and Tail	6.41*	Rejected

*z = 2.58 @ 1% level of significance;

** z = 1.96 @ 5% level of significance

H₀₁₉: There is no significant difference in the proportion of respondents about the affordability for water charges between two schemes for similar geographical region.

Table 6.56 Results of Testing of Hypotheses: Affordability of Water Charges: Between Schemes for Similar Geographic Region

Sr. No.	Between Scheme	Calculated Value Z	Decision Regarding Null Hypotheses
Head Region			
1	Iswariya and Gadhada	4.92*	Rejected
2	Iswariya and Mandvi	4.33*	Rejected
3	Iswariya and Variyav	10.76*	Rejected
4	Mandvi and Gadhada	1.56	Accepted
5	Mandvi and Variyav	7.55*	Rejected
6	Gadhada and Variyav	4.36*	Rejected
Middle Region			
7	Iswariya and Gadhada	0.52	Accepted
8	Iswariya and Mandvi	0.56	Accepted
9	Iswariya and Variyav	1.63	Accepted
10	Mandvi and Gadhada	0.1	Accepted
11	Mandvi and Variyav	1.88	Accepted
12	Gadhada and Variyav	2.09**	Rejected

Table – 6.26 Continued

Sr. No.	Between Scheme	Calculated Value Z	Decision Regarding Null Hypotheses
Tail Region			
13	Iswariya and Gadhada	0.21	Accepted
14	Iswariya and Mandvi	7.81*	Rejected
15	Iswariya and Variyav	10.56*	Rejected
16	Mandvi and Gadhada	8.32*	Rejected
17	Mandvi and Variyav	13.93*	Rejected
18	Gadhada and Variyav	8.49*	Rejected

* Z = 2.58 @ 1% level of significance

** Z = 1.96 @ 5% level of significance

While examining the difference in proportion of respondents about the affordability for water charges between two schemes for similar geographical region total 18 situations are developed. Out of 18 situations for 10, significant difference in proportion is observed at 1% level of significance and for 1 situation calculated value of Z is found to be higher than the table value at 5% level of significance. Hence, null hypotheses for these 11 situations is rejected, indicating that there exists a significant difference in proportion of respondents about the affordability for water charges between two schemes for similar geographical region. (Table 6.56)

6.7.5 Satisfaction about the Water Supply and Water Charges

Table 6.34 and 6.35 presented the frequency distribution and percentage for respondents satisfied with water supply and water charges due to water distribution system. In this para attempt is made to examine the difference in proportion, if any, between the schemes, between the geographic regions, between the economic activities, between geographical regions within the scheme, between scheme for similar geographical region, between scheme for given economic activity.

H₀₂₀: There is no significant difference in the proportion of respondents satisfied about the 'water supply' and 'water charges' payment between the schemes.

Table 6.57 Result of Testing of Hypotheses: Satisfaction About the ‘Water Supply’ and ‘Water Charges’: Scheme wise

Between the Schemes	Calculated Value of Z	Decision Regarding Null Hypotheses
Iswariya and Gadhada	2.51**	Rejected
Iswariya and Variyav	2.06**	Rejected
Iswariya and Mandvi	4.53*	Rejected
Gadhada and Variyav	5.00*	Rejected
Gadhada and Mandvi	2.10**	Rejected
Mandvi and Variyav	7.28*	Rejected

*Z = 2.58 @ 1% level of significance;

** Z = 1.96 @ 5% level of significance

From the table 6.57 it is observed that out of 6 situations the calculated value of Z is found to be higher than the table value at 1% level of significance for 3 situations and for 3 situations calculated value of Z is found to be higher than the table value at 5% level of significance. This indicates that there is a significant difference in the proportion of respondents satisfied about the ‘water supply’ and ‘water charges’ payment between the schemes

H₀₂₁: There is no significant difference in the proportion of respondents satisfied about the ‘water supply’ and ‘water charges’ payment between geographical regions irrespective of scheme.

Table 6.58 Result of Testing of Hypotheses: Satisfaction About the ‘Water Supply’ and ‘Water Charges’: Geographic Regions wise

Regions	Calculated Value of Z	Decision Regarding Null Hypotheses
All Head and All Middle	5.83*	Rejected
All Head and All Tail	9.19*	Rejected
All Middle and All Tail	2.68*	Rejected

*Z = 2.58 @ 1% level of significance

From the Table 6.58 it is observed that the calculated value of Z is higher than the table value at 1% level of significance in all 3 situations. Thus, null hypothesis for all 3 situations is rejected. This indicates that there is a significant difference in the proportion of respondents satisfied about the ‘water supply’ and ‘water charges’ payment between geographical regions.

H₀₂₂: There is no significant difference in the proportion of respondents satisfied about the ‘water supply’ and ‘water charges’ payment depending upon economic activities irrespective of scheme.

Table 6.59 Result of Testing of Hypotheses: Satisfaction About the ‘Water Supply’ and ‘Water Charges’: Economic Activities wise

Economic Activities	Calculated Value of Z	Decision Regarding Null Hypotheses
All Businessmen and All Regular Services	1.47	Accepted
All Businessmen and All Daily Wagers	0.95	Accepted
All Businessmen and All Farmers	2.57**	Rejected
All Regular Services and All Daily Wagers	0.83	Accepted
All Regular Services and All Farmers	1.28	Accepted
All Daily Wagers and All Farmers	2.68*	Rejected

*Z = 2.58 @ 1% level of significance;

** Z = 1.96 @ 5% level of significance

From the table 6.59 it is observed that out of 6 situations, the value of Z is higher than the table value at 1% level of significance in only 1 situation (All Daily Wagers and All Farmers) and in 1 situation (All Businessmen and All Farmers) Z value is found to be higher than the table value at 5% level of significance. Thus, null hypothesis for these 2 situations is rejected, however, for remaining 4 situations null hypothesis is accepted.

H₀₂₃: There is no significant difference in the proportion of respondents satisfied about the ‘water supply’ and ‘water charges’ payment between two geographical regions of given scheme.

Table 6.60 Results of Testing of Hypotheses: Satisfaction About the ‘Water Supply’ and ‘Water Charges’: Between Geographic Region within Scheme

Sr. No.	Regions	Calculated Value Z	Decision Regarding Null Hypotheses
Iswariya RRWSS: Amreli			
1	Head and Middle	4.93*	Rejected
2	Head and Tail	3.03*	Rejected
3	Middle and Tail	2.29**	Rejected
Gadhada RRWSS: Bhavnagar			
4	Head and Middle	0.14	Accepted
5	Head and Tail	4.11*	Rejected
6	Middle and Tail	4.88*	Rejected
Mandvi RRWSS: Kutch			
7	Head and Middle	3.59*	Rejected
8	Head and Tail	8.20*	Rejected
9	Middle and Tail	6.69*	Rejected
Variyav RRWSS: Surat			
10	Head and Middle	9.60*	Rejected
11	Head and Tail	14.94*	Rejected
12	Middle and Tail	7.20*	Rejected

* Z = 2.58 @ 1% level of significance;

** Z = 1.96 @ 5% level of significance

In Table 6.60 12 possible situations are identified. Out of these, for 10 situations, significant difference in proportion is observed at 1% level of significance and for 1 situation at 5% level of significance. Thus, null hypothesis is rejected for 11 situations out of 12, indicating significant difference in proportion of respondents satisfied about the 'water supply' and 'water payment' between two geographical region of given scheme.

H₀₂₄: There is no significant difference in the proportion of respondents satisfied about the 'water supply' and 'water changes' payment for similar geographical region of different schemes.

Table 6.61 Results of Testing of Hypotheses: Satisfaction About the 'Water Supply' and 'Water Charges': Between Schemes for Similar Geographic Region

Sr. No.	Between Scheme	Calculated Value Z	Decision Regarding Null Hypotheses
Head Region			
1	Iswariya and Gadhada	3.48*	Rejected
2	Iswariya and Mandvi	3.94*	Rejected
3	Iswariya and Variyav	9.21*	Rejected
4	Mandvi and Gadhada	0.28	Accepted
5	Mandvi and Variyav	5.66*	Rejected
6	Gadhada and Variyav	4.49*	Rejected
Middle Region			
7	Iswariya and Gadhada	1.00	Accepted
8	Iswariya and Mandvi	4.65*	Rejected
9	Iswariya and Variyav	4.88*	Rejected
10	Mandvi and Gadhada	3.51*	Rejected
11	Mandvi and Variyav	1.32	Accepted
12	Gadhada and Variyav	3.38*	Rejected
Tail Region			
13	Iswariya and Gadhada	3.99*	Rejected
14	Iswariya and Mandvi	7.12*	Rejected
15	Iswariya and Variyav	5.41*	Rejected
16	Mandvi and Gadhada	3.92*	Rejected
17	Mandvi and Variyav	10.67*	Rejected
18	Gadhada and Variyav	8.31*	Rejected

* Z = 2.58 @ 1% level of significance;

To test the above hypothesis, total 18 situations are developed. Out of these for 15 situations it is observed that there is a significant difference in proportion of

respondents about the status of satisfaction for water supply and water charges paid, between the schemes for similar geographic region. No significant difference is observed. For 'Mandvi' and 'Gadhada' schemes, head region, 'Iswariya' and 'Gadhada' scheme middle region and 'Mandvi' and 'Variyav' scheme middle region. (Table 6.61)

6.8 MAJOR FINDINGS

Based on the analysis carried out in this chapter the major findings are summarised in the following para. As the analysis is divided in two parts, (A) Classification, tabulation, frequency distribution and percentage analysis and (B) Hypotheses testing, the major findings are also grouped accordingly.

(A) Based on percentage analysis:

1. The mean size of the family for all the schemes was six even though there were variations in the maximum size.
2. The respondents from general caste were highest in proportion for Iswariya and Gadhada schemes, whereas the respondents from Baxi panch were having highest proportion for Mandvi and Variyav schemes.
3. On the whole about 75% of respondents were having education less than 7th standard.
4. Over all, Variyav scheme of Surat district is found economically sound containing almost 90% of the respondents having status APL followed by Iswariya scheme of Amreli district with nearly 83% APL further followed by Gadhada scheme of Bhavnagar district and Mandvi scheme of Kutch district having around 75% of respondents APL.
5. Iswariya scheme of Amreli district had almost 70% of the respondents as farmers followed by Gadhada scheme having 62% farmers, Mandvi scheme having 56% farmers and Variyav scheme having around 54% of farmers.
6. There are certain variations observed in the water source used by the respondents of the respective scheme. For Iswariya scheme, Step Well, Well

and Tanker are not used at all as water source. Hand Pump is used as a minor source by Mandvi and Variyav scheme. Tap is used by highest proportion of respondents on an average.

7. Majority of the respondents, scheme wise as well as overall are using both the sources *viz.* Government and village. Exceptionally, for Variyav scheme, for middle region response is very high for using only government source of water.
8. It is observed that the proportion of respondents satisfied is higher than those of not satisfied on the whole as well as for each scheme individually. For Mandvi scheme proportion of satisfied respondents is marginally lower than those not satisfied. The highest percentage of satisfied respondents is for head region of Gadhada and the highest percentage of non-satisfied respondents are for tail region of Mandvi scheme.
9. On the whole 'water available as per requirement', 'water available regularly' and 'clean water available' are the major reasons attributed for satisfaction from RRWSS.
10. On the whole 'no house connection' and 'insufficient water availability' are attributed as the major reasons for dissatisfaction from RRWSS.
11. Water collection and storage includes quantity of water used other than domestic use. Animal husbandry is found to be the main other use of water. This is indicated by 99% of respondents in Kutch district, 95% of respondents of Bhavnagar district and 92% of respondents in Amreli district used the water for animal husbandry in addition to domestic use.
12. For Iswariya, Mandvi and Variyav scheme change in time of supply of water, seems to have more effect on routine life. For Gadhada scheme, compared to routine life, business is found to be little more affected.
13. Majority of respondents are not required to purchase water, when RRWSS is not able to supply sufficient quantity of water. In middle region of Gadhada scheme more percentage of respondents has opined that they need to buy water. It is interesting to observe that very high percentage of tail end region

respondents of Iswariya, Mandvi and Variyav schemes are not required to purchase water.

14. It is found that effect of water shortages is most significant and acute on agricultural and animal husbandry. Labour work and traditional professions are least affected by the water shortages. For all 4 schemes, agriculture is the highest affected on account of water shortages.
15. When respondent households were asked about the water charges, 83.47%, 82.46%, 77.52% and 85.40% reported that they are paying water charges to the *Panchayat* or the Water committee in case of Iswariya scheme, Gadhada scheme, Mandvi scheme and Variyav scheme respectively.
16. The average amount paid is found to be highest for Gadhada scheme, where for tail region the mean was as high as ₹222 per annum per capita. The maximum amount paid is also found to be highest for Gadhada scheme for middle region at ₹750 per annum per capita.
17. It can be observed that for all the schemes the highest numbers of respondents are paying water charges in the range of ₹101 to ₹200.
18. It can be observed that for all the economic activities, highest numbers of respondents are paying water charges in the range of ₹101 to ₹200, except for regular services respondents, who are paying between nil to ₹100. Hardly 3% of the respondents are paying charges beyond ₹300 where mainly they are the farmers.
19. It can be observed that for all regions, highest proportions of respondents are paying water charges in the range of ₹101 to ₹200.
20. It can be observed that amongst all economic activities, highest mean is observed for farmers paying water charges of ₹172 on an average.
21. It is observed that highest percentage (78.08%) of respondents of Gadhada scheme have paid water connection charges followed by Iswariya (77.75%), Mandvi (66.74%) and Variyav (59.68%). Highest percentage of Head region respondents (79.25%) has paid water connection charges followed by middle region (70.50%) and tail region (56%).

22. Over all, it was analysed that highest percentage of respondents paying water connection charges were observed for daily wagers (71.04%) followed by farmers (71.01%), businessmen (66.95%) and respondents with regular services at 56.27%.
23. It is found that significant percentage of respondents of Variyav (82.04%) considered water charges as affordable followed by Gadhada (56.58%) and Iswariya (55.93%). Maximum proportions of non-responses are observed in the Iswariya scheme compared to other three schemes studied. In case of Variyav scheme proportionately greater percentages of farmers (82.50%) believe that the water charges are affordable.
24. It is seen in general that majority of the respondents in head, middle and tail regions are satisfied with the level of water supply and water charges they have to pay for the same. Highest proportion of respondents of Variyav scheme and highest proportion of respondents of head region have revealed satisfaction. It is seen in general that majority of the businessmen, respondents with regular services, daily wagers and farmers are satisfied with level of water supply and water charges they have to pay for the same.
25. Over all, the level of disagreement was very low. Accordingly 17.58%, 19.42%, 17.55% and 27% respondents disagreed with payment of water charges for Iswariya, Gadhada, Mandvi and Variyav scheme, respectively. In case of Iswariya scheme 21.88% of daily wagers, in case of Gadhada and Mandvi schemes 22.73% and 21.62% of businessmen and in case of Variyav scheme 27.80% of regular services respondents disagreed with the payment of water charges.

(B) Findings from testing of hypotheses

Reasons for satisfaction or dissatisfaction:

1. On examining whether the reasons for satisfaction are similar between different schemes or not, on applying Rank Correlation coefficient and *t* - test, for 4 situations out of 6, RCC was found to be significant between different schemes and a strong positive correlation was observed at 1% of significance and 5% of significance (**H₀₁**).

2. When the RCCs for reasons for satisfaction are examined between geographical regions, strong positive correlation is observed at 1% level of significance between reasons on account of which the respondents are satisfied with use of Government water sources between the geographical regions (**H₀₂**).
3. When RCC for reasons for dissatisfaction for use of government water source is examined between the schemes for 2 situations out of 6, significant correlations is observed (**H₀₃**).
4. On examining the RCC for reasons for dissatisfaction between the geographical regions, significant RCC was observed for all 3 situations (**H₀₄**).

Payment of water charges:

5. Significant difference was found in the proportions of respondents paying the water charges between the schemes for 3 situations out of 6 situations at 1% level of significance (**H₀₅**).
6. Significant difference was found in the proportions of respondents paying water charges located at different geographical regions irrespective of schemes. The calculated value of Z is higher than the table value at 1% level of significance or 5% level of significant (**H₀₆**).
7. No significant difference was found in the proportions of respondents paying water charges depending upon their economic activities irrespective of scheme for 5 situations out of 6 situations (**H₀₇**).
8. Significant difference was found in the proportions of respondents paying the water charges located at two different geographical regions of the same scheme for 9 situations out of 12 situations (**H₀₈**).
9. Significant difference was found in the proportions of respondents paying water charges between two schemes having similar geographical regions for 14 situations out of 18 situations at 1% level of significant (**H₀₉**).

Payment of Water connection charges:

10. Significant difference was found for 5 out of 6 situations in the proportion of respondents paying water connection charges between the schemes (**H₀₁₀**).
11. Significant difference was found in the proportion of respondents paying water connection charges between different for geographical regions for all 3 situations (**H₀₁₁**).
12. Significant difference was found in the proportion of respondents paying water connection charges depending upon economic activities for 3 situations out of 6 situations (**H₀₁₂**).
13. Significant difference was found in the proportion of respondents paying water connection charges for the different geographical region within the scheme for 11 situations out of 12 situations (**H₀₁₃**).
14. Significant difference was found in the proportion of respondents paying water connection charges for the similar geographical region for two different schemes for 13 situations out of 18 situations (**H₀₁₄**).

Affordability of water charges:

15. Significant difference was found in the proportion of respondents about affordability for water charges between the schemes for 5 situations out of 6 situations (**H₀₁₅**).
16. Significant difference was found for all 3 situations in the proportion of respondents about affordability for water charges between geographical regions (**H₀₁₆**).
17. Significant difference was found in the proportion of respondents about affordability for water charges depending upon economic activities for 3 situations out of 6 situations (**H₀₁₇**).
18. Significant difference was found in the proportion of respondents about affordability for water charges between two geographical regions within a given scheme for 9 situations out of 12 situations (**H₀₁₈**).

19. Significant difference was found in the proportion of respondents about affordability for water charges between two schemes for similar geographical regions for 11 situations out of 18 situations (**H₀₁₉**).

Satisfaction about 'Water Supply' and 'Water Charges':

20. Significant difference was found in the proportion of respondents satisfied about the 'water supply' and 'water charges' payment between the schemes for all 6 situations (**H₀₂₀**).
21. Significant difference was found in the proportion of respondents satisfied about the 'water supply' and 'water charges' payment between all 3 geographical regions (**H₀₂₁**).
22. No significant difference was found in the proportion of respondents satisfied about the 'water supply' and 'water charges' payment between 4 situations of economic activities out of 6 situations (**H₀₂₂**).
23. Significant difference was found in the proportion of respondents satisfied about the 'water supply' and 'water charges' payment between two geographical regions of given scheme for 11 situations out of 12 situations (**H₀₂₃**).
24. Significant difference was found in the proportion of respondents satisfied about the 'water supply' and 'water charges' payment between two schemes for similar geographical regions for 15 situations out of 18 situations (**H₀₂₄**).



REFERENCES

1. ORG Report (2007), Performance Evaluation of Regional Water Supply Schemes, (pp.1-50).