



FACTORS AFFECTING WILLINGNESS TO PAY FOR GOOD QUALITY URBAN WATER IN KOLLAM DISTRICT, KERALA

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ABSTRACT

Urbanization widens the gap between demand for and supply of civic amenities in urban centers. Among these amenities water is to be singled out as the very existence of humans depends on it. Urban population in the country has been increasing at rates that are twice the rural population growth rates, on the other hand, urban water accounts for 5-6 percent of the total water consumption in the country which is grossly inadequate in relation to water demand. The water availability in urban settlements is much below the minimum level required for a congenial living. Despite having extensive piped network, the water supply is spasmodic, of low pressure and frequently not potable. They cannot use the well water as it is brackish. The contingent valuation survey conducted in the urban areas of Kollam revealed that people are willing to pay a higher rate if they are provided with high quality water on a 24x7 basis. The present study examines the relationship between willingness to pay and factors identified as affecting willingness to pay for urban water.

KEY WORDS: *Urbanisation, water quality, willingness to pay, contingent valuation.*

INTRODUCTION

Urbanization is as old as civilization itself. Major problems associated with rapid urbanization are lack of universal accessibility of drinking water, ineffective distribution of water supply, deprivation among the people, high level of pollution, water shortage, wastage due to old leaking pipeline etc. The urbanization process in the developed countries has been closely linked to industrialization and the level of economic development. In India, however the growth in urban population has been much higher than industrial and economic growth in urban areas. Consequently, there has been a sharp rise in urban-rural and core periphery dichotomy, increasing the number of urban poor and spatially imbalanced urban systems. The sharp rise in urban population has, also, imposed a strain on the urban infrastructure and services, leading to a deterioration in quality of urban life (Umareddy Venkateswarlu, 1998). Urbanization widens the gap between demand for and supply of civic amenities in urban centers. Among these amenities water is to be singled out as the very existence of humans depends on it (Bidyut Mohanty, 1988). Issues of urban water have in recent years acquired increasing

complexity, partly on account of the continuing pressures of urbanization and urban growth, and partly due to the limited water that is available for urban use. Urban population in the country has been increasing at rates that are twice the rural population growth rates, on the other hand, urban water accounts for 5-6 percent of the total water consumption in the country which is grossly inadequate in relation to water demand. A direct consequence of inadequate provision is manifested in sharp deterioration of service levels. Drinking water supply and sanitation in India continue to be inadequate, despite longstanding efforts by the various levels of government and communities at improving coverage. The level of investment in water and sanitation, albeit low by international standards, has increased during the 2000s. At the same time, local government institutions in charge of operating and maintaining the infrastructure are seen as weak and lack the financial resources to carry out their functions. In addition, no major city in India is known to have a continuous water supply and an estimated 72 percent of Indians still lack access to improved sanitation facilities. The households have to spend long hours to source water since the water supply is intermittent and



the water from shallow tube wells and hand pumps is generally not potable. In addition the distribution of water varies considerably between settlements within the cities and between different income groups. The better off sections living in the planned parts of the city are better served by the water supply and sanitation services than those living in slums and squatter settlements. The water availability in urban settlements is much below the minimum level required for a congenial living.

Kerala one of the smallest of the states of India, occupies the south western portion of the Indian Union. With high mountain ranges not far removed from the sea coast, and a high intensity of rainfall Kerala is fortunate in having a number of rivers, all having their origin in the ghats and either flowing westward into the sea or eastward into other states. This special topography has enabled the state to have a plentiful supply of water flowing down her rivers. Even though the state can be said to be very rich in her water resources, storage arrangements and other special works are necessary in each of the rivers, so that the waters flowing through them during the monsoon months can be conserved and utilized for the various requirements in the basin at other times of the year. The lie of the land is most undulating with a general slope from east to west. In between the undulating valleys, several streams drain down and most of these rivers formed by the confluence of these streams have westward flow. On account of the shortness of the distance between the mountains on the east and sea on the west, almost all rivers are short in length. There are a few rivers in the state which have their sources in the western ghats within the state boundary, but which flow in an easterly direction. The demand for water is primarily for protected water supply, irrigation and hydel power generation. Industries and recreational sectors also demand their due share. Due to rapid urbanization, increased economic activity, population explosion, changes in land use pattern and higher standards of living, the gap between the demand and supply of water has been widening.

In the state of Kerala different slab systems are followed by the Kerala Water Authority for charging water. But when raising water charges the government does not consider whether the people are able and willing to pay such an increased amount. The income levels of consumers are different and their consumption pattern of water is also different. The people belonging to different income levels will have different willingness to pay for a commodity. The contingent valuation method is adopted in this study for identifying the factors affecting the willingness to pay for an improved water supply system. The survey

technique that attempts to obtain stated preferences is known as the Contingent Valuation Method (CVM). The word contingent is used to reflect the preferences that are stated for a described hypothetical situation. In this study the hypothetical situation presented is that of one in which there is a supply of high quality water on a 24x7 basis. Kollam, an old sea port town on the Ashtamudi Lake was founded on 1st July 1949. Despite having extensive piped network, the water supply is spasmodic, of low pressure and frequently not potable. They cannot use the well water as it is brackish. As far as the slum areas are concerned there is no daily supply of water. During the draught seasons they get water only for 2 to 3 days a week. The contingent valuation survey conducted in the urban areas of Kollam revealed that people are willing to pay a higher rate if they are provided with high quality water on a 24x7 basis. The present study identifies the factors affecting the willingness to pay (WTP) and checks the relationship between various factors and willingness to pay for water.

OBJECTIVES OF THE STUDY

1. To examine the association of willingness to pay and severity of the water availability problem
2. To examine the association of willingness to pay and family size
3. To examine the association of willingness to pay and income status
4. To examine the association of willingness to pay and slab level

METHODOLOGY

The present study is conducted among the urban water consumers in Kollam District. Out of the total population of 41937 domestic connections a sample of 600 beneficiaries were selected for analyzing willingness to pay for water and check the relationship between willingness to pay for water and various factors affecting it. Almost 1.5% connections rounding nearest 100 were selected randomly from total connections. Thus the total sample size becomes 600. Then number of samples from each corporation/municipality was fixed with probability proportional to sample size. That is proportional to the total connections in each corporation/municipality. It was also decided to select households from a minimum of two wards from each corporation/municipality. As the sample size to be selected from Kollam Corporation is high sample households were selected from eight wards of Kollam Corporation. The stated preference approach such as contingent valuation is used to measure the beneficiaries' willingness to pay and Chi-



Square Test is used to test the association between Willingness to pay (WTP) and factors affecting it.

HYPOTHESES

1. Willingness to pay is not dependent on the severity of the availability problem

2. Willingness to pay is not dependent on the family size

3. Willingness to pay is not dependent on the income of the respondents

4. Willingness to pay is not dependent on the consumption slab

WILLINGNESS TO PAY FOR WATER

Willingness to pay of beneficiaries belonging to different slabs

Response	Willing to pay		Not willing to pay		Total
	Count	Percent	Count	Percent	
BPL	52	78.8	14	21.2	66
0-5	21	91.3	2	8.7	23
5-10	200	78.7	54	21.3	254
10-20	179	85.2	31	14.8	210
20-30	29	93.5	2	6.5	31
30-40	9	81.8	2	18.2	11
40-50	2	100.0	0	0.0	2
Above 50	3	100.0	0	0.0	3
Total	495	82.5	105	17.5	600

Among those people belonging to the BPL category 78.8 percent are willing to pay up to 10 percent more for improved supply and 21.2 percent are willing to pay nothing or 10 percent more but they are ready to render their services to Kerala Water Authority(KWA) twice in a month. Among those people belonging to the 0-5 slab 91.3 percent are willing to pay up to 10 percent more for improved supply and 8.7percent are willing to pay nothing or 10 percent more for improved services. Among those people belonging to the 5-10 slab 78.7 percent are willing to pay up to 10 percent more for improved supply and 21.3 percent are willing to pay nothing or 10 percent more for improved services. Among those people belonging to the 10-20 slab 85.2 percent are willing to pay up to 10 percent more for improved supply and 14.8 percent are willing to pay nothing or 10 percent more for improved services. Among those people belonging to the 20-30 slab 93.5 percent are willing to pay up to 10 percent more for improved supply and 6.5 percent are willing to pay nothing or 10 percent more. Among those people belonging to the 40-50 slab all respondents are willing to pay and 10 percent more for improved services. Among those

people belonging to the slab of above 50 all respondents are willing to pay and 10 percent more for improved services. Out of the total respondents in all slabs 82.5 percent are willing to pay and 17.5 percent are not willing to pay or 10 percent more for improved services.

FACTORS AFFECTING WILLINGNESS TO PAY (WTP)

The factors affecting willingness to pay were identified as severity of the water availability problem, family size, income status and slab levels to which the consumer belongs. The association between WTP for water and factors affecting WTP were tested using Chi-Square Test and percentage analysis is also done to understand the relation between WTP and factors affecting it.



Table 1

Association of willingness to pay and severity of the water availability problem

Water availability problem	Not willing to pay		willing to pay		Total
	Count	Percent	Count	Percent	Count
Not a problem	11	28.9	27	71.1	38
Severe	67	18.6	293	81.4	360
Very severe	27	13.4	175	86.6	202
All	105	17.5	495	82.5	600
Chi square = 6.148* df = 2 P=0.046					

** significant at 0.05 level*

H₀ : Willingness to pay is not dependent on the severity of the availability problem.

To check whether willingness to pay is influenced by availability problem Chi square test is done. The calculated value of the chi-square is greater than the table value the null hypothesis is rejected. The

relationship is significant at 0.05 percent level. There is increase in willingness to pay of the people as the severity of the availability problem increases. The percentage analysis also shows that as the availability problem increases the willingness to pay of the people also increase.

Table 2

Association of willingness to pay and family size

Family size	Not willing to pay		willing to pay		Total
	Count	Percent	Count	Percent	Count
≤ 4	58	16.9	286	83.1	344
Above 4	47	18.4	209	81.6	256
All	105	17.5	495	82.5	600
Chi square = 0.228 ^{ns} df = 1 P = 0.633					

ns non significant at 0.05 level

H₀: Willingness to pay is not dependent on the family size

To check whether willingness to pay is influenced by increase in family size of the individual Chi square test is done. The calculated value of the chi-square is less than the table value the null hypothesis is accepted. The relationship is not significant. There is no increase in willingness to pay of the people as the

family size of the respondent increases. The percentage analysis also shows that there are no considerable changes in willingness to pay as the family size of the respondents increase.

Table 3

Association of willingness to pay and income status

Income Status	Not willing to pay		willing to pay		Total
	Count	Percent	Count	Percent	Count
< 5000	53	16.4	271	83.6	324
5000-10000	30	19.5	124	80.5	154
10000-15000	8	19.0	34	81.0	42
Above 15000	14	17.5	66	82.5	80
All	105	17.5	495	82.5	600
Chi square = 0.781 ^{ns} df = 3 P = 0.854					

ns non significant at 0.05 level

H₀ : Willingness to pay is not dependent on the income of the respondents

To check whether willingness to pay is influenced by the income of the respondents Chi square test is done. The calculated value of the chi-square is less than the table value the null hypothesis is accepted. The relationship is not significant .There is no increase

in willingness to pay of the people as the income of the respondent increases. The results of the percentage analysis also convey that the willingness to pay does not change considerably as the income of the respondents increase.

Table 4

Association of willingness to pay and Slab level

Consumptions lab (based on quantity in KL)	Not willing to pay		Willing to pay		Total
	Count	Percent	Count	Percent	Count
BPL	14	21.2	52	78.8	66
0-5	2	8.7	21	91.3	23
5-10	54	21.3	200	78.7	254
10-20	31	14.8	179	85.2	210
More than 20	4	8.5	43	91.5	47
All	105	17.5	495	82.5	600
Chi square = 8.0731 ^{ns} df = 4 P = 0.089					

ns non significant at 0.05 level

H₀ : Willingness to pay is not dependent on the consumption slab

To check whether willingness to pay is influenced by the consumption slab to which the respondents belong, Chi square test is done. The calculated value of the chi-square is less than the table

value the null hypothesis is accepted. The relationship is not significant .There is no increase in willingness to pay of the people with changes in the consumption slab to which they belong. The percentage analysis also shows that there are no considerable changes in willingness to pay as the consumption slab of the respondents change.



CONCLUSION

The present study aims at examining the relationship between willingness to pay and factors identified as affecting willingness to pay for urban water. The study conducted using contingent valuation method identified severity of the water availability problem, family size, income status and slab levels to which the consumer belongs as the factors affecting willingness to pay for water. The analysis of the relationship using Chi-Square test reveals that out of the factors identified the WTP of the people increases with the availability problem and it is the most important factor affecting the WTP of the people. There is increase in willingness to pay of the people as the severity of the availability problem increases. All the other factors identified have no influence on the WTP of the people. The water availability problem is very severe in urban settlements in Kollam District in Kerala. The urban water consumers are willing to pay a higher rate for water if they are provided with high quality water on 24x 7 basis. The government can work in this direction by providing high quality water as the people are ready to pay higher rates.

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