ANVESAK
ISSN : 0378 – 4568 UGC Care Group 1 Journal

WATER SAVING BEHAVIOR AMONG THE SELECTED HOUSEHOLD – THEORY OF PLANNED BEHAVIOR MODEL

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ABSTRACT

Freshwater scarcity is a problem for many countries around the world, owing to rising population and climate change-related rainfall variations. Water resources all across the world have been drained as a result of population growth, particularly in developing countries. There was insufficient water flow in India's major rivers. Water scarcity is currently affecting a big portion of our country's population. Water management was critical in this situation to accommodate rising human demand while also protecting our ecosystems. To tackle this challenge and increase the productivity of existing water supply systems, we need an alternative source of water, and regulating water demand will be the most important issue in the future. Water conservation can also be carried out rapidly and without incurring significant infrastructure costs. The current study used the notion of planned behavior to determine the respondents' water-saving habits. The method of factor analysis is used to identify the elements that influence the respondent's water-saving behavior in the research area.
Key Words: Urban Water Demand, Supply, Water Saving Behavior, Theory Of Planned Behavior.

INTRODUCTION

Water is essential for our survival. The rapid development in population and urbanisation in recent decades has resulted in a significant increase in water consumption, which is currently a major concern. When the rapid rise of urbanisation places a strain on water supplies, the supply becomes scarce. The groundwater table was dropping and the quality of the water was deteriorating. Groundwater becomes contaminated with various minerals as we drill deeper for it. Waste and sewage waste damage rivers and groundwater. Water scarcity in our country is also a result of climate change. (Rohilla, 2017).

The configuration of substructures, such as piped water supplies, drainage lines, sewage lines, and sewage treatment plants, is seen in most Indian towns. If the piped water supply is insufficient, private abounded groundwater extraction is used to supplement it, which contributes to pollution of urban aquifers, a decline in groundwater level, and water resource accessibility. The current water crisis has paved the way for overexploitation of the groundwater aquifer, pollution of water bodies, and a laser-like concentration on extraction technologies and infrastructural networks, all of which have contributed to a widening of the water demand-supply imbalance. The problem demonstrates that water conservation and steps to achieve sustainability have not been stated.

NEED FOR THE STUDY

Many major river systems have insufficient water flow, and most of the world is currently experiencing severe water scarcity. In this context, water management is essential for meeting the growing demand for water while simultaneously conserving the environment. To deal with this problem, we'll need alternate water sources as well as increased water supply efficiency for people to manage water resources for future generations. Water supply diversification entails introducing new water supply projects with water-saving technology, which come at a high cost and take a long time to accomplish. Water conservation can be performed in a country with extensive infrastructure and cheap investment costs at the same time.

Water conservation is crucial for urban environmental, economic, and social growth, and it is aided by increased water awareness. The elements that influence people's water-saving behavior may make demand management easier. This theory was used to examine water-saving behaviour using the "Theory of Planned Behavior." Examine the impact of subjective attitude, perceived behavioural

control, and subjective norms on behavioural intention and final behaviour using the theory of planned behaviour.

REVIEW OF LITERATURE

Marcos et, al. (2021) Despite the fact that water conservation through rainwater gathering has been studied, Indonesia's desire remains minor. This research limits rainwater harvesting by citing several reviews from various nations and examining the benefits and drawbacks of these approaches. In addition, this study employs self-evaluation as the data to be analysed using a stretched theory of planned behaviour model in order to comprehend people's behaviour purposes. Rainwater collection has a positive influence on water conservation, according to this study. Meanwhile, the expanded theory of planned behaviour model demonstrates that the attitude variable accounts for 16.4 percent of the intention to employ rainwater harvesting. This study suggested that measures to enhancing rainwater harvesting attitudes be described in this publication.. **Fielding et, al. (2012)** The elements that are targeted by demand management programmes were evaluated as important determinants of household water classification. Data on water usage was gathered from 1008 Australian households. As a result, demographic, psychological, and infrastructure variables all play a role in determining household water consumption. The findings also revealed the significance of given water use as a communal behaviour influenced by home dynamics. These findings, together with evidence that good water-saving habits are linked to water conservation, underline the need of policies that promote long-term cultural changes in people's attitudes toward and use of water. **Mahdavi, T. (2021**) This study looked at how native farmers support various policy solutions for reducing agricultural water use. Structures derived from the notion of planned behaviour were subjected to SEM investigation. Attitudes and perceived behavioural control had a significant and beneficial effect on intention. According to a review of the literature, there are few research on water conservation awareness among diverse consumers in India and other countries, and there are only a few studies on water saving behaviour in Tamil Nadu, particularly in the Coimbatore district. As a result, the current research fills this void.

OBJECTIVES OF THE STUDY

- To study the Socio-Economic background and living conditions of the selected respondents.
- To examine the domestic water supply pattern conservation knowledge of selected respondents.
- To analyze the water-saving behavior among the selected households.

METHODOLOGY

Using the Multistage Simple Random Sampling Method, the current study was conducted in five zones of the Coimbatore Corporation. Wards were chosen based on the biggest number of Households. In the North Zone, ward no. 41 has 13066 homes, in the South Zone, ward no. 86 has 9999 households, in the Central Zone, ward no. 45 has 7799 households, in the East Zone, ward no. 59 has 6999 households, and in the West Zone, ward no. 24 has 5887 households, respectively. The study uses 651 sample respondents, with 317 sample households (up to rs.21,000 per month) chosen from the low-income group, 245 sample households (from rs.21,001 to 1,05,000 per month) chosen from the middle-income group, and 89 sample households (from rs.21,001 to 1,05,000 per month) chosen from the high-income group (above rs.1,05,001 per month). The research took place between 2017 and 2020. The study's data was gathered from both primary and secondary sources. The data on the country, state, and district profiles, corporation details, water supply source, water distribution pattern, population details, ward details, and other data were gathered from various government reports and government organizations. Primary data was acquired from the sample Household respondents using the personal interview method. Interview schedules were utilized to gather information from the sample Household respondents about the project.

THEORETICAL FRAMEWORK

The Theory of Planned Behavior explains how several influences influence our actions. Your targets, according to the theory, are the best predictors of your conduct. Your behaviour is a product of three elements, according to the theory: attitudes, subjective norms, and perceived behavioural control.

What was postulated of human conduct in the Theory of Reasoned Action was used to expand the Theory of Planned Behavior. Icek Ajzen proposed this theory in his 1985 article "From Intentions to Actions: A Theory of Planned Behavior." Both theories argue that knowing a person's behavioural and normative views, as well as the social norms for the culture in which they live, determines a person's behavioural intents and attitudes toward a specific behaviour. The main distinction between the Theory of Planned Action and the Theory of Reasoned Action is that the Theory of Planned Behavior has a better probability of revealing a person's genuine attitudes, which results in the physical behaviour that is being carried out. The addition of perceived behavioural control, which considers whether a person actually believes they have control over the activity they wish to carry out, is the key reason the Theory of Planned Behavior is more accurate.

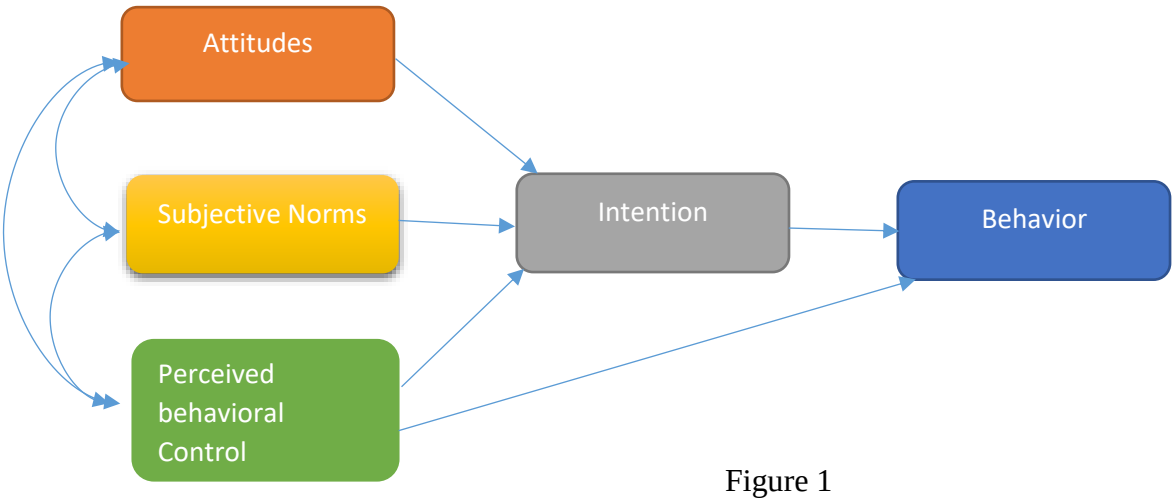

Figure 1

Later, this concept was introduced to the theory, resulting in a transition from the Theory of Reasoned Action to the Theory of Planned Behavior.

Individuals' perceptions on water resource conservation and protection, as well as their views on the current state of water resources and the environment, the worth of water resources, and promotional and educational initiatives related to water resource defense, are all considered in this study. The understanding of an individual's ability to accomplish a given behaviour is referred to as perceived behavioural control. In this study, water-saving behavioural control refers to the sample homes' awareness of their water-saving abilities. Subjective norms refer to the influence of a person's social environment on their behaviour. The subjective norms of water conservation in this paper primarily include residents' perceptions of water conservation in their neighborhoods, society as a whole, the local government, and other relevant organisations.

Using the theory of planned behaviour, this study included a fourth variable, water-saving expectation, to predict behavioural intentions based on the field study. As a result, data on 17 variables related to water-saving attitudes, water-saving expectations, perceived behavioural control, subjective norms, and WSB) were collected using a questionnaire. The general position in terms of the number of people who filled out the survey. One of the indicator factors for water-saving attitudes is water resource cognition.

MAJOR FINDINGS OF THE STUDY

Socio-Economic Background of the selected respondence

Gender, age, community, education, occupation, family type, and number of people in the family are among the socio-demographic factors studied. The female population was dominant among the selected respondents in the low-income (61.8%) and middle-income (57.2%) categories, whereas the male population (59.6%) was found to be high in high-income communities, with the majority of

them falling into the age group of 41 to 60 years of age and married marital status. The number of children in the family of selected respondents revealed that the low-income group (48.6%), middle-income group (57.2%), and high-income communities (59.6%) According to data on the number of family members of elders in the selected household, 86.8% of the low-income group, 78.0 percent of the middle-income group, and 78.0 percent of the high-income group, There were no elders in the family for 78.0 percent of the middle-income group and 82.9 percent of the high-income group. and OBC communities, who have completed at least a basic level of education, worked as coolis, and engaged in some type of employment activity in the private and unorganised sectors, and have a nuclear family system with three or more people in their households.

Living Condition of selected respondents

The bulk of the respondents live in Pucca houses, while a tiny minority reside in other dwellings such as Kutcha houses, according to the living conditions of the sample. In terms of home ownership, the majority of low- and middle-income respondents lived in leased housing, whereas 98 percent of high-income respondents lived in their own home. Those who lived in rented housing spent between Rs.5000 to Rs.10,000 in housing rent.

The housing patterns of the respondents revealed that 75.08 percent of low-income respondents had two rooms, 61.63 percent of middle-income respondents had three rooms, and 71.91 percent of high-income respondents lived in houses with five or more rooms. In the low-income category, 97.16 percent of respondents had a single bathroom, whereas in the middle-income category, 49.80 percent had a single bathroom. Whereas, for high-income category respondent’s 71.91 percent had more than 4 bathrooms.

Water supply pattern of the selected respondents

The distance from the respondent's premises for getting water for the need of the respondent's details revealed that 45.1 percent of low-income respondents travelled 2-3 metres to get water, 51.4 percent of middle-income respondents had water resources within 1-2 metres of their premises, and 42.7 percent of high-income respondents had water resources within 2-3 metres of their premises. The respondents' sources of water availability revealed that 48.6% of the low-income category utilised HSC service, a common street pipeline for their water consumption, 62.4 percent of the middle-income category used HSC connection, and 87.6% of the high-income category used HSC connection.

94.6 percent of low-income respondents said they had one pipeline connection, 95.9% of middle-income respondents said they have one pipeline connection, and 53.9 percent of high-income groups said they have two pipelines. According to information on the frequency of water supply, 77.3 percent of low-income respondents received water once every 7-10 days, 60.4 percent of middle-income respondents received water once every 7-10 days, and 55.1 percent of high-income respondents received water once every 4-6 days. All respondents paid between 0 and 100Rs. tariff for their water consumption and received moderate water supply. Low-income category 88.3 percent saved water in a container, middle-income category 60.4 percent stored water in the sump, and high-income group cent percent stored water in the sump.

Knowledge if the respondents on Water Conservation

The sample people were asked about the importance of water conservation in the district. Around 75% of respondents said water conservation is a very significant issue in the area, 10% said it is an important issue, 3% said it is not a very important issue, and 2% said it is not at all. While 10% of the respondents stated that they have no opinion on water conservation or its importance in the district. Despite the fact that a significant majority of the population believes that water conservation is necessary in the district, there is still a group of people who have no opinion on the subject or do not believe that water conservation is a pressing issue in the district.

Factors influencing water-saving behavior in selected respondents

The current study employed factor analysis to investigate the underlying dimension among the numerous indicators of factors impacting respondents' water-saving behaviour for a sample of respondents. The frequency of choosing water-saving behaviour was given a maximum score of 4 if it happened frequently and 0 if it didn't happen at all. Cranach's alpha was calculated to determine the consistency of numerous indicators and was found to be 0.901, which was greater than 0.7, indicating

that the indications were reliable. KMO and Bartlett's test measures were computed to determine the suitability of using factor analysis, and the results are provided in the table ( ) Factors influencing respondents' decisions on water conservation behaviour 0. The respondents indicated these factors, which were then used in factor analysis. The end effect may be seen in the image below.

Cranach's Alpha Value: .901

TABLE (1) KMO AND BARTLETT'S TEST MEASURES

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.623
Bartlett's Test of Sphericity	**Approx. Chi-Square**	26088.579
	Df	136
	Sig.	.000

The KMO statistic was 0.623, indicating that the sampling was insufficient. A score around one implies that the correlation patterns are relatively compact. At the 1% level, Bartlett's test of sphericity was also found to be significant, indicating the presence of a link between the variables for factor analysis. The Eigenvalues, relative explanatory powers, and factor loadings for nine components discovered in the data set are listed in Table (2).

TABLE (2) FACTOR LOADINGS FOR WATER-SAVING BEHAVIOR FOR THE SELECTED RESPONDENCE

S.No	Factors	Inhibitors	Components			
			1	2	3	4
1	Water-Saving Attitudes	Environmental Awareness		.926		
2		Scarcity Awareness	.842			
3		Water resource Value	.910			
4		Effect of cognition	.853			
5		Responsibility cognition				.944
6		Individual water-saving attitudes		.939		
7		Attitude towards participating in water-saving activities	.823			
8	Water-Saving Expectations	Man-days	.913			
9		Water shortage	.870			
10		Cost expectations	.893			
11		Water fee expectations	.898			
12	Perceived behavioral control	Family water-saving perceptions		.968		
13		Family water saving capacity	.853			
14	Subjective norms	Social water-saving expectations	.926			
15		Public water-saving expectations			.943	
16		Social opinion expectations	.882			
17	Water-saving practices	Investment in water-saving technologies and tools	.820			
		Eigenvalues	10.895	1.789	1.182	1.066
		Percentage of variance	64.091	10.525	6.952	6.269
		Cumulative percentage	64.091	74.616	81.568	87.836

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization,
Rotation converged in 4 iterations.

Source: Estimation based on Field Survey

In order to be included in the analysis, the Eigenvalue has to be bigger than zero. The Eigenvalues for the first three components alone were more than one, indicating that these factors were appropriate for inclusion in the analysis on their own. Together, these variables accounted for 64% of the variance. Factor 1 has significant loadings on 12 dimensions in the current study for the sample respondents, including "Scarcity awareness," "Water resources value," "Effect of cognition," "Attitude toward participating in water-saving activities," "Saving time and man-days," "Water shortage," "Cost expectations," "Water fee expectations," "Family water-saving capacity," "Social water-saving expectations," "Social opinion expectations," "Investment in water-saving technologies and aqueducts Factor 2 has significant loadings on "Environmental Awareness," "Individual water-saving attitudes," and "Family water-saving perceptions," whereas Factor 3 has strong loadings on "Public water-saving expectations," and Factor 4 has significant loadings on "Responsibility cognition."

As a result of the factor analysis, factor 1 has significant loadings in explaining water-saving behaviour among the respondents. High-income respondents are willing to put a large amount of effort into earning money in exchange for their water-saving option. Low and middle-income people, on the other hand, are hesitant to accept such technologies because they cannot afford them. They do, however, want to conserve water for their own consumption. As a result, the respondents' water-saving behaviour is influenced by their income.

Conclusion

Urbanization has a significant impact on water resources all around the world. In the studied area, there is a significant mismatch between water demand and availability. The respondents' LPCD is influenced by their socioeconomic characteristics. There are numerous issues that respondents face in regards to urban water supply, the most significant of which is the unpredictability of urban water supply and the quality of drinking water, both of which are causing respondents to seek alternative water sources, and their decision is influenced by their socioeconomic status. Water conservation is urgently needed, however only a small percentage of respondents in the research area were willing to do so. The theory of planned behaviour was utilized to determine water-saving behaviour among the selected respondents, and the results revealed that high-income persons were found to spend money on water through government schemes and government intervention because they are constrained by their income condition.

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Turkish Online Journal of Qualitative Inquiry (TOJQI)
Volume 12, Issue 7 July 2021: 12924 – 12931

Research Article

A Study On Willingness To Pay For Improved Water Supply In Selected Households Of Coimbaore Corporation

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ABSTRACT

Water scarcity is a major issue in the developing countries. As a result of population expansion, water distribution to homes is becoming increasingly difficult. As the quality of water delivery infrastructure deteriorates, clean water is mingling with sewage and becoming a cause of waterborne illnesses. In the city of Coimbatore, the Contingent Valuation Method was used to determine the willingness to pay (WTP) for better water delivery. This study looks into the relationship between WTP and socioeconomic factors as income, housing, and employment. In addition, 100 people were randomly selected and handed questionnaires. In statistical analysis, multiple regression is performed to find the variables that determine WTP for enhanced water supply quality. According to the data, the income variable had the biggest impact on the WTP for increased water supply. The amount of water supplied to the general populace was often inadequate. As a result, it's apparent that urban households regard water as a valuable commodity, as evidenced by their willingness to pay for it. Those with a higher income were more willing to pay for higher water quality and more consistent supply. This finding sustain the environmental economic theory which assumes that the demand for an improved environmental quality increases with income.

KEY WORDS: Contingent Valuation Method (CVM); Willingness to Pay (WTP); Regression Model; Improved Water Supply

INTRODUCTION

Toxic-free drinking water is crucial for human health and survival. Water is utilised in a variety of ways in the home, including drinking, cooking, cleaning, gardening, and laundry. Any change in water supply has an immediate effect on human health and ability to perform daily duties. As a result, the water should be safe to drink and the household supply should be reliable. The bulk of the world's population is currently affected by overpopulation, which has had a significant influence on water quality and

availability. Various estimates put the number of people without access to safe drinking water at around 700 million, with 2.5 billion people suffering the repercussions.

Poor sanitation and limited water supply are to blame for the majority of waterborne infections in Asia, South Africa, and the Central World. According to a new WHO/UNICEF poll, three out of ten people (2.1 billion) lack access to safe, readily available water at home, while six out of ten people (4.5 billion) lack basic sanitation (WHO, 2017). The majority of water for residences comes from public wells, bottled water purchases, private wells, and vendor purchases. These sources not only waste time and money, but they also pose a risk of spreading waterborne infections. Authorities are working to meet current population demands while also increasing economic growth. (Akhtar et al, 2018)

STATEMENT OF THE PROBLEM

Population growth is the increase in the number of individuals in a population. Since the end of the Cold War, the population of many countries throughout the world has grown, particularly in Sub-Saharan Africa, the Middle East, South Asia, and Southeast Asia. In some of the world's poorest countries, rising population numbers are predicted to increase demand for natural resources, food, fuel, jobs, housing, and other services. The paucity of water is compounded by population growth. “Increasing demand and competition for water for domestic, industrial, and municipal uses is a result of population growth. Water is also needed for agriculture and industrial use, and for the evacuation of waste materials”.

In locations with limited water supplies, high populations, and rapid population growth, water scarcity and stress are increasingly likely. People relocate to water-stressed areas and cities as population development limits the amount of water available per person (Population Action International, 2012). Due to the inadequate water supply, the current water supply is insufficient to meet people's daily needs. As a result, wealthy countries' governments will be pushed to update their water delivery systems.. The study's precise goals were established in this setting.

- To differentiate the sample respondents based on their income groups
- To investigate the socioeconomic features of a sample of Coimbatore Corporation's urban families;
- To determine the willingness of Coimbatore Corporation residents to pay for improved water supply.

METHODOLOGY

The current research is focused on the spatial distribution of drinking water in Coimbatore. During the months of February and April 2019, a multi-stage, stratified, simple random sampling procedure was used to pick 100 sample respondents for the study. The statistical results for the study were calculated using SPSS version 19.

Result of the study

The following section discuss the findings of the study. At first the researcher has tried to find out the income groups of the sample respondents which is depicted in table (1).

TABLE-1
DETAILS OF SELECTION OF SAMPLE RESPONDENTS OF THE DOMESTIC HOUSEHOLDS

Level of Income	East Zone	West Zone	North Zone	South Zone	Central Zone	Total
Lower Income	12	8	7	5	16	48
	(60)	(40)	(35)	(25)	(80)	(48)
Middle Income	6	9	12	13	4	44
	(30)	(45)	(60)	(65)	(20)	(44)
Higher Income	2	3	1	2	0	8
	(10)	(15)	(5)	(10)	(0)	(8)
Total	**20**	**20**	**20**	**20**	**20**	**100**
	(100)	**(100)**	**(100)**	**(100)**	**(100)**	**(100)**

Source: Field Survey, (2019).

The sample size was chosen based on income levels such as "Lower Income, Middle Income, and Higher Income", as shown in Table 1. In each zone, a home was chosen at random. In the current study, 20 sample households were chosen in each zone, for a total sample size of 100.

DEMOGRAPHIC AND SOCIO- ECONOMIC PROFILE

The demographic and socio-economic profile of the respondents is been given in table (2)

TABLE-2
DETAILS OF SOCIO- ECONOMIC CHARACTERISTICS OF SELECTED HOUSEHOLDS

Characteristics	Particulars	Total	Percentage
Age Group	0-20	13	13
	21-40	39	39
	41-60	34	34
	Above 60	14	14
	Total	**100**	**100**
Education Level	Up to Primary	12	12
	High School	34	34
	HSC	11	11
	UG	35	35
	PG and above	8	8
	Total	**100**	**100**

Type of House	Nuclear	65	65
	Joint	35	35
	Total	**100**	**100**
Level of Income	Upto 50,000	53	53
	50,000 - 1,00,000	26	26
	1,00,000 - 2,00,000	16	16
	Above 2,00,000	5	5
	Total	**100**	**100**

Source: Field Survey, (2019)

Between the ages of 1 and 20, 39% of the homes studied are between the ages of 21 and 60, and 13percent are between the ages of 1 and 20. Table (2) reveals that the majority of the people in the sampled families are between the ages of 21 and 40, indicating that they are in the workforce. It was widely assumed that the younger generation is more sensitive to water scarcity, which could affect Per Capita Water Demand. 65 of the 100 households were made up of nuclear families, whereas only 35 were made up of joint families.

Nuclear families made up around a quarter of the households in all zones. The amount of water required per household increases as the number of persons per dwelling increases. The education level of the households was documented in all of the locations. The majority of the households have a High School or UG education level, as seen in the table. Others accounted for less than 20% of the total. Low educational attainment translates to a low standard of living, and hence to a lack of awareness of groundwater depletion and conservation initiatives.

In all zones, roughly 12% of households were illiterate, and the highest degree of education was Undergraduate, which accounted for 35% of responses. Education levels influence both the increase in water use and the awareness of water conservation technology, programmes, and legislation. However, it was discovered during the survey that people from all groups showed minimal concern for water conservation..

It is clear that roughly 5% of the population earns more than 2,00,000 pm, while approximately 16% earns between 1,00,000 and 2,00,000 pm; hence, Coimbatore Corporation is home to a diverse population, with some earning less each year and others enjoying a high level of life. A little more than 26% of respondents had incomes ranging from Rs.50,000 to Rs.1,000,000, with the remaining 53% falling into the low-income category.

WATER CONSUMPTION PATTERNS

Domestic water consumption pattern of the selected respondents is been given in the table (3).

TABLE-3

WARD WISE DETAILS OF WATER CONSUMPTION IN SELECTED HOUSE HOLDS

Zone	Drinking	Cooking	Bathing	Washing	Cleaning	Gardening	Vehicle

					House		cleaning
East	**325**	**980**	**1017**	**593**	**139**	**48**	**200**
Mean	16.25	49	50.55	29.65	6.95	2.45	10.05
SD	7.46	8.26	7.05	7.58	2.29	4.48	4.23
West	**349**	**890**	**1688**	**535**	**150.5**	**35**	**185**
Mean	17.45	44.5	67.05	26.75	7.52	1.75	9.25
SD	6.98	7.09	11.06	6.24	3.5	3.04	3.73
North	**294.5**	**784**	**1353**	**497.5**	**189**	**41**	**158**
Mean	14.72	39.2	67.65	24.87	9.45	2.05	7.9
SD	5.24	9.3	11.16	5.56	3.86	3.15	4.01
South	**316.5**	**982**	**1456**	**458**	**178**	**31**	**134**
Mean	15.82	49.1	72.8	22.9	8.9	1.55	6.7
SD	2.98	6.73	11.03	3.66	3.13	3.1	2.2
Central	**351.5**	**827**	**1301**	**435**	**168**	**21**	**114**
Mean	17.57	41.35	65.05	21.75	8.4	1.05	5.7
SD	2.3	5.06	8.81	4.43	2.27	1.76	1.45

Source: Field Survey, (2019). Liter Per Capita per Day (LPCD).

The amount of water used in different parts of the city differed significantly. The table (3) shows the total water usage pattern throughout all zones of the city in order to determine the Liter Per Capita per Day (LPCD). The corporation's west zone consumed the most water out of the five zones, with an LPCD of 192 litres. The middle zone had the lowest water consumption, with an LPCD of 161 litres. Summer water use was higher than winter water consumption, possibly due to the increased volume of garments to be washed, utensils to be cleaned, and bathing intensity was also higher in the summer than in the winter.

WILLINGNESS TO PAY FOR IMPROVED WATER SUPPLY

Willingness to pay is a word used in economics to describe how much a client is willing to pay for water. It's a concept that's been tested in a number of research initiatives around the world, and it's shown that people in destitute countries are happy to pay for water. The cost of establishing a city's public water service has been proved to be equal to the earnings from water purchases.

TABLE (4)

WILLINGNESS TO PAY FOR IMPROVED WATER SUPPLY AMONG THE SELECTED HOUSEHOLDS

S.no	Item	Low income in (%)	Middle income in (%)	High Income in (%)
1	Need water and willing to pay	45	50	78
2	No need of extra water	20	18	20
3	Need water but unable to pay	35	32	02

Source: compiled from field survey, (2019).

The above table (4) shows the willingness to pay for improved water supply among the selected households. It can be identified from the study among the selected groups for low income group 45 percent have stated that they need water and they are willing to pay for improved water supply followed

by 35 percent who stated that they need water but they are unable to pay for it and 20 percent said that they no need extra water for their consumption. In case of middle income group 50 percent said that they need water and they are willing to pay for improved water supply, 32 percent said that they need water but unable to pay for it and 18 percent said that they no need extra water. Whereas, for high income group 80 percent said that they need water and they are willing to pay for it and 20 percent said that they no need of extra water and only 02 percent said that they need water but they are unable to pay for improved water supply.

In the current study multiple regression analysis was applied to identify the relationship between the variables selected for the study and willingness to pay for improved urban water sources by the respondents. The result can be seen in the table below. For the study variables like LPCD, the total distance for water collection, sources of water, time spent for water collection and the family size is considered to be the key determinants of willingness to pay for improved water supply among the selected respondent group.

MULTIPLE REGRESSION FOR WILLINGNESS TO PAY FOR IMPROVED WATER SUPPLY AMONG THE SELECTED HOUSEHOLDS

Table No 5: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
.840	.706	.703	.594

Table No: 6 ANOVA

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	544.678	5	108.936	309.080	**.000**
Residual	227.331	645	.352		
Total	772.009	650			

Table No: 7 Coefficients

Variables	Standardized Coefficients	T	Sig.
LPCD	.229	4.525	.000*
Total Distance for Water Collection	.299	5.675	.000*
Sources of Water	-.035	-1.636	.102^{NS}
Time Spent for Water Collection	.138	1.733	.084^{NS}
Family Size	.210	2.296	.022**
Income	.312	4.232	.000**

Dependent Variable: Willingness to pay
**** = Significant at 1% level, ** = Significant at 5% level, ^{NS} = Not Significant***
Source: compiled from field survey, (2019).

Regression analysis is used to identify the variables influencing Willingness to pay for improved urban water supply. At the household level five variables have been identified, which include distance for water collection, Family size, LPCD, sources of water, time spend for water collection etc.. Correlation matrices were applied to understand and shortlist the variables, which influence the willingness to pay for improved water supply at the household level. From the above table it is identified that variables such as LPCD, Total distance for water collection, income and family size is statistically significant at 1 percent level which indicates that these variables were found out to be influencing the respondents in their willingness to pay for improved urban water sources for their water necessity. All the above variables were found out to be influencing the amount spent for their secondary water source which indicated that increase in family size, income and total distance for water collection and LPCD increase the respondent's willingness to pay for improved urban water sources. The `R` squared value gives the goodness of fit of the model and the value being 0.706 which indicated that 71 percent of the variation was influenced by the combined effect of all the independent variables. Multiple correlation coefficient (0.840) between willingness to pay and the set of independent variables shows good amount of correlation and is found to be significant at 1 percent level ($p<0.01$) as tested by the 'F' ratio value being 309.080

Thus, it is evident in the current study the respondent's willingness to pay for improved urban water sources will be based on their size of family, income and the distance for water collection and LPCD.

CONCLUSION

Although India does not have a water shortage, certain areas of the country experience water stress from time to time as a result of chronic negligence and lack of oversight of water resource development projects, as well as economic reforms such as globalisation, liberalisation, and privatisation. The yearly rainfall in India is unevenly distributed across the country and at different times of the year. People should continue to concentrate on their water saving habits in order to increase water supply because it is a cost rather than a cost. In the future, humans must control and limit their use, as well as avoid wasting and polluting water with industrial and domestic waste. With water getting polluted people willing to pay for secondary water source is highly influenced by their income where low income people does not prefer paid water and high income group wishes to pay extra for their water needs. From the study it is evident that water is influenced by income group.

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