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A Tool to Measure the Knowledge of Water Resource Management at Domestic Level

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Abstract:
The growth of industries in the Indian context is highly phenomenal in different segments; one among them is the field of water management. According to Central Pollution Control Board, 90% of the water supplied in India to the town and cities are polluted, out of which only 1.6% gets treated. Therefore, water quality management is fundamental for the human welfare (Gupta1991). Globally water management has become a vital problem due to the depletion in the water sources, increase in population, pollution and global warming. The demand for water and water treatment is a never ending phenomenon in human life owing to the growth in population, technological and industrial development, depletion in natural water resources etc. In this context knowledge about water, understanding the importance of water treatment and developing an attitude towards water treatment are of utmost importance. In this direction the industrial growth and development towards water treatment is the present scenario of industrial sector. We observe 'world water day March 22nd in order to remind the people the importance of water in human life. But still people are not aware of and they lack sufficient knowledge about water. The general public are to be educated in the directions of significance of water, knowledge about water treatment and various technologies behind water treatment particularly technology behind water treatment and its worthiness.
This necessitated the researcher to develop a research tool to measure the knowledge of water resource management at domestic level. Initially the tool was constructed with 33 statements and administered to 300 domestic people. In order to standardize the tool the researcher applied Kolmogorov-Smirnov test, Cronbach Alpha test and 't' test. After the item analysis 25 statements were considered for the final Tool.

Key words: *water management, Kolmogorov-Smirnov test, Cronbach Alpha test and 't' test*

1. Introduction

Although most countries give first priority to satisfaction of basic human needs for water, one fifth of the world's population is without access to safe drinking water and half of the population is without access to adequate sanitation. These service deficiencies primarily affect the poorest segments of the population in developing countries. In these countries, water supply and sanitation for urban and rural areas represents one of the most serious challenges in the years ahead. Water is increasingly seen as a key constraint on food production, on a par with, if not more crucial than, land scarcity. All human activities need water and produce waste, but some of them need more water or produce more waste per job than others. This consideration has to be taken into account in economic development strategies, especially in regions with scarce water resources. Water has a value as an economic good. Many past failures in water resources management are attributable to the fact that water has been – and is still – viewed as a free good, or at least that the full value of water has not been recognized. . In order to extract the maximum benefits from the available water resources there is a need to change perceptions about water values and to recognize the opportunity costs involved in current allocate patterns.

2. Management of Water Resources

In evaluating the range of available management tools, the role of and scope for technological advances should still be carefully considered as a factor that may help achieve sustainable water resources management. There is scope for substantial progress both in

technology refinement within the water sector itself and in those other productive sectors which critically affect the supply of and demand for water services. Traditional technologies like rainwater harvesting can also play a key role.

3. Background

Measuring the knowledge about water resources management at domestic level could help to improve the management of water resources. It is very much essential to effect any change through management.

4. Objective

The purpose of this study was to develop a research tool to measure water resource management at domestic level**.** As such it seems that to the best of the knowledge of the researcher that there is no research tool to measure water resource management at domestic level and that necessitated the researcher to construct a tool.

5. Methodology

In order to construct the tool to measure the knowledge of water resource management at domestic level at the initial stage, the researcher referred to the books, journals and discussed with experts in water management as well as in water treatment technologies and in this background as many as 33 statements were developed. The response of the tool was with3point scale with the responses with the weight age of 2, 1 and 0 for Always, Sometimes and Never.

The tool was administered on 200 domestic people who were selected at random. All the 300 tools, collected from the domestic people were scored carefully. In order to select the reliable items the researcher has used four statistical measures namely 1. 't' value, 2.Kolmogorov-Smirnov test, and 3.Gronbach's Alpha test. Using the Kolmogrov Smirnov test the equality of mean scores was tested, the mean scores that differed significantly were retained (Guilford, J.P. 1965). The significant level is 0.0 level. The Kolmogorov Smirnov test value for those items significant at 0.0 level were considered for the final tool and the values are given in the Table 1**.**

The Cronbach's Alpha value was calculated for the two set of scores for each statement. The item with the Cronbach's Alpha value greater than 0.5 were retained and less than 0.5 were not considered. Further, to establish the significance of the test items, the 't'-value were calculated. The 't'-value for the statements greater than the table value at 0.05 level has been taken into consideration.

Based on the statistical treatments namely Cronbach's Alpha test value ranging from 0.752 to 0.961, Kolmogorov Smirnov test value ranging from 4.09 to 12.11 and 't'-value ranging from 1.871 to 4.025 the statements of the final tool was established. (Table 1) Out of the 33 statements after the analysis 8 statements got eliminated and 25 statements were found to be statistically valid. The final version of the tool entitled "knowledge of water resource management at domestic level consists of 25 statements. The tool consists of three point scale with a maximum score of 50 and a minimum of 0.

6. Validity

In the beginning of the process of tool construction the selected statements were given to experts on water resource management and water treatment management as well as to some domestic people who are the consumer of water at different forms for their approval. They judged the appropriateness of the statements. The statements were modified with their suggestions prior to administration and thereby the content validity was ensured.

7. Reliability

The Reliability coefficient of the tool was ascertained by using the test re test method and which was found to be 0.82.

8. Conclusion

This research tool focuses on gathering information about the knowledge of water resource management at domestic level. Views and perceptions of the domestic people, who are the major consumers of water, play a vital role in effecting a change or otherwise it becomes an indicator for effecting a change. This research tool will be of immense use for the people who are concern with water management, water treatment and administrative bodies to manage the water resources effectively. In turn it will help in measuring and developing water resource management methods.

This holds well in the water management where there is lot of technological change. Those changes have to be effected for which measuring the knowledge of water resource management is essential to effect any change particularly to make people to practice new water management strategies

Item No.	Cronbach's Alpha	't' value	Kolmogorov-Smirnov test
1	0.847	4.018	4.828
2	0.759	1.871	1.882
3	0.868	3.055	3.113
4	0.823	2.986	2.393
5	0.818	2.009	3.258
6	0.839	2.008	1.782
7	0.797	1.871	3.227
8	0.762	1.872	1.158
9	0.885	2.323	1.927
10	0.808	3.800	3.108
11	0.831	3.800	4.532
12	0.811	1.871	2.112
13	0.938	3.713	2.578
14	0.756	1.890	1.161
15	0.803	4.025	3.627
16	0.789	3.761	2.142
17	0.871	3.342	3.338
18	0.815	3.055	2.922
19	0.994	2.702	3.656
20	0.959	3.076	3.127
21	0.803	2.646	2.578
22	0.939	4.000	3.161
23	0.871	2.564	2.627
24	0.865	2.874	2.142
25	0.994	3.061	3.338

Table 1: Knowledge of Water Resource Management at Domestic Level - Scale (Values of the Statements Selected)

9. References

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