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Research Article

ANALYZING EXAMINATION OF CONTRIBUTING COST OF ONE METER CUBE IN AZARBAYEJAN GHARBI RURAL AND DRINKING WATER

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ABSTRACT
Through economic point of view, companies in charge of providing water can be regarded as agencies that by putting some efforts (investment, human forces…) will provide water (as a product). The final goal of this paper is an analytic examination of the level price of contributing one meter cube of water for Azarbayejan Gharbi rural water and sewage company that as an important way for controlling and evaluation and making decisions in an environment with an impossibility of changing the selling prices and also issues due to being governmental and requiring high investments in order to make changes in the selling volume, seems to be necessary if the operational goals such as continuing the company's activities and getting rid of any more loss are to be met. Thus the research's hypothesis is based on "the level price of contributing one meter cube of the water sold for peripheral affairs Azarbayejan Gharbi rural water and Sewage Company is different." Therefore it is an applied research for which the data has been collected via the financial system, financial forms, and auditing reports gathered during the research period. And finally in order to analyze the data, different types of tests have been used such as descriptive indexes for the descriptive statistical part and statistical tests for perceptive statistic part including analyzing the hypothesizes' tests by statistical parametric method "analyzing resolved variance" or non-parametrical test "kruskal-wallis", depending on the type of data distribution (normal or abnormal), and to do so software such as Spssi and Excel have been used. The result of the research showed that the level price of one meter cube of contributed water for different affairs (for the cities) all over the Azarbayejan Gharbi are not very different thus the main hypothesis of this research has rejected. However the component of level price that is divided into seven alternative hypothesis showed some distinguished results: (1- the cost of revenue operation contractors' wage, 2- the cost of repairing and reservation, 3- the cost of consuming materials, 4- and the rest of the costs) for the price of one meter cube of water for different affairs does not have statistical differences, so the peripheral hypothesis for these four entities was rejected. On the other hand (1- the cost of depreciation, 2- the cost of wages, 3- the cost of electricity needed for pumping the water) for the level price of one meter cube of water for various affairs in a meaningful stage is 0/05 statistical difference and the peripheral hypothesis of these types was accepted.

Keywords: *1- Alternative Affairs, 2- the Level Price of Contribution, 3- The Process of Providing Water*

INTRODUCTION
As the population growth goes forward daily, apprehending the limitedness of natural resources and the increasing cost which is the result of increased requirements and rules i.e. one of the most effective issues in the water economy, is to fix the true cost of the water supply. Since the cost of the water and sewage depends on natural and geographical factors thus it is not possible to prescribe any kind of well-defined cost as an acceptable result over the state (like electricity). Even if it is well-defined, however in many cities each region will have a cost that is different from the cost of water supply in another region of the same city (Mo'addab, 1988). Nowadays specifying a level cost of goods and services beyond its traditional concept which means identifying and calculating production costs, has become a managing control for skilled efficient managers in the field of industry and business. The level price system is the starting point of identifying the actual cost centers, and the potential to amend the financial and economic managing of the activities. According to the role that information has, on the other hand, as one of the managing controls for decision making and codified planning, there must be a kind of comprehensive

notification system to define the type and combination of the prices. The establishment of the comprehensive and consistent level price can be an answer to this requirement (Radmehr, 2012).

Research Problem

The final goal of this paper is an analyzing revision of the level price of one meter cube of contributed water for the rural water and Sewage Company of Azarbayejan Gharbi that as the most important controlling and evaluation and decision making means in an environment with no possibility for changing the selling price and issues due to the company's governmental managing and also the high costs of changing the selling volume; is important in order to achieve the operational goals. The importance of this issue is reducing due to the condition of the governmental aids for denationalizing and relying on controlling the subsidies. In such a condition the company needs to move from prejudicial situation towards profit making situation. As a result we can say that the profit of an economic agency is equal to the incomes minus its expenses and when the income of a company like the rural water and Sewage Company as mentioned above would not be changeable easily thus by analyzing the expenses a way for reducing the costs and finally enhancing the income must be sought.

The Importance and Necessity of the Research

It seems useless to analyze the level price in water and Sewage Companies at first, since these companies are exclusive. Although the first aim of these companies is not the profit, however we know that in order to continue their activities there must be a balance amongst the incomes and the expenses. If the expenses are more than the incomes then the government should help them or the company should receive a loan. And more parlous than that is to bear the expenses by cutting the extra expenses (i.e. transferring the expenses to a future opportunity and in other words receiving a loan from the future) (Radmehr, 2012). Issues such as the 44^{th} principal of the constitution and transferring the state companies to denationalized sections and also synthesizing the urban and rural water and Sewage Companies require more researches on level price for these companies.

The importance of this research can be summoned up as follows:

- ✓ Clarification (a part of the 5th clause of economic, social and cultural development rule of the Islamic Republic of Iran).
- ✓ Defining the actual water costs in order to amend the tariff of overusing consumers (the same law)
- ✓ Defining the proper basic of tariff system and valuation.
- ✓ The possibility of discussing over receiving the governmental aids for loss.
- ✓ Exploitation of strategic decision making and managements' judgments.
- ✓ Identifying any kind of lack of adequacy and wastage (water wasting) and identifying the costs without any surplus value and committing the required enterprise to improve it.
- ✓ Providing the necessary information to evaluate the operation and examining the responsibility of each operational section of the company.
- ✓ Appointing suitable methods and standards to estimate (budgeting) the level price.

The Research Literature

Industrial Accounting System

Industrial accountancy provides the required information for financial accounting and management accountancy. In order to produce the profit and loss form, the information about the cost of the produced product is required. This part will be calculated by industrial accountancy (Akbariye, 1990). The industrial accountancy that is a part of information management system of each organization will measure the financial and economic events and will give this information to the management thus it provides the major part of the information for the management. So industrial accountancy is considered as the main path of financial and quantity information transferring (Aliwar, 2000).

Not only is the final product of industrial accountancy important for consumers inside the organization but also for consumers out of the organization. And vital reports such as consumed material report, the level price of the produced product, wastage reports, purchased material report, selling report, etc. will be provided. Thus it will be regarded by legal and natural person such as the government, banks, investors, etc. As a result these reports must be written based on accounting standards and accepted principles so

that they could be comparable and reliable. Although in technical industrial accountancy price classifications are optional and accounting scholars would classify the prices individually (Hassas, 1989) accountants, however, often follow one of these classifications which is accepted by standard accountancy formulators.

In fact industrial accountancy contains a net of concept, methods and techniques for identifying, measuring, classifying, allocation, accumulating and reporting the prices and comparing them with standards and budgets. The mechanism, by which industrial accountancy information is identified, processed, and reports back is called the industrial accountancy system or price finding system (Radmehr, 2012).

At the same time the industrial accountancy system as an important part of the total accountancy information system of each organization has to collect related information and costs and the accomplished results of this system should be used in financial accounting and managing accountancy.

The Level Price System of Water in Water and Sewage Companies

In water and sewage industry, the water's level price is the total costs from the extraction point to the consumers' right.

The constituent elements of water level price include direct materials (disinfection materials, purchasing the consuming utilities for the installation), direct wage and tax prices.

According to special activities in water and sewage industry, the level price features are as follows.

1. In the process of diligent production there is no term as commencing and finishing the production and the producing goods or the produced ones are not separable in this process.
2. Throughout the operation process the production steps are totally local and depend on natural, topographical factors, natural deficiencies of the earth's surface, the quality of the water on the surface and undergrounds, the level of environmental pollution during the process and the amount of investment.
3. Diligence of the process with the reduction of consuming or demanding or the essentials cannot be decreased in correspondence with expenses or the cost of direct working force in particular or based on accountancy terms decreasing the changing prices. In fact all of the prices are fixed and they will be paid for the system's protection costs.
4. Contributing stage, which is a part of the production process and happens before selling and identifying the income. Its costs are a part of the total price.
5. The selling price is a standing price independent of the selling current.
6. The marketing prices (demanding management) differ from the selling income.
7. The repairing and keeping prices are stable and probably will increase by decreasing the selling.
8. The direct wage costs or traditionally is not a part of the process and what is reported as the direct cost is the fixed cost because the company is responsible to pay it and in contrast with production industry, the cost of the initial vital materials and energy is a minor part of the level price of the product (Khashayi and Davoudabadi, 2008).

The Calculation Model of Water's Level Price

Based on the classification of price factors, the calculation model of level price is as follows:

Formula (1) $Cw = [\Sigma Cp + \Sigma Cn]/ Vs$ $(p=1,2,3,4,5,6)$ &$(n=7,8,9,10)$

In which:

Cw: is the level price of one meter cube of drinking water in the year of being studied.

Cp: the price of production process in that year (by Rials)

Cn: the price of production not in process in that year (by Rials)

Vs: the amount of provided water in that year after the waste is write-off (by meter cube)

i: factors in the process of production

j: factors not in the process of production

a: the production processing factors: $\sum Cp = C1 + C2 + C3 + C4 + C5 + C6$

C1: the price of supplying water: includes the paid cost for water-rate, the cost of stewardship, and buying water from dams or wells, or supplying water from desalination systems, wells under private properties, rivers, subterranean canals, and similar sources.

C2: the cost of transferring the water: includes the cost of water transferring lines from the source of water to the distribution zones whether the cost of the pipes, pools of stopcock, air conditioning pools and evacuating the sediment and lateral installations of transferring line except the costs related to pumping stations.
C3: the cost of saving water: includes the costs of the tanks whether terrestrial, pneumatic, concrete, steel, and similar materials, or if the tank is used for saving or is a tank installed in the pumping station.
C4: the cost of pumping water: includes the costs related to the pumping stations.
C5: the cost of liquidation: includes the costs related to water refineries (without including the cost of energy and consumed materials).
C6: the cost of water contribution: includes the costs of contribution net, the existing pools in the net, faucets and lateral installations (except the costs of pumping stations in the contribution net) the costumers' services and internet accidents.
b: the stochastic factors of the water level price: Σ C7 + C8 + C9 + C10
C7: the costs of consumed materials: included costs that are paid during the financial period for providing required materials for water supply.
C8: the financial costs: includes the paid prices during the financial period for paying the lateral loans such as bank loans, or loans received from investment property possessing credits (the subject of 32, 34 articles of planning and budgeting laws of Iran). It is a function of the amount of received aids from public resources.
C10: the costs of supervising and management: includes costs that are paid for supervising and managing the production process from production, revenue operation (steering, repairing and reserving) (Khashayi and Davoudabadi, 1999).

Review

Review of Researches Done in Iran

1) In (2012), "analytic examination of the level price of water in The Water and Sewage Company" written by Mr. Sa'di Radmehr. A summary of his research is that the level price of water in peripheral affairs of the urban Water and Sewage Company of Azarbayejan Gharbi has not a major difference.
2) In (2009), a research under the title of " examining the level price of one meter cube of filtered water sold in Tehran Water and Sewage Company in order to identify the tightness and representing a resolution" written by Mr. Bijang Firouzan. The result was: the common accounting system that is in use is not a suitable way to calculate the level prices and cannot be used for separating the producing stages and will not help the management in identifying the increasing cost factors.
3) In (2008), a research titled " valuation of the level price of one meter cube of water and the services of evacuation of sewage in Water and Sewage Companies" written by Mr. Mas'oud Khashayi and Mohammad Davoudabadi. The problem which was presented in this research paper was a valuation of water's level price for topographic situation and lack of water resources in the country. According to the results of the research: (1) Establishment of the current level price in water and sewage companies is a valid and correct method for calculating the level price. (2) The current level price system creates the opportunity for active cooperation through proper and well-timed identification of the level price in the structure of the tariff. (3) After installing the balance making system, the average amount of water waste decreased in recent years.

The Researches Done in the Foreign Countries

1) In (2010), a research paper titled "An analysis of the cost of water supply in Sri Lanka" was written by Dr. Dinusha Dharmaratna and Dr. Jaai Parasnis. Based on the study, utility services of water supplies in developing countries is a challenging issue due to difficulties in exploiting the water resources and increasing the sewers in rural areas as the demands grow larger. A proper understanding of the price functions is very significant in developing the costing policies so that the marketing structure gains a balance and the financial competence of sewer services should be guaranteed. This research i.e. determining the services of economic parameters in Sri Lanka, indicates the normal physical and organizational characteristics of water supplying services in Asian countries. The lateral prices of water

supplying services in Sri Lanka are estimated to be 16/50 rupee in each meter cube. This number reached 47/25 rupee in long term period. This means that the cost of the priced water in that circumstances was less than its real cost. In this research both possible economic thrift and alternative cases were identified.

2) In (1996), Hans Lofgren did a research under the title of "The cost of managing with less: Cutting water subsidies and supplies in Egypt's agriculture". Based on the research's findings lack of water in Egypt in a short term period is predictable. The government's limited budget and decreasing the rural inhabitants' taxes will put cutting water supply subsidies the number one priority. This research is done based on a mathematical programming model for rural areas in order to find some effects that will affect the alternative mechanisms on aridity (one of the consequences of cutting water supply resources). Based on these findings cutting 15% of the required water for agriculture purposes and using it as drinking water (which will constitute 79% of non-agricultural water consuming) will have no negative effect on the total income made through agriculture.

Operational Goals of the Research

This research is actually a step towards a better perception of clarifying some related issues. The main aim of this paper is an analytic examination of the level price of one meter cube of contributing water in Azarbayejan Gharbi Water and Sewage Company and comparing it with various affairs of the company, and finding different water supplying resources. It seems that water supplying affairs in a city like Sardasht that is a highland area and has many rivers with no need to pump the water is less than water supplying affairs for another city like Tekab that is a plane area and needs pumping for draining water from wells to bring it to contribution net. And it seems that technical and engineering problems (e.g. net decay) and the type of decisions made by managers and revenue operational staff are effective on the level price of one meter cube of water.

The Aims of This Study

A summary of this study can be summoned up as follows:

1) To help preparing a legal system and purposeful subsiding in the water and sewage field.
2) To help preparing a pricing system for water and sewage field.
3) To help those water and sewage companies which made loss improve their functions.
4) Preventing wastage and paid costs of governmental parties and lessen these costs and activities.
5) To investigate ways of delivering a part of the activities to private sections based on mass policies of denationalization.

Since there have been no study on level price field of water and sewage company of Azarbayejan Gharbi, this research can be a starting point in clarifying the vagueness and deficiencies in financial system of this company and will help future decisions that will be made (Khashayi and Davoudabadi, 2008).

The Main Hypothesis

The level price of contribution of one meter cube of water sold for peripheral affairs of Azarbayejan Gharbi Water and Sewage Company.

The Alternative Hypothesis

1) The cost of the exploitation contractors' wage is different from one meter cube of contributed water in peripheral affairs of the company.
2) The calculated cost of depreciation is different from the level price of one meter cube of water in peripheral affairs of the company.
3) The cost of calculated wage and fee is not equal to the level price of one meter cube of water in various affairs of the company.
4) The portion of cost considered for repairing and preserving the peripheral affairs of the company is distinguished from the level price of one meter cube of water sold in each affair.
5) The calculated cost of consumed materials is not equal to the level price of one meter cube of water.
6) The required energy of producing and contributing water in one meter cube is not the same for various types of activities.
7) The proportion of other kinds of expenses in the level price of one meter cube of water in various activities of the company are different.

MATERIALS AND METHODS

Methodology

This research paper is an operational study. Because by analyzing the level price of each meter cube of water in various activities of Azarbayejan Gharbi rural Water and Sewage Company a suitable way might be found for collection activities, identifying, and reporting the real level price of water used in managing and leading affairs and exterior reports of the company. The data used in this research have been collected without the direct interference of the researcher thus it is half experimental and post-event (Radmehr, 2012). Therefore it is done based on chronic information. This method is used when the data is collected from an environment where it existed naturally or it is from an event that the researcher has no direct interference in. in other words this research is for those types of researches in which the researcher is looking for a reason or some reasons of some specific relationships that has happened in the past. So this type of research scheme has a high … (Namazi, 2000).

Statistical Environment

This research's statistical environment includes all of the peripheral functions of the rural Water and Sewage Company of Azarbayejan Gharbi and is defined within 14 function that has been studied in a 10 years period (from 2004 to 2013). And since Oshnaviye's functions were not independent until (2009) and were mixed with Naghade's functions thus the researcher has studied them all together from the start to the last year. Therefore the statistical environment is 13 functions. The statistical sample is considered equal to the statistical environment.

Data Collection

Data collection for this research is:

a) Library studies:

✓ Consideration of previous researches about the Water and Sewage Companies' accountancy or similar researches; especially thesis and researches in the library of the department of energy's.

✓ Consideration of books, magazines, and journals of the department of energies and Iran's engineering Water Company.

✓ Consideration of published articles about accountancy of the Water and Sewage Companies that have been represented in national and international conferences.

✓ Searching for information in authentic websites and websites of the Water and Sewage Company.

✓ Examining the system software of current cost accounting of the company's headquarters in order to classify the information of each function of the company.

✓ Examining the statistics and data of production, financial forms, audit reports, directorates' activities and functional budgets of the Water and Sewage Company of Azarbayejan Gharbi.

The Analyzing Method of the Data

After collecting and classifying the data, the next step that is analyzing the data must be started. This is an important stage in any research because it shows the all the effort and attempt done in the past. In this stage the researcher examines the data and information for representing a hypothesis and evaluation. In the stage of analyzing the significant point is that the researcher should use the collected data in path leading to the research's goal in order to find an answer for the problems and evaluate the hypothesis (Hafeznya 2006). Many types of tests have been used in this research; including descriptive indexes in descriptive statistic section and statistical tests in perceptive statistics section. The statistical tests used in the perceptive statistic section includes analyzing and testing the hypothesis by statistical parametric method "analyzing resolved variance" or non-parametric test "kruskal-wallis" which depend on the type of data distribution. Statistic "fisher (F)" or "analyzing resolved variance" is used for determining the difference of the average of two or more independent timed groups in which the data is distributed normally. The "kruskal-wallis" test or "chi-square rough distribution" is a non-parametrical equivalent for analyzing the resolved variance. This test is exactly like "Manwhitney"'s test, except that it has more groups. In order to use this test the presupposition of equivalence of the variances should be realized (Fotouhi and Asghari, 1999). In addition through post-hoc tests such as Scheffe test the reason of different level prices of drinking water of the rural Water and Sewage Company of Azarbayejan Gharbi

will be identified. Based on the type of the data and the methods of analyzing, the method of "data aggregation" is used. In all of statistical technics the Excel and Spss have been used. To determine the normality of the variables through Spss, Kolmogorov-Smirnov test should be used, in which if the mentioned statistic's probability for the variables is more than 5%, then that variable is distributed normally or else it is abnormal.

RESULTS AND DISCUSSION

The Research's Findings

Examining the Descriptive Variables in the Research in form of Aggregation

Table 1: The descriptive statistical variables' indexes

Coefficient correlation	Standard deviation	The average	The highest	The lowest	number	Indexes costs
0/703	98/811	140/414	519/54	11/32	13	The contractors' costs
0/804	877/64	1090/63	4194/97	409/49	13	The depreciation costs
0/388	150/27	386/78	1208/78	110/79	13	Wages and fees
0/801	173/83	217/01	756/7	0/47	13	Repairing and preserving
0/764	28/88	37/79	172/31	1/83	13	Consumed materials
0/976	96/43	98/78	577/43	1/01	13	The cost of pumping electricity
0/555	24/25	43/69	118/91	0/21	13	The remaining costs
0/574	1161/05	2022/13	5758/16	811/91	13	The total prices

Coefficient of variation that is the result of dividing the deviation over the average was calculated for the research's variants over the ten years period. Thus chart1 shows that among all the elements the level price of one meter cube of drinking water, the variant of wage and fee consists the least coefficient of variation and has the most stability and consistency. In contrast the cost of electricity due to pumping water has the most coefficient of variation so it has the least consistency.

Table 2: Examining the normality of the research's variations

The total price	Remaining costs	pumping	consumed	repairing	wages	The depreciation	The contractors	Variation
2/744	0/968	1/899	1/215	1/592	1/594	3/159	1/091	The statistic
0/001	0/305	0/001	0/105	0/013	0/012	0/001	0/185	meaningfulness

With a look at the other elements it would be clear out that after pumping water costs, the variation of depreciation cost and repairing and preserving cost has the highest coefficient of variation therefore have highest dispersal too. This fact indicates that the repairing and preserving costs and also depreciation cost is different in various areas and more differences can be found among different areas due to consumed materials or human forces that help repairing and preserving or changing the pieces.

Since there are particular charts for staffs' wages and fees and also based on the wage calculating formulas that initiates from the staffs' years on work and effective reasons are not many. Thus this variation has lower dispersal.

The Normality Test of Data Distribution

Before the hypothesis test, the normality of variations as one of the presuppositions of the parametric analysis was studied. To gain this aim Kolmogorov-Smirnov test is used. The tested hypothesis is:

H0: the data distribution is normal.

H1: the data distribution is abnormal.

The result of normality of variations distribution based on Kolmogorov-Smirnov statistics is in chart2. According to the results of this chart among the research's variations, the cost needed for the contractors, and the cost of consumed materials and the rest of the costs are normal. Distribution (f) the rest of the variations in a meaningful level of 0/05 was not normal.

Examining the Correlation of the Gradation

Table 3: Correlation of Spearman among the research's variation

The Total price	The remaining costs	pumping	Consumed materials	repairing	wages	The depreciation	contractors	Variants
							1	The contractors
						1	0/575**	The depreciation
					1	0/381**	0/344**	wages
				1	0/212*	0/432**	0/619**	repairing
			1	0/279**	0/215*	0/355**	0/547**	Consumed materials
		1	0/340**	0/279**	0/215*	0/355**	0/572**	pumping
	1	0/445**	0/286**	0/249**	0/176*	0/406**	0/306**	The remaining costs
1	0/446**	0/693**	0/450**	0/707**	0/521**	0/883**	0/769**	The total prices

Since most of these variations were not normal, thus in order to examine the correlation of the variations, Spearman's correlation coefficients was used.

The results of the correlation coefficient among these variations are represented in chart3 that indicates:

1. A rich, positive and meaningful correlation coefficient exists among the variations of the contractors' costs and the total price of the research.
2. A rich, positive and meaningful correlation coefficient exists among the variations' cost of depreciation and the total price of the research.
3. A medium, positive and meaningful correlation coefficient exists among the variations of the costs of the wages and fees and the total price of the research.
4. A rich, positive and meaningful correlation coefficient among the variations of the repairing and preserving costs and the total price of the research.
5. A medium, positive and meaningful correlation coefficient exists among the variations of the spent costs and the total price of the research.
6. A rich, positive and meaningful correlation coefficient among the variations of the costs of the electricity used for pumping water and the total price of the research.
7. A medium, positive and meaningful correlation coefficient exists among the variations of the other costs and the total cost of the research.

The results show that the highest correlation coefficient of the variation of water level price are with the cost of depreciation, and then the correlation of the total price of water-rate as well as the cost of contractors and repairing costs are in a lower gradation. The least correlation found was among the total price and the remaining prices which show the remaining prices were spent in various occasions and have no specific regularity or guideline.

The Reseqrch's Hypothesis Tests

Main hypothesis: The level price of contribution of one meter cube of water in peripheral functions of the rural Water and Sewage Company of Azarbayejan Gharbi are different. H0: the level price of one meter cube of water sold for peripheral functions of the company are the same.

H0: μ1= μ2 = μ3=μ4 = μ5= μ6 = μ7 = μ8= μ9= μ10 = μ11= μ12 = μ13
H1: the level price of one meter cube of water sold for peripheral functions of the company are different.
Based on what was indicated in chart2 the variation of the total price of water-rate is not normal, thus the non-parametric test of kruskal-wallis was used to compare the total price of water-rate between the water and Sewage Company and its peripheral functions throughout the research. The results are as follows:

Table 4: Kruskal-Wallis test to compare the total price of water-rate consumed in peripheral functions

The result	Meaningfulness	Degree of freedom	Chi-square	Variant
Not rejection zero supposition	0/123 >0/05	12	17/778	The level price

The results of the statistical indexes' calculation of Kruskal-wallis test show that the statistical number of chi-square in 17/778 which is not meaningful with a degree of freedom of 12 and a meaningful level of 0.05. in other words the total price of water-rate among the peripheral functions of Azarbayejan Gharbi water and Sewage Company in the research's period were equal and the differences are minor. The average of calculated gradations for each one of the peripheral functions are as the following:

Table 5: The average of the total price of water-rate gradations in peripheral functions

Piranshar	Naghade	Myandoab	Mahabad	Makuo	shahindezh	salamas	Sardasht	Khoy	Chaldoran	Tekab	Boukan	Urumyeh	The city
82/4	56/9	36/6	56/2	91/9	69/5	60/3	61	56/2	79	77	56/8	67/7	The average of gradation

The average of calculated gradations of one meter cube of consumed water in various functions of the county are calculated and represented in chart 5. Therefore the highest average of gradation in Makuo is 91.9 and Piranshahr is the next with an average gradation of 82.4. And also the lowest average gradation of the total price of water-rate in Myandoab was 36.6 while Mahabad and Khoy with an average gradation of 56.2 are before Myandoab.

Table 6: Variance analysis of wage costs among peripheral functions

The result	P value	F	The average of squares	The degree of freedom	The squares	Variance
Not rejecting zero supposition	0/710>0/05	0/740	7399/965	12	88799/579	Among groups
			100028/228	117	/618 1170728	Inter-groups
				129	/197 1259528	Total

Alternative Hypothesis
First hypothesis: The cost of the exploitation contractors' wage is different from one meter cube of contributed water in peripheral affairs of the company.

In order to test the first hypothesis, parametric variance analysis is used because the variants of the exploitation wage costs are normal.
The statistical hypothesis is as the following:
H0: The cost of the exploitation contractors' wage in one meter cube of contributed water in peripheral affairs of the company is equal.
H0: $\mu1= \mu2 = \mu3=\mu4 = \mu5= \mu6 = \mu7 = \mu8= \mu9= \mu10 = \mu11= \mu12 = \mu13$
H1: there is at least a difference between two cases of the peripheral functions in the cost of the wage in one meter cube of water. The results of the statistical analysis of variance are shown in chart 6.
The results of the variance analysis among various functions showed that the amount of f was equal to 0.740 that is not meaningful in the meaningful level of 0.05 and the supposition of 0 (zero) is confirmed. Since the supposition of zero is not rejected thus there isn't a meaningful difference in the level of 0.05 among the peripheral functions and the existing differences are deniable. It is not necessary to have post-hoc tests.
Second hypothesis: the calculated cost of depreciation in the total price of one meter cube of water consumed in peripheral functions is various.
H0: the cost of depreciation in the total price of one meter cube of water sold in peripheral functions is equal.
H0: $\mu1= \mu2 = \mu3=\mu4 = \mu5= \mu6 = \mu7 = \mu8= \mu9= \mu10 = \mu11= \mu12 = \mu13$
H1: at least one of the compared pairs are different.
Based on what was shown in chart2 that is the depreciation costs are not normal, therefore non-parametric test of Kruskal-Wallis was used to compare the depreciation costs for the peripheral functions of Azarbayejan Gharbi Water and Sewage Company during the research period which indicates:

Table 7: Kruskal-Wallis test to compare the depreciation costs of peripheral functions

The result	meaningfulness	The degree of freedom	Chi-square	Variants
Rejecting zero supposition	0/0001 <0/05	12	38/074	The cost of depriciation

The obtained results of the statistical index test of Kruskal-Wallis indicate that the chi-square statistical number is 38.074 which is meaningful for a degree of freedom of 12 and meaningful level of 0.05. In other words the depreciation cost of peripheral functions of Azarbayejan Gharbi was not similar during the research period and there are some meaningful statistical differences among depreciation costs of peripheral functions. The average of calculated gradations of each peripheral function is in chart8:

Table 8: The average of the depreciation costs gradation in peripheral functions

Piranshahr	Naghadeh	Myandoab	Mahabad	Makou	Shahindezh	Salmas	Sardasht	Khoy	Chaldoran	Tekab	Boukan	Urumyeh	The city
91/3	60/9	42/3	46/5	99/8	57/4	67/5	50	47/1	95/4	90/9	46/5	55/9	The average of gradation

The average of the calculated gradations of one meter cube of consumed water-rate in various functions of the county are reported in chart 8. According to the above chart the highest average gradation belongs

to Makuo with 99.8 and then Chaldoran with 95.4. The least average gradation of total price of water-rate belongs to Myandoab with 42.3 and Boukan is before Myandoab with 46.5.

Third hypothesis: The calculated wage and fee costs in the total price of water-rate in one meter cube of water in various functions of the company.

H0: The wage and fee costs in one meter cube of water sold in peripheral functions of the company are equal.

H0: $\mu1= \mu2 = \mu3=\mu4 = \mu5= \mu6 = \mu7 = \mu8= \mu9= \mu10 = \mu11= \mu12 = \mu13$

H1: At least one of the compared pairs are different.

According to chart2 the variations of wage and fee costs are not normal. Therefore non-parametric test of kruskal-Wallis was used to compare the wage and fee costs among the peripheral functions of Azarbayejan Gharbi Water and Sewage Company during the period of the research which is as the following:

Table 9: Kruskal-Wallis test for comparing the wage and fee costs in peripheral functions

The result	Meaningfulness	Degree of freedom	Chi-square	Vatiant
Rejecting zero supposition	0/0001 <0/05	12	44/321	The cost of wage and fee

The results from calculation of statistical indexes of Kruskal-Wallis show that the statistical chi-square is equal to 44.321 which is meaningful with degree of freedom of 12 and meaningful level of 0.05. In other words the cost of wages and fees of peripheral functions of Azarbayejan Gharbi were not equal during the period of the research and there are significant statistical differences among the wage and fee costs of peripheral functions. The average of calculated gradation for each function is:

Table 10: The average gradation of the wage and fee costs of peripheral functions

Piranshahr	Naghadeh	Myandoab	Mahabad	Makuo	Shahindezh	Salmas	Sardasht	Khoy	Chaldoran	Tekab	Boukan	Urumyeh	The city
89/3	63/8	17/3	44/4	56/7	101/4	60/1	53/7	60/2	86	68/1	55/6	94/9	The average of gradation

The average gradations of wage and fee costs in various functions of the county are shown in chart10. Based on this chart the highest average gradation belongs to Shahindezh with 101.4 and Urumye with 94.9. The least average gradations of wage and fee costs belong to Sardash with 53.7 and Myandoab with 17.3.

Fourth hypothesis: The portion of cost considered for repairing and preserving the peripheral functions of the company is distinguished from the level price of one meter cube of water sold in each function.

H0: The cost of repairing and preserving in one meter cube of water sold in peripheral functions are equal.

H0: $\mu1= \mu2 = \mu3=\mu4 = \mu5= \mu6 = \mu7 = \mu8= \mu9= \mu10 = \mu11= \mu12 = \mu13$

H1: At least one of the compared pairs are different.

According to chart2 the variations of repairing and preserving costs are not normal. Therefore non-parametric test of kruskal-Wallis was used to compare the repairing and preserving costs among the peripheral functions of Azarabayejan Gharbi Water and Sewage Company during the research period. The results are:

Table 11: The Kruskal-Wallis test to compare the repairing and preserving costs in peripheral functions

The result	Meaningfulness	Degree of freedom	Chi-square	Variant
Not rejecting zero supposition	0/206 >0/05	12	15/689	The cost of repairing and preserving

The results of calculating the statistical indexes of Kruskal-Wallis test are shown in chart11. It indicates that the statistical chi-square is 15.689 which are not meaningful with a degree of freedom of 12 and a meaningful level of 0.05. In other words the costs of repairing and preserving of the peripheral functions of Azarbayejan Gharbi during the period of the research were equal and there into meaningful statistical difference among the repairing and preserving costs of peripheral functions. The average gradation of each peripheral function is as the following:

Table 12: The average gradation cost of repairing and preserving in peripheral functions

Piranshahr	Naghadeh	Myandoab	mahabad	Makou	Shahindezh	Salmas	Sardasht	Khoy	Chaldoran	Tekab	Boukan	Urumyeh	The city
49/7	63/6	38/9	83/1	82/6	54/9	62/4	81/5	70/8	58/2	57/9	72/6	75/3	The average of gradation

The average of the calculated gradations of repairing and preserving costs of different peripheral functions of the county are in chart12. Based on the data the highest average gradation belongs to Mahabad with 83.1 and the second one belongs to Makuo with 82.1. The lowest average gradations of repairing and preserving belong to Myanfoab functions with 38.9 and Piranshahr is prior to Myandoab with 49.7.

Fifth hypothesis: The calculated cost of consumed materials is not equal to the level price of one meter cube of water.

Since the consumed materials costs are normal, in order to test fifth hypothesis the variance analysis test is used.

The statistical suppositions are:

H0: The consumed materials' costs in one meter cube of water sold in peripheral functions of the company are equal.

H0: $\mu1= \mu2 = \mu3=\mu4 = \mu5= \mu6 = \mu7 = \mu8= \mu9= \mu10 = \mu11= \mu12 = \mu13$

H1: The consumed materials' costs in each meter cube have at least two different cases.

The results of the statistical variance analysis are in chart 13.

Table 13: The analysis of the variance of consumed materials among the peripheral functions

The result	P value	F	The average of squares	Degree of freedom	The squares	Variance
Not rejecting zero supposition	0/250>0/05	1/263	1028/630	12	12343/557	Among the groups
			814/199	117	95261/271	Inter-groups
				129	107604/828	Total

The results of the conducted variance analysis among the areas' functions showed that the number of f was equal to 1.263 that is not meaningful in the meaningful level of 0.05 so the supposition of zero was confirmed. Since the supposition of zero is not rejected thus there is not a meaningful difference in the meaningful level of 0.05 among the peripheral functions and the observed differences are deniable. There is no need to post-hoc tests too.

Sixth hypothesis: The required energy of pumping water in one meter cube is not the same for various types of functions.

H0: The costs of required energy for pumping water in one meter cube of sold water in peripheral functions are equal.

H0: $\mu1= \mu2 = \mu3=\mu4 = \mu5= \mu6 = \mu7 = \mu8= \mu9= \mu10 = \mu11= \mu12 = \mu13$

H1: At least one of the compared pairs is different.

As chart2 shows the variations of the cost of required energy of pumping is not normal. Therefore non-parametric test of Kruskal-Wallis is used for comparing the costs of energy required for pumping water among the peripheral functions of Water and Sewage Company of Azarbayejan Gharbi during the research period. The results are as follows:

Table 14: Kruskal-Wallis test for comparing the cost of pumping water in peripheral functions

The result	Meaningfulness	Degree of freedom	Chi-square	Variant
Rejecting zero supposition	0/0001 <0/05	12	35/078	The cost of required energy of pumping water

The results from the statistical index of Kruskal-Wallis test in chart14 show the chi-square statistics is 35.078 that is meaningful with a degree of freedom of 12 and meaningful level of 0.05. In other words the cost of required energy for pumping water in peripheral functions of Azarbayejan Gharbi during the research period are not equal and there are meaningful differences among the costs of required energy of pumping water of these functions. The average gradation of these functions is in chart 15.

Table 15: The average gradation of the cost of water-rate consumed in peripheral functions

Piranshahr	Naghadeh	Myandoab	Mahabad	Makou	Shahindezh	Salmas	Sardasht	Khoy	Chaldoran	Tekab	Boukan	Urumyeh	The city
69/6	68/4	54/6	59	98/3	83/6	93/9	55/2	73/1	23/8	40/6	62	70/4	The average of gradation

The average of gradations of energy costs used for pumping water in various functions of Azarbayejan Gharbi are in chart15. Based on that, the highest average gradation belongs to Salmas with 93.9 and Shahindezh is in the next level with 83.6. The lowest average gradation belongs to Chaldoran with 23.8.

Seventh hypothesis: The proportion of the remaining costs in the level price of one meter cube of water in various activities of the company is different.

Since the seventh hypothesis's variations are normal, the variance analysis test was used.

The statistical suppositions are:

H0: The remaining costs of each meter cube of water sold for the peripheral functions are equal.

H0: $\mu1= \mu2 = \mu3=\mu4 = \mu5= \mu6 = \mu7 = \mu8= \mu9= \mu10 = \mu11= \mu12 = \mu13$

H1: The remaining costs of each meter cube of water have at least two different cases.

The result of statistical variance analysis is in chart16.

Table 16: The variance analysis of remaining costs in peripheral functions

The result	P value	F	The average of squares	Degree of freedom	The squares	variance
Not rejecting zero supposition	0/918>0/05	0/488	301/654	12	3619/847	Among the groups
			617/938	117	72298/720	Inter-groups
				129	75918/567	Total

The results of the variance analysis among the area's functions are shown in chart16 which indicates that (f) is equal to 0.488. This number in a meaningful level of 0.05 is not meaningful and the supposition of zero is confirmed. Since the supposition of zero is not rejected, thus this meaningful difference which is 0.05 among peripheral functions and the occurred differences are deniable. There is no need for post-hoc tests too.

The Result

There is only one research done about the analysis examination of the level price of water in one meter cube in Water and Sewage Companies, that is Mr. Radmehr's research conducted in (2012) under the title of "the analytical examination of the level price of one meter cube of drinking water in Azarbayejan Gharbi Water and Sewage Company", and the research's result indicates that there is no major difference among the level price of one meter cube of water in various functions. In that research five alternative hypothesis were examined to find possibilities of any difference in the level price of one meter cube of water. Its variants were: 1) the wasted amount of water, 2) the depreciation costs, 3) the costs of consumed materials, energy, 4) the cost of wage and fee, 5) the cost of contribution and exploitation. The alternative tests consisted of dependent variants as is described above, and had similar results. It showed that all of the independent variants had an equal share in different functions of one meter cube of water. This research has exactly the same result in its major hypothesis, i.e. the level price of one meter cube of water for different functions are equal. However for the alternative hypothesis there are three different result in this research from Mr. Radmer's. This research's result showed that for the cost of depreciation, the cost of wage and fee, and the cost of required electricity for pumping drinking water of the rural areas, the level price of one meter cube for various functions are not equal. But these differences are not as significant as to change the result of the major research.

Suggestions for Future Researches

1. Conducting the same research in other counties in order to make sure if the results are reliable.
2. Since conducting such researches (analyzing the level price) includes wide range field and needs data collection therefore it is better to do the research in groups. (Radmehr 2012)
3. Conducting researches for examining the level of acceptance of accounting systems in governmental companies such as the rural company of Water and Sewage for determining the level price.
4. Conducting researches to clarify the importance of accounting in governmental companies and the acceptance of accounting in these companies and also determining the effectiveness of the accountancy reports on managers' decisions.

REFERENCES

Aaliwar Aziz (2000). Industrial and management accountancy: profession, professional organizations, professional degrees, professional behaving regulatory, *Accounting Magazine: Audit* (9) 22 to 28.

Akbarye Iraj (1990). A manager with no financial information: closed-fisted and wandering (A glimpse over accounting roles on management), *Management Magazine: Tadbir* (3) 34 to 40.

Dinusha Dharmaratna and Jaai Parasnis (2010). An analysis of the cost of water supply in Sri Lanka" in Development Economics , Monash University Austrelia.

Firouzan Bizhan (2009). Studying the level price of one meter cube of filtered water sold in Water and Sewage Company of Tehran in order to identify the constraints and representing resolutions, the third conference of Water and Sewage (with the aim to amend the consuming patterns) Tehran, esfand 88.

Fotouhi Akbar and Asghari Leila (1999). *Teaching Statistical Data with SpssB*, second publication (Azarabad publication) Tehran.
Hafeznya Mohammadreza (2006). An Introduction to Research Methodology on Human Sciences, twelfth publication, Tehran: the studying and preparation of university books for human science major (SMT).
Hans Lofgren (1995). The cost of managing with less: Cutting water subsidies and supplies in Egypt's agriculture", Trade and Macroeconomics Division: TMD Discussion Paper 7.
Hassasyeganeh Yahya (1989). The basics of industrial accountancy theories, *Accounting Magazine: Accountant* **62** 24 to 39.
Khashayi Mas'oud and Dvoudabadi Mohammad (2008). Establishment and sketching the level price of water in Water and Sewage Companies, the fifth international conference of Management.
Khashayi Mas'oud and Dvoudabadi Mohammad (2008). Establishment and sketching the level price of water in one meter cube and services of sewage evacuation in Water and Sewage Companies, the second international conference of budgeting and operational planning.
Mo'adab Ja'far (1998). Calculating the level price of one meter cube of drinking water and the cost of sanitation evacuation of one meter cube of domestic sewage, M.A thesis, San'ati Sharif University of Tehran.
Namazi Mohammad (1999). Empirical researches in accounting_ methodological perspective, Shiraz University publication, and first publication.
Radmehr Sa'di (2012). An analytical examination of the level price of water in Water and Sewage Company, M.A thesis, Azad Islamic University of Hamedan.

Enclosure

Chart 17: Information of the statistical analysis of first hypothesis (contractors' costs). (Numbers are in Rials)

Cost of exploitation contractors' wage												
total	**92**	**91**	**90**	**89**	**88**	**87**	**86**	**85**	**84**	**83**	**Town name**	**Row**
1327.90	410.67	170.78	131.80	182.60	94.23	161.74	27.55	74.37	61.35	12.82	Uamia	1
1435.01	266.24	243.77	169.95	189.72	161.74	227.22	25.56	76.93	58.86	15.01	Bukan	2
1557.57	380.28	167.52	152.15	233.03	177.74	238.43	30.24	71.57	85.88	20.73	Tekab	3
1280.48	310.77	193.49	93.50	138.24	71.71	216.76	60.52	100.97	75.93	18.58	Chalderan	4
1399.29	324.95	187.61	92.16	236.79	166.99	200.87	29.52	87.35	57.33	15.72	Khoy	5
1880.19	263.08	209.05	104.48	191.47	519.54	224.63	90.65	143.89	107.95	25.45	Sardasht	6
876.26	198.33	117.06	54.96	102.65	81.71	132.77	25.02	87.09	61.48	15.19	Salmas	7
1776.31	404.92	258.06	197.70	179.38	108.34	226.42	113.13	95.60	174.23	18.52	Shahindeg	8
1645.33	323.79	232.11	175.04	162.36	149.10	244.98	171.62	131.85	32.45	22.03	Maku	9
1295.32	331.69	108.48	152.81	166.35	168.38	144.99	22.60	67.39	121.31	11.32	Mahabad	10
1333.99	389.99	240.93	132.46	213.31	72.15	130.58	22.65	84.99	31.89	15.05	Miyandoab	11
1052.66	306.59	133.32	140.85	146.26	62.19	118.20	22.40	86.08	18.23	18.53	Naghade	12
981.90	358.54	107.66	124.67	157.04	101.03	0.00	29.13	103.83	0.00	0.00	Piranshahr	13
17842.22	4269.84	2369.84	1722.53	2299.23	1934.85	2267.59	670.60	1211.90	886.88	208.96	total	

Chart 18: Information of the statistical analysis of second hypothesis (depreciation' costs). (Numbers are in Rials)

Depreciation												
Total	**92**	**91**	**90**	**89**	**88**	**87**	**86**	**85**	**84**	**83**	**Town name**	**Row**
9240.87	2020.54	2373.90	719.57	643.82	747.17	631.17	526.99	536.23	502.07	539.40	Uamia	1
8891.79	2106.66	2375.59	691.96	579.68	643.07	586.83	489.97	449.70	466.81	501.51	Bukan	2
14083.53	3337.19	3769.92	1062.76	868.96	1066.21	929.72	776.26	738.40	739.56	794.55	Tekab	3
15189.22	3765.95	4012.14	1131.83	994.38	1043.09	993.71	829.69	778.72	790.47	849.24	Chalderan	4
8975.53	1940.30	2623.21	664.10	628.69	667.21	586.09	489.35	409.49	466.21	500.88	Khoy	5
8960.25	1910.65	2138.60	617.15	576.62	1200.89	599.58	500.61	426.80	476.94	512.40	Sardasht	6
10522.37	2369.59	2741.04	808.68	722.25	828.50	710.59	593.30	575.90	565.25	607.28	Salmas	7
10228.48	2479.45	2838.65	809.96	682.10	713.36	654.93	546.82	422.52	520.97	559.71	Shahindeg	8
16135.68	3762.50	4194.97	1164.32	950.88	1468.48	1073.40	896.22	853.73	853.85	917.34	Maku	9
8313.94	1738.76	2139.52	626.67	582.57	608.94	571.89	477.50	624.42	454.92	488.75	Mahabad	10
8171.80	1862.67	1989.78	604.85	549.02	727.57	559.89	467.47	486.70	445.37	478.49	Miyandoab	11
9614.85	2012.56	2490.92	721.25	704.22	788.31	661.44	552.26	592.46	526.15	565.27	Naghade	12
13454.69	2869.16	3516.92	1008.23	813.65	991.86	913.94	763.08	1069.80	727.01	781.06	Piranshahr	13
141782.99	32175.98	37205.15	10631.32	9296.85	11494.66	9473.17	7909.52	7964.87	7535.59	8095.86	total	

Chart 19: Information of the statistical analysis of the third hypothesis (pay' costs). (Numbers are in Rials)

Fee Costs												
Total	**92**	**91**	**90**	**89**	**88**	**87**	**86**	**85**	**84**	**83**	**town name**	**row**
4355.31	426.59	363.23	436.09	384.06	448.12	508.81	472.70	498.01	444.04	373.66	Uamia	1
3448.43	380.48	369.10	336.60	314.56	361.84	416.74	340.90	329.08	293.65	305.48	Bukan	2
3753.93	315.01	390.05	474.15	431.71	425.57	492.15	353.81	321.16	261.28	289.04	Tekab	3
5847.10	1208.78	880.93	936.70	745.51	355.93	373.40	342.96	376.42	312.23	314.24	Chalderan	4
3497.39	374.88	347.99	345.51	344.89	368.50	386.27	313.58	343.48	349.42	322.85	Khoy	5
3452.15	644.02	501.47	447.66	553.24	304.06	239.96	160.46	234.61	110.79	255.89	Sardasht	6
3535.51	374.55	278.46	326.99	438.95	383.63	334.95	422.69	369.92	297.40	307.97	Salmas	7
4723.84	534.58	529.76	428.48	403.32	496.45	520.95	601.13	418.13	428.80	362.25	Shahindeg	8
3546.99	299.64	269.72	244.24	233.61	555.01	517.75	360.47	394.36	343.01	329.19	Maku	9
3164.18	469.27	339.09	299.40	200.00	374.56	346.97	272.78	348.20	232.55	281.37	Mahabad	10
2406.57	359.75	265.26	294.98	219.24	223.78	229.69	182.59	242.23	151.56	237.49	Miyandoab	11
3697.49	543.82	480.45	467.93	450.68	349.00	350.87	257.33	310.43	219.02	267.96	Naghade	12
4853.08	417.34	340.12	333.99	287.77	411.23	618.97	603.90	835.49	567.38	436.89	Piranshahr	13
50281.94	6348.71	5355.62	5372.72	5007.53	5057.68	5337.47	4685.29	5021.51	4011.12	4084.29	total	

Chart 20: Information of the statistical analysis of fourth hypothesis (repairs' costs). (Numbers are in Rials)

Repairing and preserving												
total	**92**	**91**	**90**	**89**	**88**	**87**	**86**	**85**	**84**	**83**	**Town name**	**Row**
2719.30	418.15	429.52	167.84	517.30	565.64	289.97	72.64	66.04	171.85	20.36	Uamia	1
2390.25	316.96	181.38	247.96	574.52	441.25	290.97	132.37	37.76	160.53	6.56	Bukan	2
1566.30	266.91	202.91	123.75	257.08	265.29	75.90	172.30	37.53	136.59	28.04	Tekab	3
1625.17	168.21	189.06	233.50	323.22	158.01	140.86	53.91	68.14	254.98	35.29	Chalderan	4
2037.86	206.11	245.27	148.47	340.25	351.40	249.38	83.64	165.09	207.02	41.24	Khoy	5
3506.13	756.70	547.59	636.02	607.11	413.53	117.36	128.40	63.48	204.37	31.58	Sardasht	6
2079.75	570.34	454.58	160.04	237.53	201.35	90.11	55.75	165.39	138.17	6.50	Salmas	7
1573.18	220.33	233.15	168.19	359.37	166.88	106.84	110.19	37.43	158.62	12.19	Shahindeg	8
2732.35	649.25	425.82	254.83	298.11	177.44	267.77	104.30	208.74	322.55	23.54	Maku	9
3495.78	486.01	572.75	237.32	548.33	755.77	514.04	72.11	108.49	164.47	36.49	Mahabad	10
1046.04	195.19	167.19	113.74	235.41	107.18	37.50	60.45	31.32	88.65	9.41	Miyandoab	11
2008.10	364.26	198.63	148.40	550.17	241.10	85.53	111.93	45.88	224.50	37.69	Naghade	12
1431.98	397.15	252.04	94.00	219.53	241.06	78.75	86.42	23.73	38.82	0.47	Piranshahr	13
28212.21	5015.58	4099.88	2734.04	5067.91	4085.89	2344.98	1244.42	1059.01	2271.12	289.38	total	

Chart 21: Information of the statistical analysis of fifth hypothesis (materials' costs). (Numbers are in Rials)

Consumed materials												
total	**92**	**91**	**90**	**89**	**88**	**87**	**86**	**85**	**84**	**83**	**town name**	**row**
333.32	80.77	22.27	52.32	31.55	22.45	36.45	45.50	32.73	6.79	2.50	Uamia	1
302.90	76.89	26.49	38.12	24.53	17.06	30.19	39.34	35.29	11.04	3.96	Bukan	2
480.37	92.44	42.87	41.23	55.58	37.29	45.82	81.06	63.11	12.11	8.84	Tekab	3
364.42	75.03	18.46	95.78	24.23	20.52	27.83	55.80	24.39	10.27	12.11	Chalderan	4
472.44	73.95	102.06	45.08	30.22	32.21	76.21	40.53	25.39	44.98	1.83	Khoy	5
513.27	80.18	66.66	48.77	42.50	69.86	41.90	66.95	55.27	24.93	16.26	Sardasht	6
273.63	64.29	14.94	51.52	34.29	18.17	18.67	26.90	30.26	11.17	3.42	Salmas	7
417.53	111.50	44.09	49.65	27.53	11.96	61.66	50.31	42.08	11.87	6.88	Shahindeg	8
439.55	72.44	97.41	72.54	52.90	25.65	19.23	43.95	34.98	15.95	4.51	Maku	9
295.05	70.03	21.70	45.17	18.94	18.56	19.80	36.66	58.48	1.91	3.80	Mahabad	10
523.01	172.31	145.23	66.59	27.16	15.18	16.02	30.98	35.20	10.80	3.54	Miyandoab	11
236.60	59.86	9.59	46.80	11.32	7.65	16.84	32.83	27.94	15.19	8.59	Naghade	12
223.14	63.04	15.11	35.50	8.74	6.43	19.20	32.27	36.30	6.55	0.00	Piranshahr	13
4875.24	1092.73	626.87	689.06	389.48	302.97	429.82	583.07	501.41	183.57	76.26	total	

Chart 22: Information of the statistical analysis of sixth hypothesis (energy of pumping water' costs). (Numbers are in Rials)

Energy of pumping water												
Total	**92**	**91**	**90**	**89**	**88**	**87**	**86**	**85**	**84**	**83**	**Town name**	**Row**
1078.52	253.12	269.68	177.37	107.12	84.06	45.48	29.45	36.04	58.54	17.66	Uamia	1
1118.96	423.78	230.09	196.85	69.32	53.85	36.82	16.80	20.91	52.04	18.51	Bukan	2
606.13	212.35	200.30	59.33	37.51	17.68	16.61	15.52	17.89	19.24	9.72	Tekab	3
248.07	40.17	43.48	34.56	28.86	22.04	25.12	14.88	12.99	22.06	3.93	Chalderan	4
1099.69	158.53	359.13	89.18	132.09	89.24	94.91	24.81	24.78	94.32	32.69	Khoy	5
687.77	163.34	147.86	69.69	57.23	121.39	32.07	8.49	30.47	41.58	15.64	Sardasht	6
1499.25	278.50	311.55	154.15	145.46	124.77	121.76	107.49	59.92	143.42	52.22	Salmas	7
1295.29	335.46	217.30	208.25	118.68	79.33	95.68	74.55	48.37	97.58	20.09	Shahindeg	8
2000.98	577.43	409.14	179.90	139.74	155.96	145.19	133.73	80.59	142.24	37.05	Maku	9
781.99	267.73	128.71	89.89	69.41	42.19	47.65	27.12	40.26	55.69	13.35	Mahabad	10
608.39	155.58	100.00	46.10	67.71	61.85	25.68	12.73	29.89	72.00	36.86	Miyandoab	11
938.30	314.86	143.74	86.99	94.69	61.72	55.99	39.77	40.34	73.85	26.35	Naghade	12
879.20	160.17	164.52	158.96	97.52	64.11	72.82	75.99	69.97	14.13	1.01	Piranshahr	13
12842.54	3341.01	2725.52	1551.21	1165.32	978.20	815.78	581.31	512.43	886.68	285.08	total	

Chart 23: Information of the statistical analysis of seventh hypothesis (remaining' costs). (Numbers are in Rials)

Remaining costs												
Total	**92**	**91**	**90**	**89**	**88**	**87**	**86**	**85**	**84**	**83**	**Town name**	**Row**
461.08	68.33	76.06	75.44	2.51	52.07	41.96	27.07	36.92	60.20	20.53	Uamia	1
377.80	69.91	55.37	61.24	1.77	44.88	36.10	26.47	30.87	31.40	19.79	Bukan	2
480.17	76.76	66.67	64.35	1.37	45.32	36.26	23.24	56.02	90.02	20.16	Tekab	3
466.13	61.31	77.97	118.91	18.82	55.77	35.14	23.03	27.02	27.76	20.40	Chalderan	4
388.43	47.03	56.60	68.20	4.14	42.46	34.87	24.43	41.94	48.56	20.20	Khoy	5
414.37	61.18	75.42	71.89	3.47	50.77	40.92	22.98	27.27	40.21	20.25	Sardasht	6
399.43	60.38	64.68	74.64	1.94	46.43	36.21	22.80	27.32	44.68	20.34	Salmas	7
534.61	56.60	65.85	72.77	10.74	98.07	39.77	29.33	57.01	82.17	22.29	Shahindeg	8
453.65	64.11	54.20	95.66	2.60	89.20	40.29	23.52	28.75	34.42	20.89	Maku	9
389.31	58.09	61.18	68.30	1.49	43.18	40.04	26.73	28.45	37.67	24.17	Mahabad	10
445.44	44.56	58.11	89.71	9.72	44.61	77.68	27.59	31.32	42.08	20.07	Miyandoab	11
515.56	51.90	61.47	69.92	4.54	81.53	63.19	24.76	76.32	60.57	21.35	Naghade	12
354.54	65.97	51.90	58.63	0.21	41.18	38.63	25.61	28.00	25.16	19.26	Piranshahr	13
5680.52	786.14	825.50	989.67	63.32	735.46	561.07	327.56	497.20	624.89	269.70	total	