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Designing a Paradigm Model of The Organization's Human Resources Interaction with Subscribers in Order to Optimize Energy Consumption (Drinking Water)

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Abstract

Energy consumption management is one of the most fundamental issues in today's world. One of the sources of energy is the management of drinking water consumption. Considering the high per capita water consumption in Iran, it is necessary to emphasize the increase of water productivity through measures such as demand management and water consumption, and social enhancement. This article deals with the design of the interaction model of the organization's human resources with the subscribers in order to optimize drinking water consumption in Qazvin Province Water and Wastewater Company. This research is descriptive-analytical, and the research method is qualitative. The statistical population of this research is university experts and executive managers of the water and sewage industry in Qazvin province, 11 people were selected using the snowball sampling method and theoretical saturation point. The results of this research are explained in the form of five main categories and subcategories. The findings showed Causal factors include social factors, individual factors, government bodies, senior managers, legal, legal, and technical-engineering factors, and other factors, contextual factors include individual background conditions and socioeconomic shortcomings. Intervening factors include "the way of thinking and support of managers, the performance of those in charge, and the will and desire of society", strategic factors include "correct and correct performance, continuous training at different levels and advertising and media information" and the consequences of the model are: Short-term outcomes, individual outcomes, long-term outcomes, national and regional outcomes.

Keywords: Human Resources, Joint Management, Optimization, Sustainability, Qazvin water and sewage company.

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1. INTRODUCTION

life and existence (more than 70% of the surface of the earth is covered by water). According to the UNESCO report, 20% of the world's people do not have enough access to drinking water, and 40% of them do not have enough water to comply with appropriate hygiene principles. For this reason, 2.2 million people die every year due to diseases caused by dehydration [1]. Therefore, the issue of water and its access problems has become a global crisis for the past few decades. According to the recent World Bank data, half of the world's 4.3 billion people, 3.49% of the world's population live in rural areas, and 76.5% of these people live in rural areas of developing countries are development. This causes more attention to be paid to drinking water supply and access to it in villages [2].

One of the important categories in facing the water shortage crisis is water wastage. In Iran, the rate of water loss is almost 3 times the world average, according to the available statistics, the average water consumption in the drinking sector is 350 liters per day, which should reach 150 liters per day based on the optimal consumption pattern in the current situation. Water in city networks is also 30. In other words, the world's average per capita water consumption is about 580 cubic meters per person per year, which is about 1300 cubic meters in Iran. This shows the inappropriateness of the consumption pattern and the waste of water resources [3]. The value and importance of water as a source of life and the shaper of civilizations as well as a factor in industrial, agricultural, and environmental development is very vital and strategic. Population growth, industrial development, expansion of urbanization, and increase in the level of welfare have caused an increase in water demand. This is despite the fact that the sources of water supply are generally cheap and local and have already been exploited, and other sources of water supply are far from the place of consumption and need a lot of money for exploitation. For this reason, experts on water issues in the world believe that the conflict between human societies in the future is mostly over the appropriation of water resources[4].

Drinking water accounts for a small part of the various uses of water. The share of drinking and general consumption is 8-10% of the total water consumption, and this figure is very small compared to other uses. So that this limitation has limited the growth of these countries. Issues related to water crisis and management are recognized as the second main problem of the world after population problem from the perspective of the United Nations. It should be noted that increasing the world's freshwater resources and solving this crisis is not possible, the only thing that can be done is to modify the methods of its use[5].

A major part of the challenges of water resources is caused by the water cycle and natural limitations of water resources, and another part is the impact of human activities on these resources. The Intrinsic limitation of water resources is one of the most important challenges of the water sector in Iran. Due to special geographical and climatic conditions, our country has a small share of freshwater [6].

According to the Falcon Mark international index, Iran's water resources are on the brink of crisis, and according to the

report of the United Nations and the International Water Management Institute, it is in a severe crisis [7, 8]. The World Bank in a report about the per capita reduction of extractable water and its quality, inefficient use of agriculture and industry, unfavorable condition of repairs and maintenance, limitation of reimbursement of costs, and lack of coordination between related organizations are the most important challenges facing water in Iran [9]. In general, the basic factors effective in reducing per capita renewable water resources are:

1) Climate change and global warming
2) increase in population
3) increase in pollution
4) efficiency of water resources use
5) Pricing of water resources
6) Quantitative and qualitative decrease in water resources [10].

In this regard, the comprehensive model derived from the training needs and interaction with the organization's human resources in order to promote the green and sustainable behavior of the subscribers to promote the culture of optimal energy (water) consumption includes what variables and model that can display all the components and strategies. It is the main question. This is the investigation. The structure of the present research includes the theoretical foundations and background of the research, research method, findings, conclusions, and suggestions.

2. THEORETICAL FOUNDATIONS

2.1 Drinking Water and Water Resources Management

Drinking water is one of the basic needs of humans and the source of life for humans, animals, and plants on the planet or biosphere. Among the water sources, accessible water sources are: surface water (river, pond, lake, sea, and ocean), underground water (well, spring, and aqueduct), and rain water [11]. Rivers, lakes, and underground water sources are some of the common water sources used for drinking, sanitary, and industrial purposes (these sources have conventional pollutants and are treated or disinfected using conventional processes) [12]. Non-conventional sources are also used forcefully in some parts of the country. These sources include water Salt, brackish water, rainwater, and even wastewater are the result of wastewater treatment, which in Iran are mostly used for green space irrigation and agricultural purposes, and some in some industries [13]. In general, the most important things that should be taken into consideration in determining the source of water supply for a city or village are as follows:

- The quantity of water resources and its fluctuations during several water periods, along with the investigation of water resources
- The quality of water sources and the type of treatment required
- The distance from the source to the place of consumption
- Topography of the water transfer route
- Difference in height of the water supply source and the place of consumption or storage tanks
- Covering more communities
- Easy accessability

• Type of transmission system (gravity-pumping)

• Economic comparison [14]

The problem of water supply in third world and developing countries, especially in rural areas, is not only the lack of water resources but also the lack of use of appropriate technology in water supply and distribution, relying on indigenous and local capabilities. One of the main reasons is the lack of proper use of available national or international financial resources and the lack of formulation of the necessary strategy according to national, regional, and local conditions [15]. In the last two decades, the World Bank and the World Health Organization have emphasized that if the improvement of the environment and water supply systems in villages is done with the participation of people and through local and native organizations such as village councils, it will bring more efficiency. This participation can be done in various sectors of investment, civil studies, and operation and maintenance of water facilities. Lack of water, quality problems, water and the government's inability to operate thousands of kilometers of water networks and pumping stations, thousands of wells, and hundreds of aqueducts and fountains in the country's villages, require a serious revision in the management of rural water supply [16].

2.2 Access to Drinking Water

In today's world, one of the concerns of the government of men is access to good quality drinking water. The presence of some salts in water is necessary for human health, but an excessive amount of some of them endangers human health. In general, quality is relative and represents the characteristics of water and is defined through physical, chemical, and biological characteristics [17]. One of the principles of providing drinking water in the villages is its adequacy and optimal quality [17]). Therefore, the amount of drinking water for each person per day or per capita water consumption should meet the needs of drinking, cooking, washing dishes and bathroom clothes, sanitary services, washing the house, and irrigation of domestic and drinking green spaces, or benefit from it. The collection methods are used by the public, which causes the amount of costs to vary [17].

2.3 Types of Water Used in Residential Houses

1. White water (drinking and sanitary water)
2. Gray water (second-hand water, except for the toilet)
3. Black water (toilet)[18].

2.3.1 White Water

Water that is free of foreign matter to the extent that it causes disease or has a harmful biological effect and that in terms of composition, physical, chemical, or microbial compliance with drinking water standards officially declared by the responsible health and regulatory authorities[19].

It is drinking water or city water that meets drinking water standards and has the highest quality. On average, 3 of the world's waters are sweet (drinkable). One of the most important sources of freshwater in Iran can be extracted. He mentioned underground water

with methods such as aqueduct wells, reservoir springs, etc [20].

2.3.2 Gray Water Recycled Water

Sewage produced at home, except for toilet sewage, is called gray water.

Gray water is water wasted from washing machines, bathrooms, dishwashers, and some other uses. If it is used to flush toilets and irrigate gardens, the consumption of drinking water will be greatly reduced. Many designs have been proposed to create gray water return systems for flushing toilets or watering gardens and lawns. If these proposals are implemented, the result will be a drastic reduction in net water consumption. An effective and efficient return system can collect and direct about 130 liters of gray water per person per day to the place of consumption. However, this strategy has not been widely adopted everywhere due to possible high cost and subsequent maintenance requirements [21].

Gray water is a good name for some water that is used in homes. Water that is turbid due to household activities and is hygienically somewhere between clean water and sewage, is a common definition in Europe, Australia, and other countries, for example, water from washing clothes and dishes. And even bathing is about 50 to 80 percent, or return water from watering houseplants that usually accumulate under pots. With this, we will reduce the cost of water consumption by about 40%. Some space areas in America are kitchen sink and laundry. They have left the old baby out of their definition of recycled water, these are mostly defined as black water (dark recycled water) [22].

2.3.3 black water

The water used in the toilet is called black water, which cannot be recycled and reused, and its per capita consumption is about 20 to 30 liters per day [23].

2.4 Water management

Water management can be divided into two separate parts:

1) Water supply management: includes normal activities to identify the development and extraction of new water sources in a more economical way and in general all measures that affect the quality and quantity of water entering the distribution points are supply management system[24].
2) Management of consumption: It presents the methods of consumption and the available tools to improve the levels and patterns of water consumption, and in general, everything that is effective for the consumption or waste of water after that is water consumption management [25].

2.4.1 Water Supply Management and Drinking Water Source Selection

The quality and quantity of purified water, the conditions, and the method of purification depend on the water supply source. So that many underground waters are free of minerals and undesirable substances, if placed in the right place and properly protected, they are healthy and drinkable from the point of view of health and can be used without purification. On the other hand, surface water is exposed to direct pollution

and its use for drinking usually needs purification. Furthermore, the location of the water source determines the energy required to pump the water, which directly affects the total cost of water [26]. If possible, one should choose a water source that is economically suitable and has the highest quality and can also provide the water needed by the community in terms of quantity. The wise choice of water sources and its protection in developing countries, especially in rural areas, is the most important measure to prevent the spread of water-borne diseases, and in these countries, drinking water cannot be provided only by purification processes. Because water sources are the inadequacy and management of water treatment plants in these countries is very weak [27]. The World Health Organization has prioritized the selection of water sources according to the filterability and energy required as follows [27]:

1) The use of underground water resources to supply water to small and rural communities is of primary importance, especially if it is located at a higher point than the point of consumption and can be protected. For example, we can mention a spring that is located upstream of the village, because it does not need to be purified and pumped.

2) The second priority is with a water source that does not need to be purified but needs to be pumped. Like a spring in the village downstream.

3) A water source that requires aeration, sedimentation, and simple filtration and can be directed to the consumption point by gravity.

4) A source of water that requires simple purification and must be directed to the point of consumption using a pump.

5) A source of water that requires full physical and chemical purification and also requires the use of pumping [28].

The reduction of underground aquifers and water supply sources, the increase in population, and the needs of consumers, as well as the drought crisis have doubled the necessity of managing water consumption. Considering that this sector uses processed and purified water, the importance of its correct and principled consumption doubles [29]. Consumption management is the planning, implementation, and monitoring of water-related activities that affect its consumption and cause favorable changes in the way of consumption, the time pattern of consumption, the amount of water consumption, and finally it follows the following benefits will have:

- Reduction of consumption and subsequently reduction of production costs
- Environmental protection and pollution reduction

In this regard, by adopting appropriate policies, not only the standard of living and the desirability of consumption will not decrease, but the goal of maintaining the standard of living and well-being with less consumption will be achieved [30].

2.4.2 Water Consumption Management

Water consumption management or water demand management is one of the branches of energy management and can be used in a wide range of measures in the form of water consumption pattern (water with income) and

its optimization and reduction of water losses in the distribution network (part of the water without coming) which will ultimately lead to a reduction in energy needs [5].

2.4.1.1 Purpose of Consumption Management

The total consumption of a network can be considered in two real consumption sections (after branching and water losses in the distribution network and before branching). The purpose of consumption management in the distribution network is to reduce losses in the network on the one hand and to optimize the consumption in the real consumption sector [31].

2.5 Optimization

Optimization is a word that is considered synonymous in our current literature and has the same meaning as the word economy. Unfortunately, it has been observed in many Persian books and articles that the definition of the word optimization is written as an explanation of the word economy [32]. If these two words have different meanings and it is not correct to use them as synonyms of each other, in English literature these two words have two different synonyms and they are never considered to have the same meaning [4].

The word optimization in English literature is a synonym (Optimize) and it is a synonym of the word Economic (Economize). In English texts, the word "Optimize" means the optimal use of something, while the word "Economize" means saving or using something with care and caution [33].

In Moin's dictionary, the word "optimization" means choosing and choosing the most, and in Dehkhoda's dictionary also means "chosen", although the word "optimization" does not exist in the Persian dictionary, from meaning of the word "optimum" it means “It is very clear”. This is while the Moeen dictionary has defined the word thrift as saving and economy, and the Omid dictionary has defined it as frugality, carefulness, and paying attention to not spending more than necessary[34].

As can be seen from the mentioned explanations, the word optimization only refers to improving the situation or something, while the word saving in its meaning has a little negative charge and indicates stinginess.

1.5.2 Optimizing Water Consumption

The definition of water use optimization by the American Water Resources Association (AWWA) is activities that are designed to:

- Decrease in demand for water.
- Increasing the efficiency of water consumption and reducing its losses.
- Improving land preparation operations in order to save water consumption and conserve water [35].

2.6 Research Background

In 1400, Imani and Shahbaz Begian conducted research titled The Spatial Expansion of Parand City with regard to the limitations of water resources until the Horizon of 2032: the necessity of paying attention to spatial planning and Management of Urban Water Resources. The obtained results indicate a significant difference in the

calculation of Parand City's drinking water consumption based on the spatial expansion approach in a scattered manner with a water requirement of about forty-three million cubic meters in 2032 and the long-term perspective growth scenario. A population with a water requirement of about thirty-three million cubic meters in 2032. In the second place, it shows planners a style of urban needs assessment and forecasting with regard to the natural growth of the population and the spatial expansion of the city[36].

In 1401, Amiri Baghbadrani conducted research titled "Women's awareness of the concepts of water resources management and their attitude and performance to improve the water consumption pattern (women aged 20 to 65 years, Zarin Shahr, Lanjan). The missing link of sustainable rural development, which if used with "Modern knowledge" while empowering rural communities, provides the basis for their participation and cooperation in the development process.

In 2014, Hedayati et al. He conducted a study titled Land Use and Water Resources Management. Instead of analyzing the activities, they analyzed the resources (case study: Caspian watershed). The results show that between 1380 and 1391, the Tashar sub-basin with 0.499617 points, and the Haraz-Qarasu sub-basin has the lowest score with 0.158627 points.

In 2019, Armota et al. conducted a study entitled Systematic Review of green human resource management: implications for Social Sustainability. The results showed three clusters named green human resource management practices, green behavior of employees at work, and organizational sustainability.

In 2019, Sharife et al. conducted a study entitled The Impact of Green Human Resource Management Practices on Sustainable Performance in Health Care Organizations: A Conceptual Framework. The findings showed that green human resource management practices are implemented at an average level, the overall average implementation of which was 2.42 on a scale of 5. Also, stable performance at a high level, 3.42 on a scale of 5, was obtained. Prioritization was done using green practices, where the most influential practices were "green recruitment" and "green training and engagement". The least effective green procedure was "green performance management and damage compensation".

In 2018, Roskoi et al. Conducted a study titled Green Human Resource Management and Green Organizational Culture Enablers: Enhancing the Company's Environmental Performance for Sustainable Development. Their findings indicate that environmental human resource management practices including recruitment, training, evaluation, and motivation support the development of a green organizational culture.

In 2018, Yousmani et al. conducted a study on linking green human resource management practices with environmental performance in the hotel industry. Based on the analysis, this study showed that green hiring and selection, green training and development, and green reward have a significant relationship with environmental performance, while green performance evaluation has no significant relationship with environmental performance.

3. RESEARCH METHOD

This research is qualitative. In order to identify the research variables and their dimensions, since the research literature on the subject does not have the necessary richness, the grounded theory method was used. In qualitative research, the main research tool is a semi-structured interview with experts and colleagues. For this purpose, the statistical population of the research was all scientific experts in human resource management from public and private universities, as well as managing directors of Qazvin Water and Sewage Company, and participated in the interview. To determine the samples of this research and to determine this group of experts, the purposeful sampling method was used based on criteria such as doctoral education and related executive work experience. According to the time and conditions of entering the test, 15 samples were used to conduct interviews and the sampling process continued until reaching the theoretical saturation point. These people were selected by the targeted snowball method until reaching the theoretical saturation point of 11 people.

The main dimensions and components are based on the open and central coding process of the data obtained from the in-depth exploratory interviews, and the process of refining the conceptual codes has been carried out, and the priority of each of the factors.

It is determined based on the frequency of the mentioned concepts in the interviews. Concepts were categorized through coding, either directly from participant interview transcripts or based on common themes of the codes. The text of the interviews was regularly reviewed to find the main and sub-categories and the importance and priority of these categories. Finally, the obtained codes were used to confirm the validity and reliability of the codes, and reliability between coders, which is a scale to determine the quality of qualitative analysis, and the codes were confirmed.

Table 1 shows the demographic characteristics of the interviews carried out in the qualitative section. In this section, the interviewees are described in terms of characteristics such as gender, age, and education.

4. RESEARCH FINDINGS

Research data has been collected through the coding process based on the foundation data method. Coding is an analytical process in which data are conceptualized and combined to form theory. In this process, data analysis is not done separately from

Table 1. ***Demographic characteristics of interviewees.***

Experts and professors							
Number of interviewees	**Gender**		**Work experience**			**Education**	
11	Woman	Man	5-10	11-20	Above 20	Masters	PhD and above
	3	8	1	7	3	1	10
Interview place	Tehran and Qazvin province						

collection and sampling. In the research plan, the phenomenological theory of the stages of data analysis was carried out through open, central, and selective coding.

• Open coding

In this phase of the research, the concepts and key points obtained regarding the evaluation of religion and life courses in a secondary school based on a constructivist perspective, two theoretical literature study processes, and research and interview background were listed.

First, the concepts and key points obtained from these two main concepts from the process of studying the theoretical literature and the background of the research carried out inside and outside the country were examined and listed. Phrases, concepts, and cases extracted from research were done with detailed analysis, and simulation (choosing more correct words and removing common concepts) and 273 cases were obtained in this section. The obtained cases were prepared in the form of an interview checklist and some of the obtained cases were removed and corrected by conducting interviews with experts.

In the open coding stage, the data were carefully examined, the appropriate terms and concepts and related special categories, their dimensions and characteristics were determined and the pattern was examined. The main unit of analysis for open and axial coding was the concepts extracted from the interviews, the concepts were created through the title by the researcher and directly from the interview text, and the items were obtained from the interviews.

• Axial coding

As mentioned, in the central coding part, the codes obtained in the free coding part are reviewed and studied, and related and similar codes are placed together in larger categories. After preparing and setting the tables as part of the qualitative analysis of the interview data, to complete the analysis based on free coding, the concepts obtained at a higher and more abstract level were grouped to achieve categories. Classification is the process of grouping concepts. Otherwise it would be confusing. Therefore, once again using the constant comparison of concepts with each other, each concept was compared with the concepts before or after it or with all existing concepts in order to extract general categories. Therefore, after comparing the extracted concepts, related concepts were categorized into a general category and based on the titles in related theories or the concepts obtained from the research, general titles were considered for the categories.

In this way, after the continuous comparison of the answers obtained from the interview, similar answers were arranged and similar concepts were extracted from them. In addition, related cases were merged and placed in 5 categories.

Category 1: causal factors

This category has 52 codes, which are finally divided into five main categories: "social factors, individual factors, government agencies, senior managers, legal factors, legal and technical-engineering factors, and other factors".

Table 2. ***Codes of the first axial category.***

Theoretical code	Axial code	Concepts
Causal factors	Social factors	Social capacity building
		Social responsibility
		Level of social awareness
		Growth and improvement of the culture level of society
		Mental grounding
		The degree of sociability
		Social participation
		Economic conditions
		Public education
	Individual factors	Responsibility
		Being teachable
		Persuading others
		Personal and family culture
		Level of knowledge and awareness
		Religiosity
		Environmental knowledge
		Institutional trust
		Household income
	State organs	Radio
		Media tactics
		Socializing the issue of water
		Informing
		Ministry of Power
		Water and sewerage and regional water companies
		Education
		Provincial Government
		Governorship

	Universities to create and promote the culture of optimal use of water resources
Senior Managers	Being a role model and leader in consumption culture
	Commitment to achieving stated goals
	Proper planning
	Coordination in implementation
	Examining the level of consumption culture
	Providing a solution to improve it
	Monitoring and evaluating the performance of relevant units
Legal, legal and technical engineering factors	Existing laws and loopholes
	The requirement to use modern methods and modern technology in water distribution
	Improvement of water-consuming household appliances
	Providing equipment to reduce water consumption
	The requirement to encourage the use of water consumption reduction equipment
	Modifying the network and minimizing leakage and leakage of treatment plants and repair network
	Update measuring equipment
	Increasing technology in water houses
	Requirement to use water label
	Decrease in rainfall
	Geographical location of the country (located in a dry area)
	The occurrence of recent droughts and their consequences (land subsidence, etc.)
	Cultivation in the field of optimal water use
	Placing water as an economic commodity
	Protecting the environment by using less energy
	The saltiness of the water
	Excessive consumption and mismanagement of water resources

Category 2: contextual factors

This category includes 36 codes. The main codes of this category include the subcategories of "Individual Background Conditions and Socio-Economic Disadvantages".

Table 2. ***Codes of the second core category.***

Theoretical code	The central category	Concepts
Individual background	Individual background conditions	Belief in the matter
		Cooperation
		Acceptance of culture
		Lack of awareness of the complications and effects of dehydration
		Consumerism
		Lack of information and lack of motivation regarding consumption management
		Using new technology and scientific methods
		Responsibility
		lifestyle
		Age
		Education
		Job
		Saving habits and national identity
		Marital status
	Social and economic failures	Land use planning
		Not having another option in water consumption for consumers
		Pricing system
		Separation of drinking water tariff from non-drinking water
		Indiscriminate development of green spaces
		Lack of attention to culture
		Lack of public information about the water crisis
		The high cost of using modern technology
		Absence of punitive incentive tariffs As soon as there is a subsidy for the preparation and use of consumption-reducing appliances
		Absence of legal requirements
		Lack of basic education

		The correct way of consumption
		Commitment and social responsibility
		Education and appropriate media and advertising fields
		Technical issues (how to design, type of materials, and types of consumables such as pipes, operation method, etc.)
		Renovation and reconstruction of networks
		Separation of drinking water from non-potable water
		Use of specialist forces
		Organizational culture for Optimal Energy Consumption (Water)
		Changing the attitude of subscribers towards the environment and the amount of water

Category 3: Intervening factors

This category includes 48 final codes. The key categories in this section include "the way of thinking and support of managers, the performance of trustees, and the will and desire of the community."

Table 3. ***Codes of the third axial category.***

Theoretical code	Axial code	Concepts
Interfering factors	Managers' way of thinking and support	Compilation of comprehensive water document
		The existence of favorable thoughts in senior managers
		Officials' request
		Adequate attention to the water crisis
		Correct and fair management in drinking water distribution
		Creating restrictions on water industry licenses based on the conditions of each region
		Provide tangible statistics
		Detailed planning and consumption based on statistics and trust-building
		The importance of culture
	The performance of the trustees	Coordination of organizations in the implementation of plans
		Considering incentive plans and facilities for construction
		Optimal consumption by organs
		Use of energy-saving appliances by the government
		Creating a system of encouragement and punishment

	Considering the limitations in creating green space
	Supporting producers and users of technological equipment and modern science
	Mandatory use of reducing devices and valves in the construction of residential houses
	Separation of drinking water from non-drinking water
	Requiring industries to recycle water
The will of society	Citizens and community members want
	Participation and observance of important people and elites of the society
	People's participation
	Taking the matter seriously from the point of view of the community members
	Preventing confrontation due to a lack of knowledge and understanding
	Belief in optimal consumption norms
	People's desire for education and the use of new equipment and technology
	Community responsibility
Administrative corruption	
The difficulty of the organizational structure	
Better management	
Cost reduction (lower cost)	
Improving employee engagement and performance	
By creating motivation and positive evaluation	
Improve customer engagement and value	
With respect and new service delivery methods (CRM)	
People's welfare level (economic, health, etc.)	
Social class (urban, rural, etc.)	
The amount of religious beliefs	
Information and advertising in virtual space and media	
The level of education of the people	
Raising awareness and creating culture by the organization	
Installation of water tanker valves	

		Consciousness
		Religion
		Attitude and performance of families
		Managers' way of thinking and support
		Advertising for the correct use of water
		Public training for subscribers

Category 4: Strategies

This category includes 54 codes. The main categories include "proper and correct operation, continuous training at different levels, and media advertising and information".

Table 4. ***Codes of the fourth core category***

Theoretical code	Axial code	Concepts
Strategic factors	Correct performance	Monitoring the correct performance of the trustees
		Investment in education sectors
		Use of benefits and incentives for optimal consumption culture
		Using modern technology and new scientific methods in water consumption and equipment
		Taking the crisis seriously by the authorities
		Correct management in education
		Providing the right solution for each region
		Accurate and economic estimate of the plan
		Trying to implement principles and coordination of organizations
		Track correction by evaluating performance at each stage
		Implementation of justice in access to sanitary drinking water
		Making the society responsible by observing the responsibility of elites and important people and officials
	Continuous training at different levels	Education and culture since childhood
		Making symbols of Optimal Energy Consumption (Water)
		Making children's animations
		Education in schools
		Creating a suitable educational structure in different age groups

	Pandemic training
	The use of effective training suitable for each person's age and expertise
	Continuity in education
	Training managers and officials
	Create a suitable intellectual background
Advertising and media information	Correct advertising
	Continuous advertising
	Continuous awareness
	Informing the limitations and complications of water production
	Announcing and providing practical solutions
	Honesty in information
	Announcing the actual and existing conditions of water resources
Approval of restrictive laws (increasing tariffs, methods of subscription allocation, etc.)	
Intensification of punishment in dealing with offenders (high users, unauthorized users, etc.)	
Government policy in the use of water resources and its management	
Putting the strategy of water and sewage companies on the basis of optimal consumption and water economy	
Recycling and water circulation in nature	
Exchange of information, ideas and constructive interaction between human resources within the organization	
Use of up-to-date technologies	
Continuous training at different levels	
Jihadist work based on knowledge	
Recycling and recovery of gray water	
Positive interactions and communications within and outside the organization	
Creating organizational transparency	
Interactions with the media, institutionalization, and management of optimal consumption of drinking water	
Good communication within the organization	
Formation of research groups	
Cultural foundation with the approach of modifying the consumption pattern	

	Assessment of water demand
	Raising the level of knowledge
	Expert, committed and capable human resources
	Using the experiences of other countries in the field of optimal consumption
	Legal and control measures
	Education and correction of the cultural habits of the society
	Elaboration of supporting platforms regarding graywater recovery
	Using local knowledge for optimal water use

Category 5: Consequences

This category includes 32 codes. The main codes of this category include "individual outcomes, short-term outcomes, long-term outcomes, national and regional outcomes".

Table 5. ***Codes of the fifth axial category.***

Theoretical code	The central category	concepts
consequences	Individual consequences	Correct consumption
		No excessive consumption
		Increase the level of awareness
		Correct management
		Lack of consumerism
		Reducing mental pressure related to water supply and peace
		Increased accountability
		Learning to accept
	Short term results	Reduction in per capita consumption
		Increasing people's awareness
		People's participation in education and optimal consumption in trained people
	Long-term results	Achieving a balanced consumption trend and stabilizing it
		Reduction in per capita consumption
		Preservation and survival of water supply sources
		Institutionalizing the culture of water consumption in the public mind

	Changing and optimizing the consumption pattern of electricity, gas, and...
	Achieving water support and preserving the environment
National results	Achieving people's support and cooperation in the implementation of the plan
	Conservation of water resources such as underground waterways
	Conserving water resources for future generations
	Building an informed and purposeful society
	Changing the structure of society to the approach of non-extravagance, consumerism, and social justice
Regional results	Regional growth
	The survival of society and the increase of prosperity
	Access to an acceptable environment
	Becoming a model of the region for culture and optimal consumption of resources
A strategic and comprehensive view of the human management system	
Future perspective and sustainable development of drinking water	
Localization of human resource strategies based on scientific theories and attention to the organization's policy	
Clarity of organizational goals and needs	
Technology and innovation in strategy	
Reducing obstacles and benefiting from successful experiences	
Collaborative strategy and interaction of all managers and employees in formulating strategy	
Respect, tolerance, and resolution of conflict between the organization and subscribers	
Manpower training	
The independence of the human resources unit and customer infrastructure	
Promote privatization and reduce administrative support	
Establishing bilateral interaction in outsourcing and assigning work to people and the private sector	
Reduce consumption	
Optimization of consumption	
Increased satisfaction	
Less damage to facilities	

Revival of supply sources
Saving Water
Reduction in per capita consumption
Reduction in costs
Sustainable Development
Proper management of non-consumerism
Achieving people's support and cooperation in implementing optimal consumption plans
People's participation
Changing the structure of society to the approach of non-extravagance, consumerism, and social justice
Conserving water resources for future generations
Building an informed and purposeful society
To become a model of the region for culturalization and optimal consumption of resources
Institutionalizing the culture of water consumption in the public mind
Achieving a balanced consumption trend and stabilizing it
Interaction of organizational human resources with subscribers → reduction of per capita consumption, savings, preservation of water resources
Increasing people's awareness

At this stage, similar and symmetrical categories were tried to be included in the main themes. Based on the concepts shared by the categories with each other, the themes were extracted in the form of more abstract concepts. After preparing and setting the table of initial concepts and categories as the first step of qualitative analysis of the information obtained from the interview, to complete this process, the resulting concepts were grouped at a higher and more abstract level to reach the main themes. After comparing the grouped categories, the categories related to each other were grouped into a general theme, and based on the titles in the relevant theories or concepts arising from the research literature, general titles were considered for these themes.

Table 6. ***Selected final codes.***

Theoretical code	The central category	Optional code
	Social factors	Growth and improvement of the cultural level of society
		The degree of sociability

Causal factors	Individual factors	Personal and family culture
	State organs	Socializing the issue of water
		Universities to create and promote the culture of optimal use of water resources
		Monitoring and evaluating the performance of relevant units by managers
	Legal, legal, and technical-engineering factors	The requirement to use modern methods and modern technology in water distribution
		Modifying the network and minimizing leakage and leakage of treatment plants and repairing the network
	Reducing the amount of rainfall and the geographical location of the country (located in a dry area)	
Background factors	Individual background conditions	Lack of information and lack of motivation regarding consumption management
		Using new technology and scientific methods
	Social and economic failures	Land use planning
		Separation of drinking water tariff from non-drinking water
		Absence of legal requirements and lack of basic education
	Changing attitudes towards the environment and the amount of water	
Interfering factors	Managers' way of thinking and support	Compilation of a comprehensive and electronic document on the water crisis
		Correct and fair management in drinking water distribution
		Creating restrictions on water industry licenses based on the conditions of each region
	The performance of the trustees	Separation of drinking water from non-drinking water
	The will of society	Participation and observance of important people and elites of the society
	Improving the participation and performance of the employees of the relevant institutions	
	Improve customer engagement and value	

		Providing the level of public education for the people
		Raising awareness and creating culture by the organization
Strategic factors	Correct performance	Government policy in the use of water resources and its management
		Intensification of punishment in dealing with offenders (high users, unauthorized users, etc.)
	Continuous training at different levels	Approval of restrictive laws (increasing tariffs, methods of subscription allocation, etc.)
	Advertising and media information	Putting the strategy of water and sewage companies based on optimal consumption and water economy
		Creating organizational transparency
		Interactions with the media, institutionalization, and management of optimal consumption of drinking water
		Using the experiences of other countries in the field of optimal consumption
Consequences	Individual consequences	Creating a culture of optimizing consumption and reducing per capita consumption
	Short term results	People's participation in education and optimal consumption in trained people
	Long-term results	Collaborative strategy and interaction of all managers and employees in formulating strategy
	National results	Changing the structure of society to the approach of non-extravagance, consumerism and social justice
		Localization of human resource strategies based on scientific theories and attention to the organization's policy
		A strategic and holistic view of the human management system
	Regional results	To become a model of the region for culturalization and optimal consumption of resources

The purpose of selective coding is to create a relationship between the categories generated (in the axial coding stage). This action is usually done based on the paradigm model and helps the theorist to carry out the theorizing process easily. The basis of communication in coding is based on the expansion of a category.

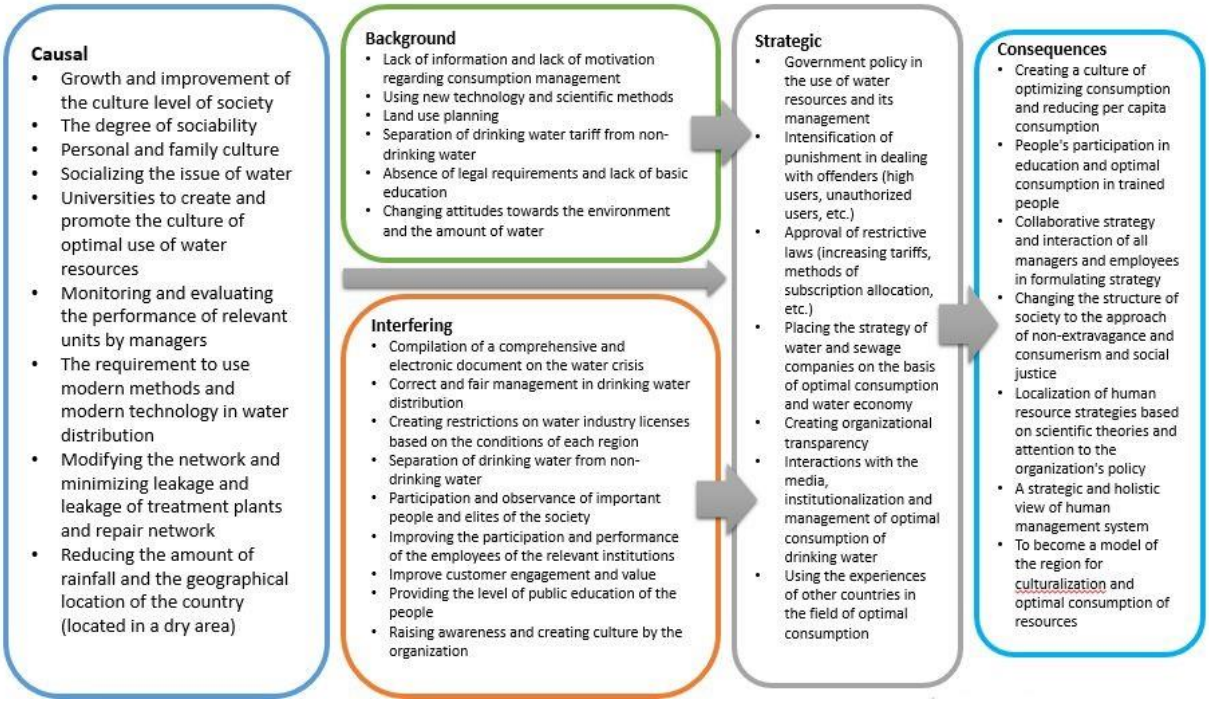

Fig. 1. Research paradigm model.

In the selective coding stage of the current research, the relationship between the main category and other categories was determined. At this stage, the main and secondary classes were connected to each other to produce theoretical concepts so that the organization's manpower coefficient is available to the subscribers in order to optimize drinking water consumption with a sustainable approach. These actions allow the researcher to integrate the concepts obtained in the open and central coding stages and use them to provide a model for the provision of self-employment services. For this purpose, in the form of a qualitative research method, we identified the role of extracted categories in the form of a paradigm model using the paradigm provided by Corbin and Strauss (2007).

5. CONCLUSION

This is a humanities article and the patterns were formed based on interviews with experts. The validity of this article is based on the researcher variable paths questionnaire. The purpose of validation in the humanities of the article is to use the method of confirmatory factor analysis.

The field of sustainability in water resources management, with the main goal of optimizing water consumption, examines possible solutions for the selection and optimal allocation of limited resources to meet human needs. This process is always faced with two serious problems: one is the limitation of resources and the other is the ever-increasing diversity and growth of needs, which intensifies the problems of selection and allocation. Water resources

management is facing the problem of lack of water resources and in response to the existing needs, it is looking for the optimal allocation of resources and their optimal use in line with economic growth and development. In this regard, it is faced with serious issues such as the economic efficiency of water, opportunity cost, and resource valuation in the direction of resource allocation, transfer, and distribution. Water in Iran is limited and this limitation is very serious. But is this limited resource economically used? The relative comparison of the economic efficiency of water in different economic sectors and attention to the opportunity cost leads us to the discussion of optimal planning and selection.

Causal factors in the organization's human resources interaction model with subscribers in order to optimize drinking water consumption identified in the current research are social factors, individual factors, government bodies, senior managers, and legal, the legal and technical-engineering factors. The findings of the present study are similar to the findings of [37-39] Armota et al. (2019), Sharife et al. Yousmani et al. (2018), were consistent. Water-scarce countries have to invest huge sums of money every year to develop infrastructure to meet their ever-increasing water needs. While many water-scarce countries are facing financial and economic problems in all fields, and to keep up with the world, they must worry about their economic growth. Population growth and economic growth also depend on access to resources, and this need is increasing every year. It seems that a more serious move towards solutions such as management systems and unconventional solutions in the near future is inevitable. On the other hand, many solutions, such as building a dam, etc., are in conflict with the principles of sustainable development. Optimizing water consumption for its development and expansion faces many obstacles and problems due to the extent and the need to change structures. However it seems that the huge capacity that exists in this business can provide suitable incentives for the development of this business. Reducing the need to develop and create some water infrastructures and being more compatible with sustainable development is one of the results of this business. Optimizing water consumption can take an effective step in supplying water needs and managing supply and demand by using water networks. In this way, a part of the large costs of construction and infrastructure development can be invested for the optimal exploitation of the opportunities that have arisen and the abandoned factors. Increasing GDP, optimal use of natural resources, development of social welfare, and orientation of policies to meet the needs of future generations are among the advantages of this business.

Background factors in the organization's human resources interaction model with subscribers in order to optimize drinking water consumption identified in the current research are individual background conditions and socio-economic inadequacies. The findings of the present study are consistent with the findings of [37-39] (2014), Armota et al. (2019), Roscoy et al.

All construction projects have environmental, economic, and social benefits. Studying the connection between drinking water and other issues is important.

The basic challenges facing water resource management are as follows: how to maximize all positive effects and reduce negative effects, how to provide safe water and effective use in the agricultural sector, reduce flood losses, control water pollution, reduce Environmental and social effects such as reducing problems caused by floods and combating and reducing water diseases and pollution related problems. Projects should be designed and developed as multi-purpose projects. Due to the increase in population, drinking water supply should be prioritized. Also, careful planning should be done for the implementation of watershed treatment plans and environmental issues. In these projects, the use of water should be the main component of the development of water resources. In these projects, attention should also be paid to the preservation of the quality of the environment. The inseparable and almost permanent principles that exist in the development and management policies of this country are the real challenge caused by technical, organizational, and financial problems, the lack of basin plans based on stable principles with the lack of a suitable legislative system, and weakness, financial support, slow decentralization process, and lack of public awareness at the community level about water quality and correct use of water for irrigation and sanitation needs, awareness of the importance of water pricing and not paying attention to it due to the existing socio-political conditions and consumers' inability to pay.

Intervening factors in the interaction model of the organization's human resources with subscribers for the purpose of optimal consumption of drinking water identified in the present research are: the way of thinking and support of managers, the performance of those in charge, and will, and the will of society, the findings of the present study are consistent with the findings of [38] Armota et al. (2019), Sharife et al. (2019), Yousmani et al. (2018). The existence of a large political, social, economic, and cultural gap between domestic and international spheres has always been a great obstacle to realizing the goals of globalization and a comprehensive framework for theorizing in the field of international relations. If the international dimension shows a set of political and economic forces that are distinct from domestic political and economic forces, this requires that the international field be studied with a different analytical framework and with the help of its own analytical tools. Also, governments, as the main players in the international arena, make decisions based on a set of norms, ideologies, productions, and domestic economic needs. International and domestic events have been inextricably linked since the beginning of time. In such a way that they influence and guide the internal political, economic, and social policies to a great extent.

The strategic factors in the organization's manpower interaction model with subscribers in order to optimize the consumption of drinking water identified in the current research are correct and proper exploitation, continuous training at different levels, and advertising and information in the media. The findings of the present study are consistent with the findings of [37-39] (2014), Armota et al. (2019), and Sharife et al. has been the country's comprehensive water plan was prepared in the previous

decade for levels one and two watersheds, and its provincial version is also available for a number of provinces of the country in the regional watershed of the province. Also, by addressing all the natural capacities, the necessary institutional and material infrastructures have been investigated and finally, it has dealt with the different policy scenarios and scenarios of water resources development. However, according to officials and specialists of Iran's Water Resources Management Organization, the policies foreseen in this plan have not been realized and due to the lack of institutional and structural coordination between suppliers and consumers, the work done so far has not achieved the intended goals. According to the plan, the regional water organizations of the country prepare reports titled "Resources and Consumption Report" for the Iranian Water Resources Management Company, in which they review the current resources and consumption within the geographical scope of their operations. In the practice of preparing these reports, there is no specific time interval and they are prepared when needed. In the past years, the efforts have been based on the fact that the regional water organizations in their reports examine the more distant horizons and anticipate the future needs of their region and provide important proposals. Then these reports are reviewed in Iran's Resource Management Organization and considering all the needs and capacities of the country, the solutions to meet the needs and resource management are reviewed.

The consequences of the organization's human resources interaction model with the subscribers in order to optimize drinking water consumption identified in the present research are individual consequences, short-term results, long-term results, national results, and regional results. The findings of the present research are similar to the findings of [37-39] Armota et al. (2019), Sharife et al. Yousmani et al. (2018), were consistent. The Middle East region is struggling with the problem of severe water scarcity and for this reason, water has entered the political equations of the region. Water scarcity is a global problem that has occurred even in countries with abundant water such as the United States. But in the Middle East and North Africa, this problem is more serious. Local, national, and international agencies have taken initiatives. However, due to the lack of coordination and sometimes conflict in behavior, no success has been achieved in this work. Unlike all other sectors, the water industry still needs subsidies and therefore there is little incentive to invest in it. The World Bank has praised the efforts made for health and access to clean water for people. Stating that he is not optimistic about the future, this bank says: Despite this, currently the amount of demand is greater than the amount of water supplied, and for this reason, there is an imbalance between supply and demand in many countries, which causes the crisis

5.1 Executive proposals of the research

- It is necessary to provide a suitable platform for people in the community to become more familiar with the optimization of water consumption at the level of mass media and social networks that are used by the public.

- Substrate for the separation of drinking and non-potable water
- Creating a foundation for water management in agriculture
- The use of collaborative management, focusing on the interaction of subscribers with the human resources of the water and sewage organization.
- Optimum pricing of water resources and pricing separation of low-consumption and high-consumption groups and differentiation of industries

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