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Application of Social Marketing In Water Management Optimization

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Extended Abstract

Proper management of water resource patterns is considered as one of the main infrastructure for sustainable development in the energy sector. Drought, population growth, industrialization and urbanization are the factors that have contributed to the country's water supply crisis. In this regard, social marketing has an effective role in reforming the pattern of consumption in the energy sector, especially in the consumption of water resources. In this research, in order to determine the relationship between effective factors in social marketing and its role in voluntarily changing water of consumption and effective management, from 115 knowledgeable experts in the field of water resources as a statistical society, asked about the factors that associated the pattern of consumption in form of a questionnaire. Based on the analysis, it was found that three factors of social marketing (location, product and culture) have a significant relationship, and then by ranking the social marketing factors with fuzzy TOPSIS method, the factor of location as the most important factor was obtained (0.644).

Keywords: water resources, modeling, structural equations, fuzzy TOPSIS

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INTRODUCTION

According to the Ministry of Energy's performance report, balancing supply and demand for water in different climates and geographies in different parts of the country cannot be solved simply by relying on the construction of new facilities and hardware aspects (Shahedi and Talebi, 2013,74). Therefore, in the context of the water crisis, the reform of the consumption pattern will be very important and will play a key role in the area of water security, energy security, environmental protection as well as macroeconomic and political decision making. In this regard, one of the new tools in changing the pattern of energy consumption, especially water resources, is the use of social marketing. As in "Economic Marketing", the purpose of identifying market components and scientific analyzes in order to increase economic profit is to achieve social benefits in "social marketing". Economic marketing is based on four components of product, location, price, and promotion, which is known as the Four P (kotler, 1391,66).The product in social marketing is the expected behavior and benefits of the product, which is here the optimal behavior in water consumption. The second element of social marketing is price that refers to cost and time that subscribers must to change their behavior. The third component is place (critical areas) and fourth component is culture (Ghasemi, 1395).

PURPOSE

The purpose of this paper was to study of the management approach in the field of water resources, based on the components of social marketing, to determine the relationship between effective factors on the optimal water consumption through changing the consumption pattern.

METHODOLOGY

In the first stage, using the confirmatory factor analysis, the validity and reliability of the studied variables have been investigated. In the second stage, the relationship between the explicit and latent variables has been investigated by the Structural Equation Modeling method, in the third stage, the latent variables as a social marketing component, has been ranked by Fuzzy Topsis. In order to determine the sample size of the researchers, based on a 30-sample prototype and the Cochran formula ,the sample size according to formula (1) was obtained 96. In the following, 160 questionnaires were prepared in format of five-choice Likert scale, which, 115 questionnaires were Analyzed. Validity of the questionnaire was identified based on experts' opinions and its reliability was calculated by Cronbach's alpha coefficient.

$$(Number\ of\ samples)\ n = \frac{N \cdot Z_{\alpha}^2 \cdot \sigma_x^2}{\varepsilon^2(N-1) + Z_{\alpha}^2 \cdot \sigma_x^2} = \frac{160 \cdot (1.96)^2 \cdot (0.78)^2}{(0.1)^2 \cdot (159) + (1.96)^2 \cdot (0.78)^2} = 96 \quad (1)$$

RESULT

Based on the analyzes using the exploratory factor analysis method, three latent variables were identified in titles of critical regions (location), changing in consumption of behavior (product) and culture (promotion), then using modeling Structural equations showed that the behavior component is influenced by two factors of culture and location. Finally, based on the ranking by Fuzzy TOPSIS method, the location factor with the coefficient of 0.644 as the most effective social marketing factor in water resource management was determined.

DISCUSSION

According to Table 1, a significant relationship was found between the affecting factors of water resource management with the three latent components that identified as social marketing indicators .Feature 1 show the significant relationship.

Table (1). Significant Relationship

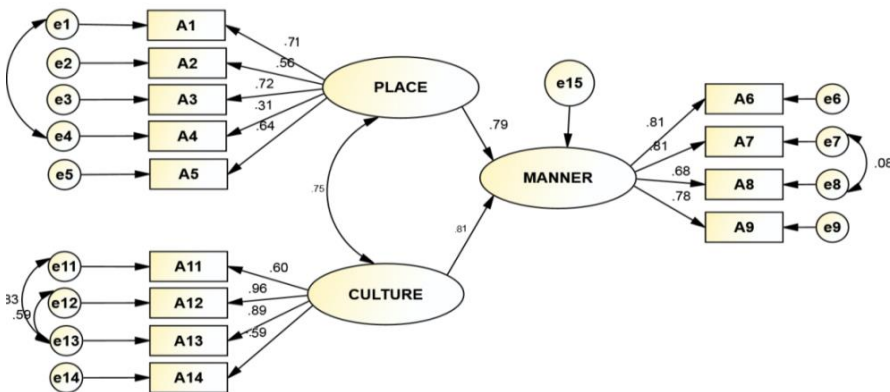
Latent variable	Significant level
MANNER---> PLACE	0.007
CULTURE<-->PLACE	***
CULTURE-->MANNER	0.002

Sig.<0.05



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Feature 1. Structural Model of Related Factors Based on Social Marketing Components



Based on the structural model of the research, it has been found that the culture making is based on training has a strong correlation (0.81) with changing consumption behavior and also restricting measures in critical areas (water supply and demand) has a good correlation (0.79) with consumption pattern, it can be argued that in order to change the viewpoint of subscribers, actions such as the use of fines, provision of facilities and training, have a significant role in optimal management of consumption. On the other hand, because of the relationship between factors in managing water resources and the fact that these factors have nature of time and cost, proper implementation requires prioritization. In this study, the Fuzzy Topsis Ranking method was used to rank the effective factors, the results are presented in Table (2).

Table (2). Priority of Latent Factors

Ci	Latent factors
0.644	PLACE
0.312	MANNAR
0.294	CUTURE
Sig.<0.05	

CONCLUSION

Despite the high potential for saving water resources in different sectors such as agriculture, industry and household, it can be achieved by applying social marketing components to changing the attitude of consumption . The ranking of effective factors of social marketing indicates the amount of attention to various factors in the management of water resources in terms of the degree of crisis creation or prevention of adverse events.

NOVELTY

Determining the relationship and ranking of effective factors in water resource management through social marketing components as a management strategy in modeling the correct consumption especially in areas that encounter water crisis.

Practical implication: The model can be used for policy planning and long-term planning as a way to support decision-makers in water resource management to change the pattern of consumption

BIBLIOGRAPHY

- Alam Tabriz, A., Zareian, M., & Rajabipoor Meybodi, A. R. (2009). Barresi-ye kârkard-e teknik-e topsis fuzzy dar behbud-e sanješ-e kârâyi-ye šo'ab-e bânkhâ bâ estefâde az teknik DEA [Studying the application of fuzzy topsis in improvement of efficiency measurement of bank branches using DEA]. *Journal of Industrial Management*, 1(3), 99-118.
- Azar, A., & Rajabzadeh, A. (2012). *Tasmimgiri-ye kârbordi-ye ruykard-e MADM* [Applied decision making MADM approach] (pp. 194-197). Tehran, Iran: Enteshârât-e Negâh-e Dâneš.
- Chen S.J. & Hwang C.L. (1992.) *Fuzzy Multiple Attribute Decision Making Methods and Applications*, Springer, Berlin, ISBN 978-3-642-46768-4, 16-41. Retrieved from <https://www.springer.com/gp/book/9783540549987#>
- Dehgan, H. & Pourreza, N. (2016). Avâmel-e mo'asser bar sarâne-ye masraf-e âb-e xânevâdehâ –ye Tehrâni. *Fasnâme-ye Râhbord-e Ejtemâ'i Farhangi*, 5(19), 245-268.
- Ehsani, M., & Khaledi, H. (2002). Šenâxt va ertegâ'-e bahrevari-ye âb-e kešavarzi be manzur-e ta'min-e amniyat-e âbi va għazâi-ye kešvar [Understanding and improving of agricultural water productivity in order to provide water and food security of the country]. *Proceedings of the Eleventh Conference of National Committee on Irrigation and Drainage* (pp 674-684), Tehran, Iran.
- Ehteshami, M., Ghadimi, H., & Ghadimi, A. (2015). Râhbord-e modiriyat-e yekpârçe-ye âb va enerži dar ta'min-e amniyat-e âbi dar šarâyet-e xošksâli [Integrated water and energy management strategy for providing water security in drought situations]. *Fasnâme-ye Râhbord-e Ejtemâ'i Farhangi*, 4(15), 39-64.
- Forests, Range and Watershed Management Organization, Daftar-e Tarh-e Melli-ye Taghyir-e Âb-o-Havâ (2012). *Jalase ham andiši va tanzim sanad rahbordi va barname hefazat bahrebardari az marâte', sâzmân-e jangalhâ, marâte' va âbxizdâri-ye kešvar*. <https://www.doe.ir/Portal/home>.
- Ghasemi, S. (2016). Kampein-e bâzârâbi-ye ejtemâ'i, râhi barâye kâheš-e masraf-e âb [Social marketing campaign; A way to decreasing water consumption]. *Donyâ-ye Eqtesâd*, No 3440. Retrieved from <https://www.donya-e-eqtesad.com/fa/tiny/news-866412>
- Golam, R. (2016). Managing the food, water, and energy nexus for achieving the Sustainable Development Goals in South Asia. *Journal of Environmental Development*, 18, 14-25. doi: 10.1016/j.envdev.2015.12.001
- Hajkowicz, S., & Collins, K. (2007). A review of multiple criteria analysis for water resource planning and management. *Journal Water Resources Management*, 21(9), 1553-1566. doi: 10.1007/s11269-006-9112-5



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- Honarbaksh, N., & Babran, S. (2008). Bohrân-e vaz'iyat-e âb dar jahân va Iran [The crisis of water in the world and Iran]. *Faslnâme-ye Râhbord*, 16(48), 193-212.
- Honari, H. (2011). Tarrâhi-ye model-e mo'âdelât-e sâxtâri-ye sarmâye-ye ejtemâ'i va modiriyat-e dâneš dar sâzmânâ-ye vazeši [The planning structural equation model of social capital and knowledge management in sport organizations]. *Pažuheshâ-ye Modiriyat-e Varzeši va Olum-e Harekati*, 1(1), 85-105.
- Hosseini, M., Sharifzaheh, A., Golamrezaei, S., & Akbari, M. (2012). Tabyin-e mo'allefehâ-ye modiriyat-e bohrân-e xošksâli dar manâteq-e rustâyi va ašayeri-ye Jonubšarq-e kešvar [Explaining components of drought crisis management in Southeastern rural and nomadic areas of Iran]. *Iranian Journal of Agricultural Economics and Development Research*, 42(2), 185-197.
- Kadi, M. (2016). Water for development and development for water: Realizing the Sustainable Development Goals (SDGs) Vision. *Aquatic Proceeded*, 6, 106-110. Doi: 10.1016/j.aqpro.2016.06.013
- Keshavarz, M., & Karami, E. (2008). Sâzehâ-ye asargozâr bar modiriyat-e xošksâli-ye kešavarzân va payâmadhâ-ye ân: Kârbord-e model-e mo'âdelât-e sâxtâri [Affecting constructions on drought management of farmers and its consequences: Using the model of structural equation model]. *Journal of Sciences and Technology of Agriculture and Natural Resources*, 12(43), 267-283.
- Khorshidi, Gh., & Mogaddami, S. (2003). Tabyin-e mafhum-e bâzâryâbi-ye ejtemâ'i [Explaining the concept of social marketing]. *Journal of Economic Literature*, 7(28), 141-163.
- Kotler, P. & Armstrong, G. (2011). *Modiriyat-e bâzâryâbi* [Marketing management] (18th ed.; B. Forouzandeh, Trans.). Isfahan: Enteshârât-e Âmuxte. (Original work published 1981)
- Mugagga, F., & Nabaasa, B. B., (2016). The centrality of water resources to the realization of Sustainable Development Goals (SDG). A review of potentials and constraints on the African continent, *International Soil and Water Conservation Research*, 4(3), 215-223. doi: 10.1016/j.iswcr.2016.05.004
- Nasraabadi, E. (2015). Šavâhed-e zistmohiti-ye bohrân-e âb-e Iran va barxi râhhalhâ [environmental evidences of water crisis in Iran: Solutions]. *Faslnâme-ye Râhbord-e Ejtemâ'i Farhangi*, 4(15), 56-89.
- Nastaran, M., Ghasemi, V., & Hadizadeh Zargar, S. (2013). Arzyâbi-ye šaxeshâ-ye pâydarî-ye ejtemâ'i bâ estefâde az farâyand-e tahlil-e šabake (ANP) [Assessment of indices of social sustainability by using analytic network process (ANP)]. *Journal of Applied Sociology*, 24(3), 155-173.

- Olayinka, O. S.(2014). Towards achieving energy for sustainable development in Nigeria. *Renewable and Sustainable Energy Reviews*, 34, 255-272. doi: 10.1016/j.rser.2014.03.019
- Shafiqul Islam, M., Sadiq, R., Rodriguez, M., Najjaran, H., Francisque, A., & Hoorfar, M. (2013). Evaluating water quality failure potential in water distribution systems: A fuzzy-TOPSIS-OWA-based methodology. *Journal of Water Resources Management*, 27, 2195-2216. doi: 10.1007/s11269-013-0283-6
- Shahedi, M., & Talebi Hossein Abadi, F. (2013). Erā'e-ye čand šāxes-e kārborđi be manzur-e barresi-ye ta'ādol-e manābe'-e āb va pāydāri-ye towse'e [Proposing applied creiteria for investigating water resources balance and sustained development]. *Journal of Waterand Sustainable Development*, 1(1), 73-79. doi: 10.22067/jwsd.v1i1.34603
- Shahraki, J., & Mohseni, S. (2013). Kārborđ-e tasmimgiri-ye čand me'yāre dar taxis-e behine-ye manābe'-e āb: Motāle'e-ye mowredi šahrestān Yazd [Compromise multi criteria decision making application in water resources optimal allocation case study Yazd city]. *Journal of Irrigation & Water Engineering*, 3(4), 107-117.



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