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Changing Attitudes Towards Water Consumption: Influencer Communication on Instagram

Abstract

Due to environmental challenges, water scarcity has become a global issue, and consumers' water conservation attitudes (WCA) have become crucial. Although traditional media campaigns have a power on consumers' motivation to change their sustainable water consumption behaviours, social media campaigns can be more influential in changing negative attitudes into positive ones toward water conservation. Influencer marketing can especially cause changes in a shorter time since it provides more personal communication than traditional marketing communication. This study aims to reveal whether influencer marketing can change water consumption attitudes (WCA). The main research question is: "Does influencer communication about water conservation cause an attitude change in the followers?" We conducted a quasi-experimental design for three weeks and examined consumers' WCA by pre-and post-test results by using the WCA survey developed by Dolnicar & Hurlimann [1]. Participants answered the survey before and after being exposed to the 24 videos shared by the influencer. The increase in attitude points is statistically significant (t= -15.461, p=.000).

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Introduction

Water scarcity is a global challenge for achieving the Sustainable Development Goals of the United Nations, and it is vital to spread sustainable water consumption behaviours [2]. According to Llanos et al. [3], the perception of sustainable water consumption is influenced by water consumption services and indirect and direct domestic water consumption, which are the water-footprint indicators. Promoting sustainable water consumption is critical in managing water resources since it can encourage households to try to adopt more water-saving activities and provide information on how to do so [4]. Informative mass-media campaigns are criticized for poor message design, but more critically, for underestimating the difficulties of behaviour change [5].

As social media has become a part of our daily lives, influencers in social media became to act as online opinion leaders, smooth the way for knowledge dissemination, new information processing, and impulse new behavior adoption [6]. Compared to traditional marketing, mediated experiences with social influencers appreciate more interpersonal relations because of the openness, frequency, and mutual nature of celebrity endorsement [7].

This study investigates the effect of influencer communication on WCA and addresses the following question:

Does influencer communication about water conservation cause an attitude change in the followers?

Conceptual Framework

Although there is more than one way to influence attitudes towards water conservation, it is already proven that awareness of the water-footprint concept has an impact on people to promote sustainable water consumption [8] The origin of “water footprint” (WF), introduced by Hoekstra and Hung [9], was inspired by the concept of the “ecological footprint” developed by Wackernagel and Rees [10]. These concepts have supported sustainable consumption of goods and services, and people can learn how to manage water in their households [11]. Water conversation in households is related to essential behaviors in reducing water consumption such as fixing leaking taps, turning off taps while brushing teeth, using a dishwasher, washing machines with full loads, reusing greywater, and taking showers rather than baths [12], [13]. Moreover, household water-use activities are shaped by varied capabilities, motivations, opportunities, and attitudes towards these activities [14], [15].

It is necessary to mention the importance of developing the right communication strategies to raise awareness about the water footprint to effectively address the attitudes related to water conservation behavior. In research about the awareness of water scarcity conducted at a university in Turkey, participants demanded educational and informational activities related to environmental issues [16]. Along with having many ways to communicate with people, social media has become one of the most effective ways of raising awareness among the public, thanks to the digitalized world [17]. Further, social media influencers became opinion leaders. By creating organic content for specific followers, they manage to maintain a permanent link with followers by creating organic content for those with whom they share their lifestyles and mindsets. Thus, their content significantly impacts the target audience to shape and spread trends.

It is known that influencer marketing and social marketing are effective tactics in social media to create awareness about environmental issues [18], [19], [20] Thus, this study aims to address influencer marketing's influence in changing WCA.

Influencer marketing is defined as a quickly expanding industry that promotes goods or raises brand awareness through posts shared by popular social media users [21], including the ability of influencers to gather an audience and direct the ideas and behaviors of this audience [22]. This ability enables influencers to create an impact not only in brand awareness but also in daily life situations.

According to Boerman and Müller [23], influencers can positively influence pro-environmental behavior. Individuals' attitudes about sustainability issues are affected by influencer marketing [24] and influencers are effective in changing the attitudes of consumers about correct water use [25]. Many studies prove that influencer marketing is effective in improving environmental and green awareness [26], [27], [28]. The communication between influencers and users on social media especially plays a role in people adopting a conscious and green lifestyle [29] and water footprint concept and awareness of water footprint are among the main aspects of a green lifestyle that has recently emerged.

Methodology

To facilitate the study aim, we conducted a quasi-experimental research design. Although using experimental designs to evaluate water-conservation campaigns' impact is not new [30], it remains an underused technique [31], [32]. Experimental design may provide specific suggestions to improve conservation campaigns rather than broad generalizations [33].

The study consisted of two components:

- designing water conservation content with the Instagram influencer Gizem Dağ @mutluluktasarimcisi in a special account formed for the experiment (bap114_suayakizi);
- measuring attitude change via a survey.

Experimental Influencer Marketing Design

In the experiment, we examined attitude change towards water conservation by comparing pre and post-test results. We adopted the WCA scale developed by Dolnicar & Hurlimann [1] to measure consumer WCA. The scales developed by Reddy et al. [30] and Ananga et al. [31] also inspired the current research. As the experimental stimuli, we used the Influencer's Instagram posts, including information about direct domestic water consumption (DWC), indirect domestic water consumption (IWC), and water consumption in urban services (WCS) that aims to inform the followers about water footprint and sustainable water consumption. The framework developed by Llanos et al. [32] was used as a guide during content creation.

In total, 140 posts were shared in the Instagram account of the project named "@bap114_suayakizi". Of these 140 Instagram posts, 106 were stories, and 34 were feeds. Apart from the WCA scale, demographic questions and water footprint perception levels of the participants were surveyed at the experiment's beginning to reveal the participants' general profiles. Regarding demographics, age, education, and sex were surveyed. For water-footprint perception, 13 items were questioned on a five-point Likert type scale. Water-footprint questions were adapted from Llanos et al. [32.] For reference, the table below presents the items that question the perception regarding water footprint (See Table 1).

Table 1

Items for Water Footprint Perception

I think taking shorter showers enables us to conserve water.
I think using less water while brushing our teeth enables us to conserve water.
I think using dual flush toilets enables us to conserve water.
I think using less water while hand washing enables us to conserve water.
I think using less water while washing the dishes enables us to conserve water.
I think using less water to do laundry enables us to conserve water.
I think changing our textile shopping habits enables us to conserve water.
I think changing our car cleaning habits enables us to conserve water.
I think eating less meat enables us to conserve water.
I think using energy sources in a more efficient way enables us to conserve water.
I think wastewater treatment plants in cities contribute to water conservation.
I think recycling enables us to conserve water.
I think renewable energy sources contribute to water conservation.

As can be seen in Table 1, water-footprint perception items cover direct water consumption (DWC), indirect water consumption (IWC), and water consumption services (WCS) that aim to inform the followers about water footprint and sustainable water consumption.

The communication process took three weeks, as the previous experimental design on the impact of the communication campaign suggests [31]. For reference, two screenshots of the most popular videos are provided below illustrating DWC. All videos on the Instagram account explain the elements of the water footprint concept, and water consumption by numbers and give small tips and technics for less water consumption. These informational and motivational videos are shot in a flat. The videos are made in a conversational manner without a scenario.

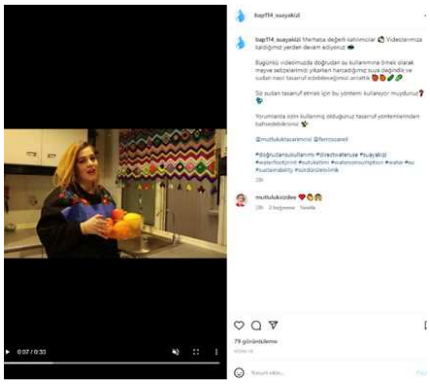

Figure 1

Screenshot of a Sample DWC

Figure 2

Screenshot of a Sample IWC

In Figure 1, a screenshot of a sample video used in the experiment is seen. The video explains practical tips demonstrating the proper utilization of water in the kitchen for washing fruits and vegetables. In Figure 2, the screenshot of the video shared on Instagram is seen. It gives information about the water footprint of a shirt by numbers. In the videos, Gizem Dağ (the influencer who shared the content) asks questions such as “Do you know the amount of water used in the production of that basic t-shirt?” The influencer shared these informational videos on her own Instagram account, and each drew significant attention from her followers.

Participants

This study utilized voluntary participants from the followers of the Instagram influencer Gizem Dağ. Detailed information about the influencer is given below. She shared an announcement to her followers on her own Instagram account to invite them to the experiment which will take place in a new Instagram account (@bap114_suayakizi). She requested to follow the specific account for her new project, which she will share the details of in a short while. She did not provide a further explanation in order not to influence followers' responses to the WCA scale. Seventy-six of her followers participated in the experiment voluntarily.

Instagram Influencer

Gizem Dağ is a micro-influencer giving suggestions on life and critical issues and motivates her followers to achieve better things for life and the planet. She had 31K followers at the time of the experiment. The username (@mutluluktasarimcisi) means "happiness designer" in English, positioning her as a happiness coach. Moreover, she is a PhD candidate in public relations, which increased her motivation to participate in this research.

Measures for Water-Conservation Attitude Change

At the experiment's beginning and end, the water-conservation attitude scale adapted from Dolnicar & Hurlimann [1] measured the overall impact of influencer marketing. The original scale consisted of 14 items. The scale used in the study was developed as a five-point Likert type scale ranging from strongly disagree (1) to strongly agree (5). There were 12 indicators in total. The table below is provided as a reference of these indicators (see Table 2).

Table 2

Items for WCA

Water conservation is important.
Water conservation is necessary because of water scarcity.
More attention to water conservation is needed.
I conserve water wherever I can.
I could make more effort to conserve water.
I advocate water conservation among my friends and family.
The need for water conservation depends on the location.
Water conservation alone can solve some water problem issues.
I feel no pressure to conserve water now.
Water shortage issues don't affect me.
I am not concerned at all with water conservation.
Water conservation isn't my responsibility.

Data Analysis

Frequencies and percentages were used to describe participants' profiles. A paired samples t-test was conducted to test the significant difference between the points of the WCA scale before and after the experiment.

Findings

This section provides a descriptive analysis of the participants' profiles, including demographic data and their water-footprint perception level. Then, the findings of paired t-test sample results are illustrated to discuss the significance of the difference between the water-conservation attitude scale points before and after the experiment.

The sample consisted of 76 voluntary followers of Gizem Dağ. The participant demographics were determined at the end of the survey. The majority were female (n=56, 73.7 per cent) and consisted of highly educated urban-based individuals holding degrees such as undergraduate (n=33, 43.4 per cent), graduate (n= 22, 28.9 per cent), and high school

diplomas (n=15, 19.7 per cent). Thus, the highest education level attained is considerably higher than the average Turkish citizen. The greatest level of education acquired in Turkey, according to the World Values Survey (WVS), is a "complete primary school degree" (n=481[1605 total], 30%). With 178 cases, university graduates make up 11.1% of the sample. The respondents' age distribution is evenly distributed (between 18 and 64). The table below presents the participants' demographics (see Table 3).

Table 3

Demographic Profile of the Participants

Measure	Items	n	%
Sex	Female	56	73.7
	Male	20	26.3
Education	Secondary school	1	1.3
	High school	15	19.7
	Vocational school	5	6.6
	Undergraduate degree	33	43.4
	Graduate degree	22	28.9
Age	18-24	14	18.4
	25-34	21	27.6
	35-44	25	32.9
	45-54	11	14.5
	55-64	5	6.6
Total		76	100

We used a 5-point Likert-type scale, allowing respondents to express how much they agree or disagree with the given statements. Each statement used in the scale has a numerical value ranging from 1 (strongly disagree) to 5 (strongly agree) to measure the water-footprint perception level. We conducted a descriptive analysis and used frequency, standard deviation, and mean scores to analyze the data. To measure the respondents' water-footprint perception score, we applied the following formula for all statements. On a 5-point Likert-type scale, the range is 4 (5-1=4). The greatest value of the scale, 5, is divided into 4 (4/5=

0.80), and the range values are determined: between 1 and 1.80 represents strongly disagree, between 1.81 and 2.60 represents do not agree, between 2.61 and 3.40 represents neutral, between 3.41 and 4.20 represents agree, and between 4.21 and 5.00 represents strongly agree.

As a reference, the table below provides the mean scores of the participants on water footprint perception level.

Table 4

Water Footprint Perception Level of the Participants

Items	N	Mean	Std. deviation	Interpretation
I think taking shorter showers enables us to conserve water.	76	4.5395	.88605	Strongly agree
I think using less water while brushing our teeth enables us to conserve water.	76	4.5000	.95917	Strongly agree
I think using dual flush toilets enables us to conserve water.	76	4.4737	.85594	Strongly agree
I think using less water while hand washing enables us to conserve water.	76	4.3816	.92329	Strongly agree
I think using less water while washing the dishes enables us to conserve water.	76	4.5526	.77278	Strongly agree
I think using less water to do laundry enables us to conserve water.	76	4.2500	1.15614	Strongly agree
I think changing our textile shopping habits enables us to conserve water.	76	3.9605	1.22682	Agree
I think changing our car cleaning habits enables us to conserve water.	76	4.3026	1.04588	Strongly agree
I think eating less meat enables us to conserve water.	76	3.6316	1.05631	Agree
I think using energy sources in a more efficient way enables us to conserve water.	76	4.4868	.84053	Strongly agree
I think wastewater treatment plants in cities contribute to water conservation.	76	4.5395	.77358	Strongly agree
I think recycling enables us to conserve water.	76	4.4342	.86926	Strongly agree
I think renewable energy sources contribute to water conservation.	76	4.5000	.77460	Strongly agree

The results of the study illustrate that respondents' water-footprint perception mean scores for all the items are over 3.41, which means the respondents' WFP (Water Footprint Perception) levels were positively high. This finding demonstrates that they are conscious of sustainable water consumption.

A paired samples t-test was performed to determine the significant difference between the attitude scale points before and after the experiment. As indicated in Table 5 below, attitude points increased from the pre-test (M=3.5730, SD=.41963) to the post-test (M=4.5241, SD=32456). The increase in attitude points is statistically significant (t= -15.461, p=.000).

Table 5

Results of t-Test and Descriptive Statistics for the Participants' WCA Scores

	Pre-test		Post-test				
Total Mean Scores of the WCA Scale	M	SD	M	SD	t	p	n
	3.5730	.41963	4.5241	.32456	-15.461	.000	76

A paired sample t-test was conducted for each item to investigate which indicators created the significant difference. As shown in Table 6 below, for items 3 (t= -4.732, p=.000), 7 (t= 10.279, p=.000), 9 (t= 16.408, p= .000), 10 (t=21.325, p= .000), 11 (t= 9.089, p=.000), and 12 (t=27.203, p= .000), attitude points increased from pre-test and post-test, statistically indicating participants' attitudes towards individual responsibility for water conservation changed positively from the experiment.

Table 6

Results of the t-test for each Item of WCA Scale

		Paired Differences					t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Water conservation is important	-.02632	.16114	.01848	-.06314	.01051	-1.424	75	.159
Pair 2	Water conservation is necessary because of water scarcity	.01316	.59985	.06881	-.12391	.15023	.191	75	.849
Pair 3	More attention to water conservation is needed	-.40789	.75149	.08620	-.57962	-.23617	-4.732	75	**.000**
Pair 4	I conserve water wherever I can	-.15789	1.20058	.13772	-.43224	.11645	-1.147	75	.255
Pai 5	I could make more effort to conserve water	-.14474	.98933	.11348	-.37081	.08133	-1.275	75	.206
Pair 6	I advocate water conservation among my friends and family	-.07895	1.18618	.13606	-.35000	.19211	-.580	75	.564
Pair 7	The need for water conservation	2.60526	2.20955	.25345	2.10036	3.11017	10.279	75	**.000**

	does not depend on the location								
Pair 8	Water conservation alone can solve some water problem issues	-.22368	1.41042	.16179	-.54598	.09861	-1.383	75	.171
Pair 9	I feel no pressure to conserve water at the moment	2.77632	1.47512	.16921	2.43924	3.11339	16.408	75	**.000**
Pair 10	Water shortage issues don't affect me	3.28947	1.34478	.15426	2.98218	3.59677	21.325	75	**.000**
Pair 11	I am not concerned at all with water conservation	2.14474	2.05721	.23598	1.67464	2.61483	9.089	75	**.000**
Pair 12	Water conservation isn't my responsibility	3.47368	1.11324	.12770	3.21930	3.72807	27.203	75	**.000**

The indicators of water-conservation attitudes that increased after the experiment were: 'more attention to conservation', 'the need for water conservation does not depend on location', 'I feel no pressure to conserve water at the moment',' water shortage does not affect me', 'I am not concerned at all with the water', and 'water conservation is not my responsibility'. Notably, the indicators related to a personal approach to water consumption behaviors and responsibilities changed. These findings may indicate that influencer-marketing can influential on changing the attitudes of consumers, as Grundler [24] confirms

regarding sustainability issues, [19], [20] and Breves and Lieber [18] confirm regarding environmental and green awareness.

Conclusion

The water footprint is a concept that can be used to communicate via different communication channels. The research aimed to understand the impact of influencer communication on sustainable water consumption behavior by using water footprint as content. Recent studies have not indicated findings related to influencer communication affecting attitude change towards water consumption. This research provides an initial step to ignite future research designs in this area.

Influencer marketing was chosen as the means of the experiment for the dissemination of water footprint information via Instagram. It was a challenging process, as the influencer was not prone to promote pro-environmental behavior in her account. Apart from being a green influencer, she created 19 videos and many stories about sustainable and responsible water consumption and the water-footprint concept, receiving 1,117 views from Instagram users with different demographic features. It was also a challenging process for the influencer to motivate her fans to participate in the experiment and answer the survey questions twice.

In the experiment, we measured the change in water conservation attitudes through pre and post-tests. Three types of water consumption (direct domestic, indirect, and urban services) regarding water footprint and water consumption were used in the Instagram shares as the experimental stimuli. A significant increase in the attitude points was observed ($t=-15.461$, $p=.000$), where positive attitude change happened after the experiment towards individual responsibility for the conservation of water. The indicators of water conservation attitudes were mostly at a personal level which consisted of more attention to conservation, the need for conservation not depending on location, feeling pressure to conserve water,

water shortage concerns, and responsibility to conserve water. Therefore, we believe that if the respondents' information level about water footprint is sufficient to perceive water conservation and water consumption issues, then influencer communication can be effective with well-designed content.

For further studies, we recommend researchers evaluate the credibility and the parasocial interaction of the influencers before the experiment. Besides, the impact of green influencers and other influencers can be compared in further experiments. The number of participants can be increased, and for the reliability of the research, the demographic features of the sample can be more heterogeneous. This type of experimental study can be repeated by using other types of stimuli related to pro-environmental behaviors and environmental issues in the future.

Ethical Statement:

Informed consent was obtained from all individual participants involved in the study. Their consent was asked for and taken in the online survey.

Disclosure Statement

The authors declare that there are no relevant financial or non-financial competing interests to report.

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