

# Water Conservation Campaigns in Sharjah, United Arab Emirates



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Sponsored by:

Sharjah Electricity and Water Authority



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الجامعة الأميركية في الشارقة  
American University of Sharjah



هيئة كهرباء ومياه الشارقة  
Sharjah Electricity & Water Authority

# Water Conservation Campaigns in Sharjah, United Arab Emirates

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## ABSTRACT

The Water Conservation Campaigns in Sharjah, United Arab Emirates project was sponsored by the Sharjah Electricity and Water Authority (SEWA) and in collaboration with the American University of Sharjah. The project includes the following three studies: *The Exploration of Conservation Efforts in Sharjah, UAE*; *Design Sprint Workshop: Ideating Water Conservation Campaigns at the American University of Sharjah*; and *Feedback on Water Conservation Campaigns Ideated by Residents of Sharjah*. The first study was an exploratory qualitative study using methods of observation and interviews. The second study was a design study using a Design Sprint methodology. The third study was a user-feedback study using interviews and in-person surveys. Based on the findings of each study, recommendations were then developed.

## EXECUTIVE SUMMARY

When a region lacks sufficient water resources to meet demands, the region is considered to be water stressed. A completely diminished state of water resources, referred to as water scarcity, becomes a possibility for these regions. Areas in the Middle East and North Africa (MENA) are especially susceptible to these threats due to their arid climates and geography. One of these regions, the United Arab Emirates (UAE), is currently experiencing water stress. Despite limited rainfall and surface water, the UAE ranks among the highest per capita water consumers in the world. The increase of the water demand in the UAE has developed concerns from different government organizations, one of which is the Sharjah Electricity and Water Authority (SEWA).

SEWA, a local government organization, has begun to focus their attention on the increased demands for water. As a result, SEWA has made it their priority to ensure water demands are met, while the population is increasing (“About Sharjah”. n.d.). As a member of the Ministry of Energy and Industry, SEWA has been providing sufficient water and electricity resources to the consumers of Sharjah. SEWA has not only increased the supply to meet the demand, but also encouraged Sharjah residents to conserve water through various methods.

The three research questions guiding the studies in the following chapters are:

1. “What are the social benefit campaigns that have already been created in Sharjah?”
2. “How can we design three creative campaigns aimed to change the behavior of water consumers and encourage water conservation?”
3. “How will each of three campaigns produced in the Design Study be perceived by Sharjah residents?”

This project has been broken up into three studies, each guided by a research question. The studies are as follows: The Exploration Study (Chapter Two), the Design Study (Chapter Three), and the Feedback Study (Chapter Four). The goal was to understand, design, and evaluate campaigns that suggest limiting water consumption in Sharjah.

## **Study 1: The Exploration of Conservation Efforts in Sharjah, UAE**

The residential sector of Sharjah accounts for 61.8% of the water produced by SEWA (SEWA, 2018). Because residents are the primary water consumers, SEWA has been attempting to decrease water consumption among the citizens of Sharjah. This includes implementing varying water conservation campaigns to encourage behavior changes. The first study explores past and current social benefit campaigns aimed to encourage people to change behaviors.

Two methods were used to explore the social benefit campaigns in Sharjah. First, an observational study was executed to identify the current campaigns in Sharjah. The campaigns we observed were not limited to water conservation; we observed campaigns that functioned to influence behavior of the target audience. Campaigns were photographed on the AUS campus and screen captured from the SEWA's achievements report. We used two marketing frameworks to analyze the campaigns. Each campaign was annotated by the four elements of the Hook Model (Trigger, Action, Reward, Investment) and the seven from the Marketing Mix (Product, Price, Place, Promotion, People, Process, and Physical Evidence). The corresponding elements were documented and then organized using a qualitative analysis software called NVivo. NVivo helped make comparisons between campaigns and allow emergent themes to become visible.

Secondly, we interviewed campaign creators to get more insight on the design process. We audio recorded interviews with representatives from the SEWA Conservation Department and the AUS Office of Sustainability. A protocol was created for each interview which included the informed consent process and questions relating to campaign design and outcomes. Using the recorded and transcribed interviews, main points were highlighted and grouped together to identify themes.

The main findings of the observational study are listed as follows:

1. A campaign's location is key to its success.
2. Design elements help convey messages.
3. Campaigns should reach their target audiences through different methods.
4. Campaigns do not normally involve monetary investments.
5. Messages of campaigns are framed differently.

6. Rewards convince the audience of potential benefits.

The main findings from our interviews with SEWA officials are the following:

1. Designing a campaign takes time and reiterations.
2. Relating the campaign's message to the target audience encourages engagement.
3. Different target audiences necessitate different delivery methods.
4. Targeting the next generation helps create lasting impacts.
5. Water conservation campaigns aren't the only social benefit campaigns in Sharjah.
6. Incentives can be used to attract people towards a campaign.
7. The success of a campaign can be measured through surveys.

A list of recommendations based on the findings were presented:

- Use a marketing framework to provide structure in a campaign's design process.
- Use rewards to pique the interest of the target audience.
- Publish campaigns in high traffic areas to increase visibility.
- Use campaign formats that best suit the target audience.
- Use a qualitative analysis software, such as NVivo, to help organize campaigns based upon their elements.

### **Study 2: Design Sprint Workshop: Ideating Water Conservation Campaigns at the American University of Sharjah**

To alleviate the UAE's water stress, SEWA is currently implementing water conservation campaigns mostly targeted towards residents of Sharjah. Part of this target includes the 171,698 students, some of which belong to the 15 institutions in University City. The research question this poses is "How can we design three creative campaigns aimed to change the behavior of water consumers and encourage water conservation?". Campaigns can be ideated by the locals of Sharjah through a Design Sprint methodology, where individuals work in teams to generate lots of creative ideas and rapidly prototype.

Our study functioned to answer the research question by creating three water conservation campaigns from the products of Design Sprint workshops. We recruited members of the AUS community, including students, staff, and faculty, to participate in our study. Participants signed up and consented through a registration form. Links to this form were presented on a flyer which was advertised via several distribution channels. We held a pilot test, where two researchers facilitated and two participated alongside three additional participants. After the pilot test, we held two Design Sprint workshops in the Sharjah Entrepreneurship Center on the AUS campus. At these two-hour-long sessions, participants worked in teams of 3-5 to complete each of the six stages of the Design Sprint (Understand, Define, Diverge, Decide, Prototype, Validate). Each team finished the workshop with one campaign prototype.

Several themes emerged in the pilot test, Design Sprint workshops, and three campaigns. The four findings from our pilot test were:

1. Prior to conducting a Design Sprint workshop ensure the time needed for each stage is correct.
2. Instructions must be clearly written for participants.
3. Reminding participants of the time remaining to fulfill the activity will help the participant manage their time.
4. Check for understanding after directions are given out to participants.

From the Design Sprint workshops, we used marketing frameworks to analyze and categorize the products. Our findings were:

1. Nine prototypes were produced from the Design Sprint workshops.
2. Themes regarding content, delivery, incentives, and messaging emerged from the prototypes.
3. Five campaign deliveries emerged: Informative, App, Event, Device, and Games.
4. Three campaigns were created from the findings of the Design Sprint:
  - I. Social Media
  - II. Event
  - III. App

Several recommendations came out of this study:

- Run and participate in Design Sprint workshops involving the target audience
- Use different challenges and topics for Design Sprint workshops
- Complete pilot tests to determine strengths and weaknesses of protocols

### **Study 3: Feedback on Water Conservation Campaigns Ideated by Residents of Sharjah**

From our second study, three overarching themes from the prototypes arose: Informative, Application, and Event. From these themes, we designed three water conservation campaigns, which were a social media post, a smart phone app, and an awareness event. The three finalized prototypes from the Design Sprint Workshops then posed the research question guiding the third study of our project: “How will each of three campaigns produced in the Design Study be perceived by Sharjah residents?” We approached this question by inquiring feedback on the campaigns from representatives of SEWA and members of the Sharjah community. We chose to interview SEWA in order to get input from campaign creators; we chose to survey the Sharjah community so we could receive feedback directly from the target audience of the campaigns.

In our interviews with SEWA representatives of the Conservation Department, we presented our three campaigns and asked for feedback on content, design, and delivery. The SEWA representatives were asked to rank the campaigns. Additionally, we surveyed members of the Sharjah community at AUS and Sharjah National Park by presenting one campaign and asking questions about content, design, and engagement. For example, questions asked in regard to the event campaign are “Was the message clear?”, “Do you like the design and layout?”, and “Would you attend this event?”. Responses were inputted by the researchers into a Qualtrics form.

From the interview with SEWA representatives of the Conservation Department, the main points of feedback were:

1. Release the social media campaign as multiple posts, instead of one with multiple pictures.
2. For the event, to use influencers to spread the word.



3. An event, like the one we designed, would require a large amount of preparation.
4. The app redesign was not considered a campaign by the Conservation Department.
5. SEWA primarily uses social media and events to for awareness.

From the surveys, the three campaigns received 118 feedback responses in total: forty for the social media post, thirty-eight for the app, and forty for the event. The main findings for the surveys were:

1. Social media and app campaigns were deemed valuable campaign deliveries contrastingly to the event campaign.
2. Participant engagement would be higher the less the campaign asked of them.
3. Many participants would engage with social media campaigns that were across multiple social media platforms.

Based on the findings and analysis from this study the researchers generated the following four recommendations:

- Continue requesting feedback on campaigns
- Continue social media campaigns
- Redesign the SEWA app with water consumption tracking feature
- Continue awareness events to promote conservation

## **Conclusion**

The objective of our three studies was to find an impactful method for designing water conservation campaigns. In our first study, we explored the current status of social benefit campaigns implemented in Sharjah through an observational study on the AUS campus and interviews with campaign creators at AUS and SEWA. For the second study, we held two two-hour-long Design Sprint workshops for members of the AUS community to brainstorm and prototype water conservation campaigns. From the nine campaigns produced, we developed three water conservation campaigns (social media, event, and an app). In our third study, we presented these three campaigns to SEWA representatives of the Conservation Department and

the Sharjah community to receive feedback on design, content, and engagement. Further research and projects are required to answer the following questions:

- What are the short- and long-term impacts of social change campaigns within communities or universities?
- What is the best method of delivery to target incoming generations?
- Does implementing a five-day design sprint methodology produce different outcomes than that of a two-hour workshop?
- What other campaigns have been conducted in Sharjah besides those from AUS and SEWA?

A condensed presentation of the relevant background information, methods, findings, and recommendations of our three studies can be seen in Appendix Q.

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## AUTHORSHIP

Our approach for the writing involved in this project was collaborative. When tasked to compose our first drafts for each chapter, we divided the authorship initially so that each team member had a section to write. After all sections of a chapter were drafted, the team worked together to edit the entire document. For following drafts, the group continued to edit the document together, and sections that were originally written by one member sometimes were combined with other sections. As such, we have listed the primary authorship for each respective section.

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## GLOSSARY AND ABBREVIATIONS

**American University of Sharjah (AUS):** a higher education institution located in Sharjah, UAE.

**Campaign:** a planned set of activities that people carry out over a period in order to achieve something such as social or political change (Collins Dictionary, n.d).

**Design Sprint:** a methodology where people are tasked to answer questions and solve challenges within a time-constraint. It is used to generate a large amount of creative ideas around any situation. (G.V., n.d.)

**Hook Model:** framework to market a product, the four main components are, Trigger, Action, Variable Reward, and Investment. (Eyal, 2013)

**Marketing Mix:** variables that businesses control to implement a marketing strategy directed at a specific target audience. The components of this framework are: Product, Price, Place, Promotion, People, Process, and Physical Evidence. (Booms and Bitner, 1981)

**Middle East and North Africa (MENA):** the countries in the northern region of Africa and the western region of Asia, including Jordan, UAE, Saudi Arabia, Israel, and Egypt.

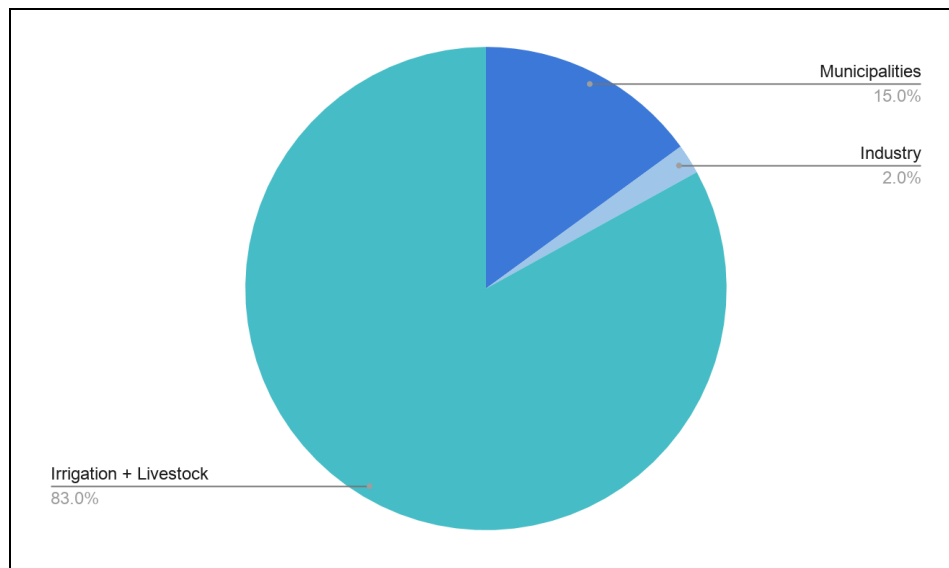
**Sharjah Electricity and Water Authority (SEWA):** a local government institution involved in water management in Sharjah, UAE.

**United Arab Emirates (UAE):** a country in the Middle East comprised of seven Emirates, including Sharjah, Abu Dhabi, and Dubai.

## 1.0 INTRODUCTION AND BACKGROUND

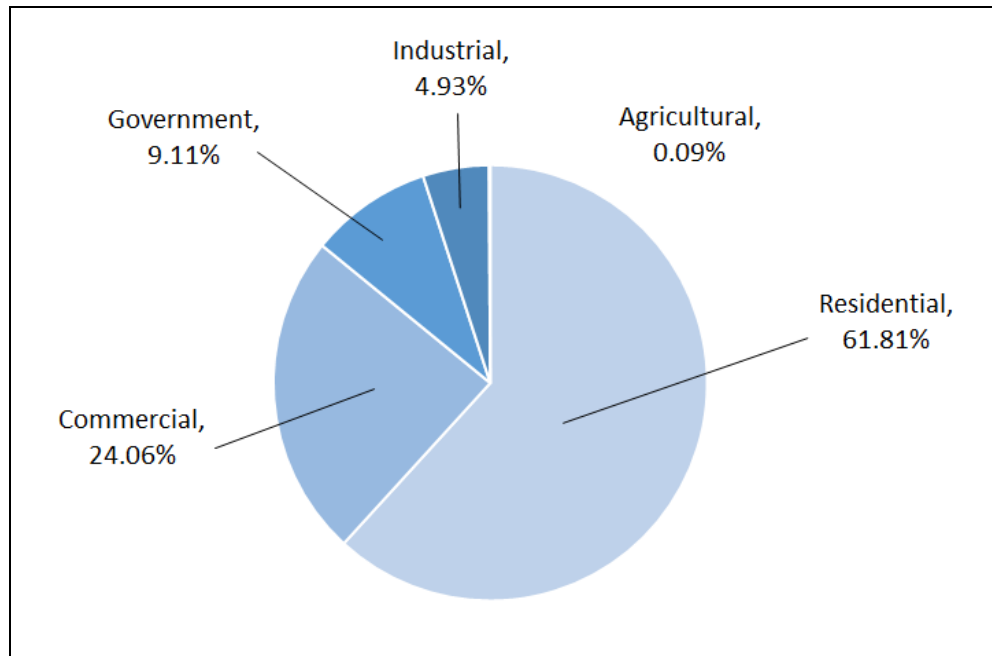
Water is an essential part of everyday life, and in recent decades, the importance of conserving it has greatly increased. When a region lacks enough water resources to fulfill water consumption demands, it is water stressed. Intensifying water stress can then lead to a severely diminished state of water resources, which is referred to as water scarcity. Areas in the Middle East and North Africa (MENA) are especially susceptible to such threats due to their climates and locations. The United Arab Emirates' (UAE) arid climate, rising population, and flourishing tourism ranks it among the most water stressed regions, along with Kuwait, Qatar, and Saudi Arabia.

The UAE is located in the Middle East between the Arabian Gulf and the Gulf of Oman. Its climate is characterized by infrequent precipitation and high temperatures which adversely contribute to the conservation of water resources and induce a water stressed state. Despite these conditions, the UAE ranks among the highest per capita water consumers in the world (Khaleej Times, 2016). Water usage by sector in the UAE can be seen in Figure 1. For the seven Emirates overall, the largest water withdrawal is from irrigation and livestock, followed by municipalities and industry.



**Figure 1:** Water withdrawal by Sector in the UAE (Food and Agriculture Organization of the United Nations, 2005)

Even though the agricultural sector is one of the largest water consumers in the world, this doesn't apply to Sharjah in particular. In 2018, the residential sector consumed 61.8% of water produced by the Sharjah Electricity and Water Authority (SEWA, 2018). Showers, tap, and clothes washers account for most of this consumption (Willis, 2013). Second to that, the commercial sector accounted for 24.06% of total consumption. This sector is preceded by the government sector (9.11%), industrial sector (4.93%), and the agricultural sector (0.09%). The water consumption breakdown by sector in Sharjah can be seen in Figure 2 below.



**Figure 2:** Water Production by Sector in Sharjah (*SEWA Annual Report, 2018*)

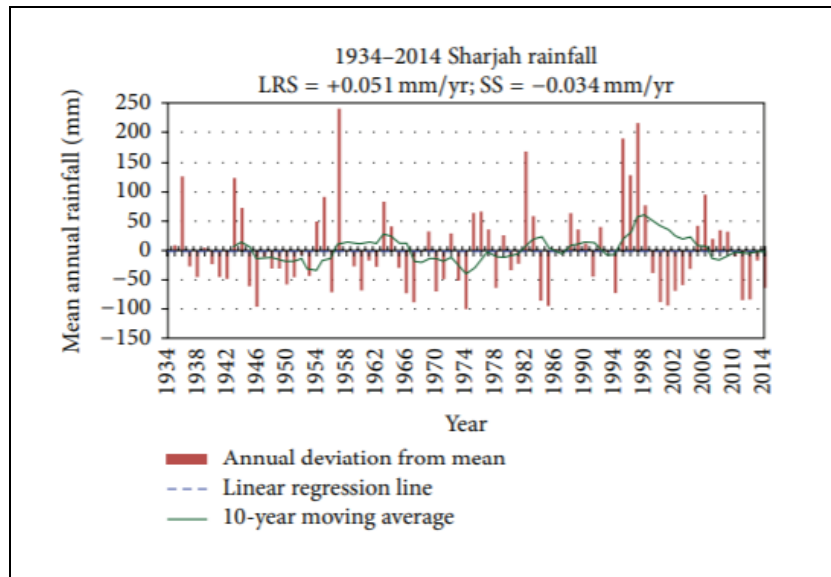
With over one million inhabitants, Sharjah is experiencing a population growth of urban areas at a rate of 6.32% per year since 2015 (World Population Review, 2019). Consequently, several government organizations have developed concerns regarding increased demands for water (“About Sharjah”. n.d.). One of these organizations, SEWA, has made it their priority to ensure water demands are met, despite an increasing population. This entails increasing water supply through desalination and groundwater extraction, as well as alleviating demands by encouraging water conservation.



Our project functions to further explore the efforts of water conservation in Sharjah. This chapter of our paper provides a literary review that establishes the relevant context to approach this problem. First, we discuss the environmental effects on Sharjah’s current water-stressed state and SEWA’s role with water management. Then, we introduce the available water resources in Sharjah to meet water consumption needs. Additionally, we provide example case studies of ways other arid, urban areas similar to Sharjah have addressed water consumption. Lastly, we explore the design elements and marketing strategies for educational campaigns.

## 1.1 ENVIRONMENTAL CONSTRAINT ON SHARJAH’S WATER RESOURCES

According to the widely used climate classification system, the Köppen climate classification, the UAE is considered a “hot desert climate”. There are two distinct seasons: summer and winter. The summer period is characterized by high humidity and temperatures. This season’s dust storms and scarce rainfall contribute to the desertification of the region. Most rainfall occurs in the winter season. The amount of rainfall has decreased by between 3.0 mm and 9.4 mm every decade since 1934, making surface water a limited resource (Merabtene, 2016). This trend can be seen in Figure 3 below.



**Figure 3:** 1934-2014 Mean Annual Rainfall in Sharjah (Merabtene, 2016)

Consequently, instead of relying on surface water, Sharjah uses two neighboring bodies of water, the Arabian Gulf and the Gulf of Oman, as its primary source of water. The combination of arid climate, limited surface water, and convenient access to seawater make desalination the most feasible way to get water resources to the citizens of Sharjah. Ultimately, these environmental issues of desertification, water pollution, and limited natural water resources have led the UAE government to increase their funding for desalination plants. (Environmental Threats, 2019)

## 1.2 ESTABLISHMENT OF WATER MANAGEMENT IN SHARJAH

Formed in 1971, SEWA, a member of the Ministry of Energy and Industry, has been working to supply enough water and electricity resources to the consumers of Sharjah. The high costs of desalination and population growth has led SEWA to find new alternatives to process and store water (Almulla, 2005). Conversely, instead of solely increasing supply to meet demand, SEWA has also taken the approach of decreasing demand by encouraging water conservation among the citizens of Sharjah. SEWA, in collaboration with His Highness, Dr. Sheikh Sultan bin Muhammad Al Qasimi, Supreme Council Member and Ruler of Sharjah, has implemented diverse programs to educate the consumers about their water consumption behaviors.

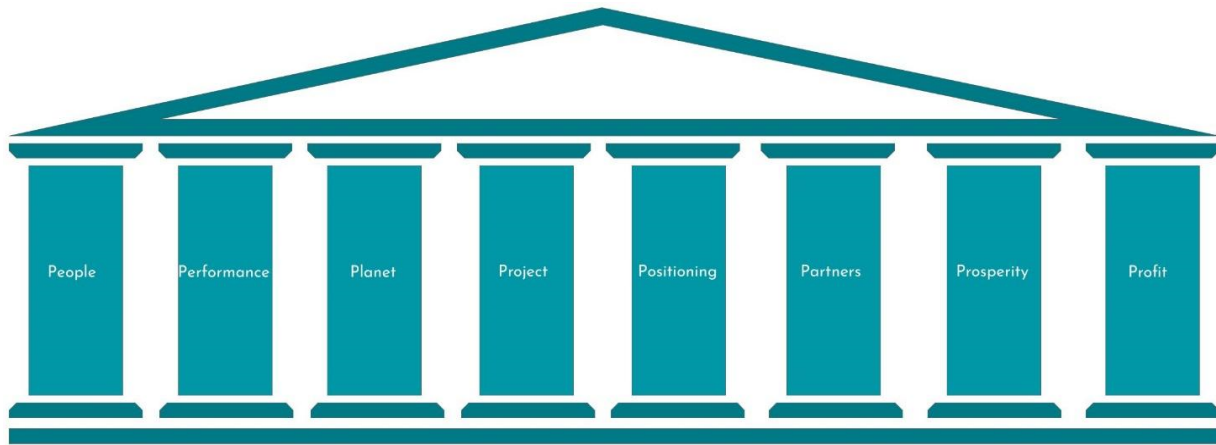
### 1.2.1 SEWA'S VISION AND GOALS

SEWA functions to enforce national and local water policies in Sharjah. The system priorities of SEWA include reducing their impact on the climate and environment, having sustainable growth, and building a culture that fosters national identity (“SEWA Vision 2020”, n.d.). SEWA is passionate about being an impactful organization and has a vision of being one of the most authentic organizations in the world.

Although SEWA began as a private company, it was nationalized once the economy, industry, and civilization began to develop. His Highness Sheikh Dr. Sultan Bin Mohammed Al-Qassimi, Supreme Council Member and Ruler of Sharjah, established SEWA as a financially and administratively independent entity to distribute electricity, water, and natural gas to their

customers: the nationals and residents of Sharjah. As a government institution, SEWA has seen tremendous growth in their infrastructure. For electric power, several new generation units, distribution substations, and transmission substations were installed to increase power generation. Similarly, SEWA has introduced additional desalination plants and well fields to increase water production and increase water supply. Also, piped natural gas was introduced by SEWA for domestic, commercial, and industrial purposes as a first of its kind in Sharjah. (“SEWA About Us”, n.d.)

SEWA’s vision for 2020 is “to lead a globally successful, highly innovative, and sustainable tomorrow”. This vision contains eight pillars as seen in Figure 4 to represent their core priorities and to highlight their focus for their 2020 goals.



**Figure 4:** SEWA 2020 Vision Pillars

The eight pillars of SEWA’s vision are People, Performance, Planet, Project, Positioning, Partners, Prosperity, and Profit. Within the first pillar, People, SEWA has a goal to be one of the greatest employers in the world. The aims of this pillar are to attract the right talent to build an experienced workforce, to integrate smart technology to support their business, and to have effective Emiratization. The main goal of the second pillar, Performance, is to exceed customer satisfaction and expectations through delivering reliable services of electricity, water, and natural gas. The third pillar, Planet, has the goal to reduce energy and water consumption, carbon emissions, and the environmental impact of their operations. A large part of this goal is to promote water and energy conservation awareness to their over two million consumers,

including through work with local and global organizations. The fourth pillar, Projects, involves the successful and sustainable delivery of projects. The fifth pillar, Positioning, strives to establish a distinct position in the minds of the consumers in a way that effectively communicates SEWA's core values. The sixth pillar, Partners, has a priority to improve business and service practices through discussions with their partners and to carry out joint workshops, training, and development programs. The seventh pillar, Prosperity, has the goal to create authentic leadership and continue to build a lasting institution. The final pillar, Profit, functions to improve the revenue stream and the bottom line while maintaining the balance between social and commercial obligations. SEWA's motto, "reliable, efficient, and sustainable", is apparent throughout the SEWA 2020 vision. This vision places a large importance on sustainability for the present and future generations.

SEWA has been working towards one of their goals for water sustainability by creating water conservation campaigns and exercising new laws. Previous conservation campaigns have encouraged residents of Sharjah to check for signs of water leaks by looking for an increase in consumption on their monthly bills and meters. Inspectors also checked the condition and quality inside water tanks. (Abdullah, May 28, 2017) Additionally, SEWA had several conservation awareness campaigns in the past, and they have held workshops in schools. (Y Kakande, March 23, 2014) His Highness Dr. Sheikh Sultan Bin Mohammad Al Qasimi, Supreme Council Member and Ruler of Sharjah, had issued a law regarding conservation of water resources in 2013. The law covers the developing and regulating of water resources' rational use and ensuring sustainability in Sharjah. This law protects water resources from depletion, waste, and water pollution. This would result in the increase of water capacity, quality of water, and the efficiency of water transport and distribution. It would also aid in the proper maintenance and operation of water facilities. (Gulf News, 2013)

### 1.3 CONVENTIONAL AND NON-CONVENTIONAL WATER RESOURCES

The ongoing depletion of nonrenewable water resources in the UAE cannot be attributed to just one factor. The arid climate and scarce rainfall significantly limit the amount of naturally occurring water resources available for use. Limited water resources combined with population

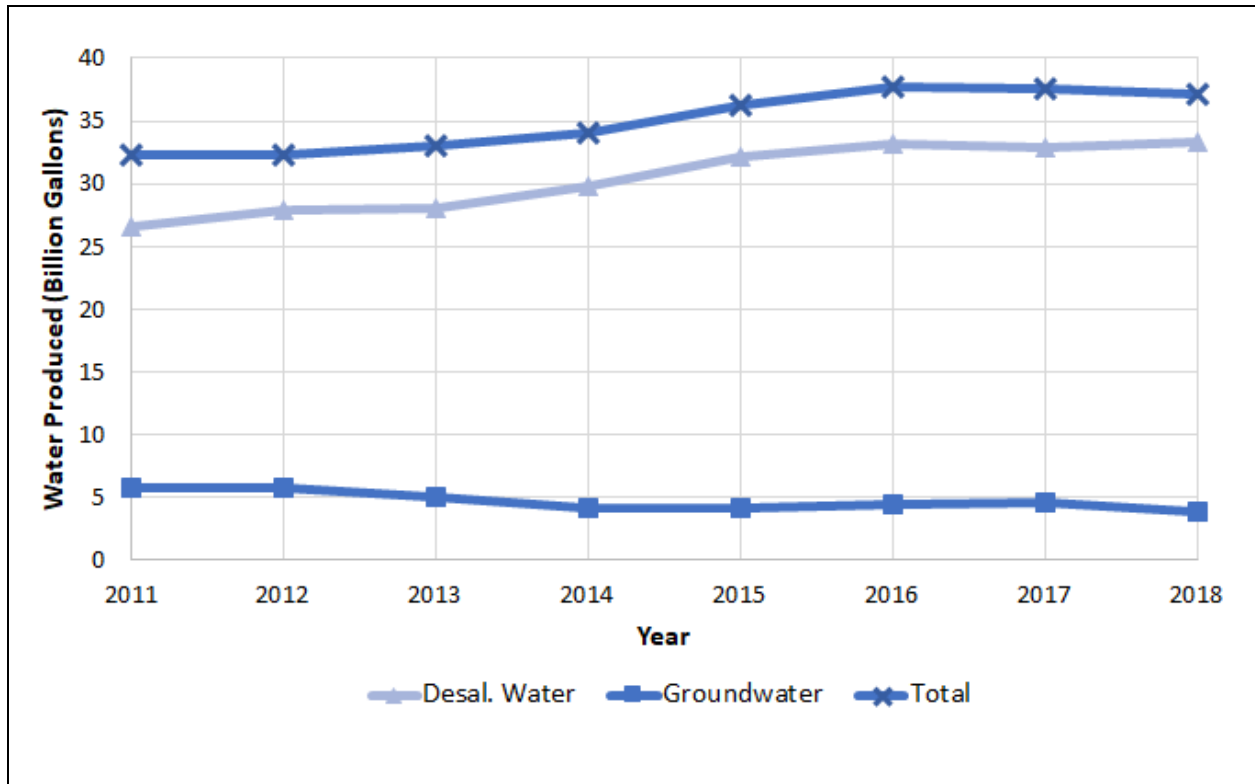
growth and growing tourism necessitates the use of water processed by engineering systems, which is referred to as non-conventional water resources. (Murad, 2010)

According to the *SEWA 2018 National Statistical Report*, the Sharjah Emirate produced 37.2 billion gallons of water using different options for water resources. Sharjah's conventional resources include surface water and groundwater, which both depend on rainfall. Surface water refers to water from ponds, streams, springs, floodwater, and dam water. Groundwater, which is extracted through wells, is a more readily available and abundant conventional water resource, making it more reliable. However, the rising sea levels tend to deposit salt into groundwater, making it brackish (Sowers, 2010). Consequently, the Emirate has turned to non-conventional resources.

The main non-conventional water resources consumed in Sharjah are those produced through desalination and wastewater treatment. (Murad, 2010) Drinking water is produced solely by desalination, which is the removal of salt from seawater and brackish groundwater (Cambridge Dictionary, n.d.). This method can be costly at a large-scale as it requires a great amount of energy. The two byproducts of desalination plants are the desalinated water and a high-salinity brine. The brine is pumped back into the sea. Similarly, wastewater is also purified of contaminants, including human waste, food, and chemicals. Still, many individuals do not deem treated wastewater fit for drinking even after extensive treatment. Therefore, wastewater treatment is used for agriculture (Ahmed, 2016)

In 2011, SEWA reported 26.6 billion gallons produced through desalination and 5.7 billion gallons from groundwater; in 2012, water produced through desalination and groundwater was reported as 27.8 billion gallons and 4.8 billion gallons, respectively. (SEWA, 2014) By 2018, the water produced from desalination (33.3 billion gallons) was nearly nine times as much in comparison groundwater (3.8 billion gallons) (SEWA, 2018). The water consumption reports from the past decade depict a decline in groundwater usage and a steady increase in desalinated water, exemplifying Sharjah's increasing reliance on non-conventional water resources. All water production (both desalinated and groundwater) increased by 4.9 billion gallons from 2011 to 2019, which may suggest an overall increased demand of water

throughout the years from population growth. (SEWA, 2014-2018). This trend of decreasing groundwater and increasing desalinated water is depicted in Figure 5.



**Figure 5:** Desalinated Water and Groundwater Production in Sharjah, UAE (SEWA, 2014-2018)

#### 1.4 MENA WATER CONSERVATION EDUCATIONAL CAMPAIGNS

Educational campaigns that encourage water conservation are widely implemented to relieve stress on water resources. These campaigns tend to put the responsibility of water conservation on the consumers, rather than the government or water suppliers. Thus, the effectiveness of educational campaigns relies on the individual’s willingness to make sacrifices for the common good. Hence, the success of an educational campaign depends primarily on the persuasiveness of the material and its impact on consumer behavior long-term.

Two research studies of behavioral change campaigns from the MENA region are explored in the following paragraphs. One study assesses the effectiveness of an educational

campaign, and the other explores the impact of tone and language on a campaign's effectiveness.

In 2016, Zietlow, Michalscheck, and Weltin conducted a research study, *Water conservation under scarcity conditions: testing the long-run effectiveness of a water conservation awareness campaign in Jordan*, to quantify the long-term effects of a water conservation campaign on consumer behavior. This campaign promoted individual water conservation strategies by putting a cartoon figure of a Jordanian man at the forefront of advertisements. The data was collected five years after the campaign through the Public Action for Water, Energy, and Environment Project with a survey (n=367) that randomly selected people who managed their household's water, fuel, and waste. This survey assessed the participants' awareness of the scarcity itself, their consequent responsibility, and their water conservation actions.

The campaign was found to have a long-term effect on water conservation awareness. The campaign increased people's sense of accountability and responsibility for the water scarcity. Though people may have felt more responsible for their effect on water scarcity, it did not induce behavioral changes to the extent where people would adjust their water usage. It was determined that the effectiveness of a campaign cannot be seen in such a short period of time; it must be over a longer period.

Another case study similar to our project was detailed in the article *Still Waters Run Deep: Comparing the assertive and suggestive language in water conservation campaigns* by Katz in 2018. The article's focus is to indicate and compare the effectiveness of using assertive and suggestive messages in water conservation campaigns in Israel. An example of assertive language would be "You must conserve water", whereas a suggestive message would be "Please consider conserving water". The style of communication can affect the consumer's water consumption rate, as the authors described. They used the method of conducting the study in a real-life environment to determine the effectiveness of the assertive and suggestive messages within a three-month time frame on water consumption rate. The study found that both assertive and suggestive messages had an impact on reducing water consumption rate; however, the

suggestive had a stronger impact in both magnitude and duration. This article's method of collecting the campaign's data suggests a concise and practical method. Katz focused primarily on comparing between two styles of communication rather than determining the behavioral impact of conservation campaigns.

Both case studies share a campaign location with our study: The Middle East. Thus, similar environment and climate appear in both locations, which makes these studies more relevant in our literature review to provide context to water conservation campaigns in MENA. The research study conducted by Zietlow, Michalscheck, and Weltin presented campaigns to change behavior but it was determined that more personal responsibility was needed and that it would take more time to see changes in behavior. Although both Katz's and our research pertain to water conservation, Katz's primary focus was on the messaging. Both case studies provide integral background on the messaging and time required for campaigns to influence behavior.

## 1.5 USING MARKETING TECHNIQUES IN A CAMPAIGN

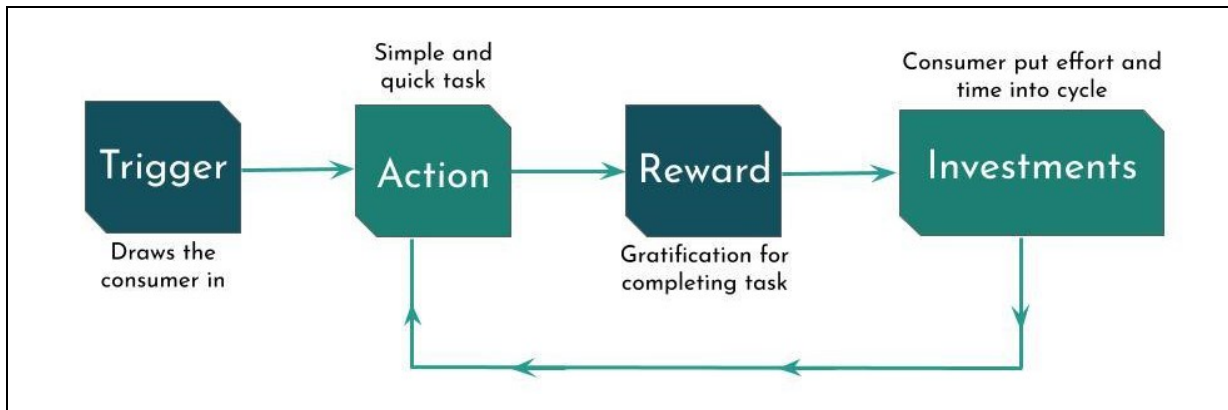
A campaign is defined as “a planned set of activities that people carry out over a period of time in order to achieve something such as social or political change” (Collins Dictionary, n.d). A campaign can be delivered in a multitude of ways, including social media, television, and newspaper.

Like products and commodities, campaigns are “sold” to the consumer, in that they require consumer engagement. In order to market a campaign for consumers to be receptive of it, marketing frameworks are used to plan and organize (Mangles, 2019). The Hook Model is a framework which helps to invest the customer into a product by creating a habit; the Seven P's of the Marketing Mix shows the essential core components of a product, such as the price and place. Additionally, principles of psychology play a major role in the interaction between the consumer and products created from marketing frameworks.



### 1.5.1 THE HOOK MODEL

One framework to market a product is the Hook Model. It is used to build a habit-forming relationship between a product and a customer. The components of the Hook Model can be seen in Figure 6 below.



**Figure 6:** The Hook Model (Eyal, 2013)

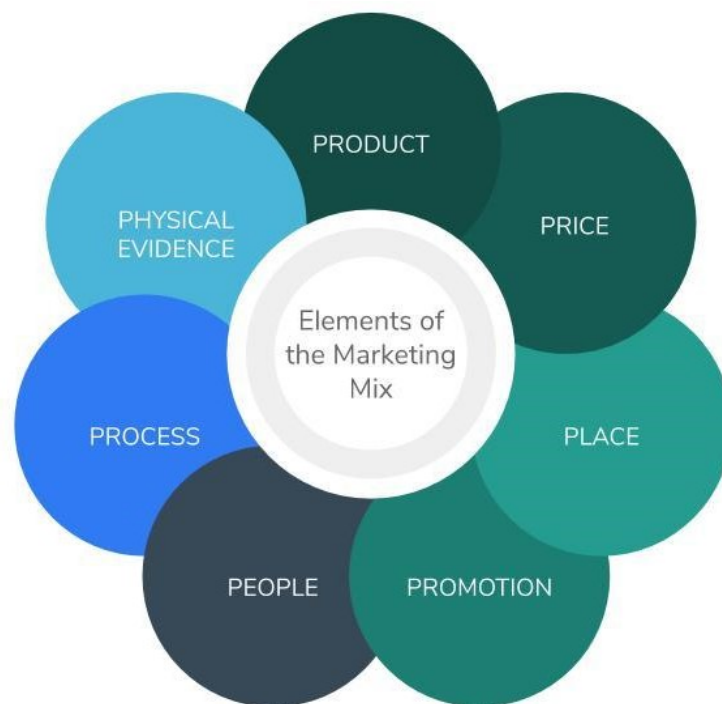
The main purpose of this model is to hook consumers to use a product or complete certain actions to build a habit. The Hook Model is cyclic and contains four main components: Trigger, Action, Variable Reward, and Investment (Eyal, 2013).

The Trigger is what draws the consumer towards the product, beginning the cycle. The message can vary in language, tone, design, delivery, and in other respects. Now that the attention of the consumer has been gained, the consumer can perform an action in expectancy to get a reward. In this model, the Action is expected to be a small amount of work which can be done quickly (e.g. repairing water leaks). Then, the consumer is rewarded for doing the action. The Variable Reward is a random result which is caused by the consumer's actions. The anticipation of being rewarded creates a strong positive reaction from the consumer when rewarded. In some cases, the consumer is not rewarded immediately after completing the action. For example, a smaller water bill at the end of the year is not an immediate reward. Moreover, the reward does not have to be of materialistic value. For instance, it could be personal gratification. Finally, after putting in much time and effort, the consumer will be invested in the cycle. This Investments will start the cycle again by making the consumer continuously complete

the action again to receive rewards. For example, a consumer who checks for any water leaks every six months would be invested in this cycle. (Filippou, 2016)

### 1.5.2 SEVEN P'S OF THE MARKETING MIX

The Marketing Mix refers to variables that businesses control to implement a marketing strategy directed at a specific target audience. Moreover, this framework is used to describe the different kinds of choices organizations must make to achieve their marketing objectives. The original Marketing Mix framework was created by E. Jerome McCarthy in 1960 and consisted of four elements: Product, Price, Place, and Promotion. Later, the model was extended by Booms and Bitner in 1981 to include a total of seven elements. (Marketing Theories, n.d.) The seven elements included in the Extended Marketing Mix framework are illustrated in Figure 7.



**Figure 7:** Elements of the Marketing Mix (Booms and Bitner, 1981)

The Seven P's of the Marketing Mix include Product, Price, Place, Promotion, People, Process, and Physical Evidence.

#### **Product**

*Product* refers to the service and the range of products that will be sold. This element includes the quality, branding, and reputation of the product. An important aspect is the support provided for the consumer after the purchase. An example of this is when campaigns include a contact number to answer any questions the consumer may have.

### **Price**

*Price* refers to how much the business will charge for the purchase of its product. Organizations may use different approaches to pricing, including value-based pricing. Value-based pricing includes setting the price based on the consumer's perception of value rather than the organization's cost as well as using a marketing strategy to enhance the perceived value in the consumer's mind.

### **Place**

*Place* refers to where the product or service is being distributed. This includes the location and accessibility of the product. Some distribution channels include producer-consumer, producer-retailer-consumer, and producer-wholesaler-retailer-consumer. The choice of distribution channel influences the types of customers the product attracts, the perception of the product in the market, and the ease with which the consumer can access the product.

### **Promotion**

*Promotion* refers to how a business communicates with consumers about the product. Furthermore, there is a Promotional Mix which includes personal selling, relationship marketing, advertising, sales promotion, and public relations. Mediums of advertising include television, radio, social media, and pamphlets.

The following elements belong to the extended Marketing Mix framework:

### **People**

*People* refers to how the business's staff and consumers differ from those of a competitor's organization. It is important to have the right people to support the business's products, as this is reflected through the customer service. Customer service is critical to selling the business's product.

## **Process**

*Process* refers to how the product is sold, delivered, and accessed. This element includes the consumers' complete experience of buying the product from beginning to end; this is how the product is bought by the consumer. Customer service is integral to this element for the buying process to improve customer satisfaction.

## **Physical Evidence**

*Physical Evidence* refers to how the product becomes tangible. Physical Evidence is the physical appearance of the product across every aspect of its presentation to the consumer (e.g. packaging). Each aspect of Physical Evidence is crucial in attracting consumers to the product. (Farall, Lindsley, March 2008)

Ultimately, the elements in the Marketing Mix model (Product, Price, Place, Promotion, People, Process, and Physical Evidence) are strategies to connect a product or service with a consumer. With the consideration of each of these elements, an organization will have a clear idea of the methods needed to get the final product to their target audience.

### **1.5.3 PSYCHOLOGY OF MARKETING CAMPAIGNS**

A marketing campaign's message, delivery, and design can be polished, but ultimately, the success relies on the marketer's ability to engage the consumer. Thus, psychological concepts can be utilized in marketing to persuade the consumer to invest in a product. Language style, the Foot-in-the-door technique, persuasive rhetoric, and rewards are a few of the many ways psychology can be incorporated into a campaign to promote consumer engagement.

Language is a factor that must be considered when delivering a campaign or any product; the communication of the product from the marketer to the consumer is crucial when trying to successfully spark interest and engage the consumer. The style and tone used to present a campaign can greatly impact the reception of such. As for water conservation campaigns, according to Katz (2018), both assertive and suggestive messages had an impact on reducing water consumption; however, the suggestive had a stronger impact in both magnitude and

duration. Consequently, the consumer's perception of educational campaigns can have a major influence on how much water they conserve (Masoud, 2014).

The Foot-in-the-door Technique is a phenomenon where the marketer asks the customer to complete tasks in increasing size over time (Dolinski, 2012). For example, the marketer may ask the customer to recycle bottles at home in one campaign. The next campaign may then be to buy a water filter and then a reusable water bottle. The first request builds the relationship with the customer and increases the chance they will fulfill the additional requests.

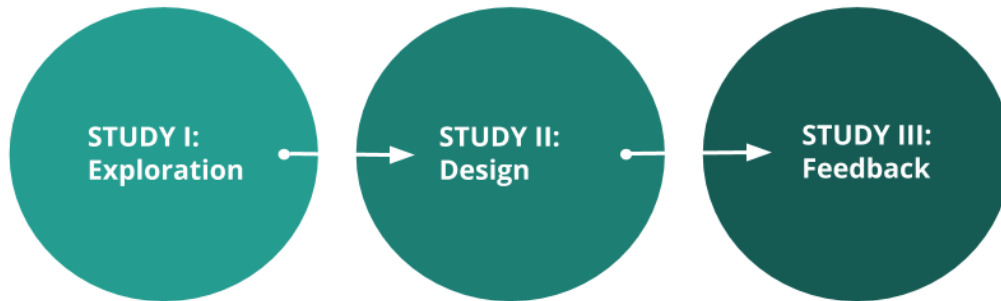
Rhetoric, a style of writing with the purpose to influence the reader, is useful when trying to persuade a consumer into engaging with a product. (Cambridge Dictionary, n.d) The three types of rhetoric are pathos, ethos, and logos. Pathos is used to persuade the audience by appealing to their emotions, such as pity and sympathy. This can be seen in campaigns encouraging individuals to conserve water by presenting footage of underprivileged people who do not have access to clean water. Ethos appeals to the audience's ethics and morals; therefore, religion plays a large role in this. For instance, individuals who believe the creation of the planet was from a divine nature then may be more inclined to take care of the environment, especially when the religious texts ask them to do so. Finally, logos persuades through logic, which is primarily done through descriptive statistics and facts. (Varpio, 2018)

Positive reinforcement through rewards encourage continued participation from the customer. Many organizations implement this technique in their marketing through point systems. For instance, some restaurants give customers "points" for each purchase. Once customers reach a certain number of points, they would then earn a free item. Similarly, some water conservation campaigns make use of incentives to save water, such as receiving a percentage off a water bill or a voucher for free items. In addition to these fixed-ratio rewards, there are also variable rewards where the earnings are sporadic. These incite curiosity in the customers to come back and gamble their chances of receiving a reward.

## 1.6 OVERVIEW OF METHODS

Our project focuses on the use of educational campaigns to encourage the Sharjah community to conserve water. The goal of this project is to design and evaluate campaigns for

SEWA that suggest limiting water consumption. This goal can be broken up into three studies: The Exploration Study (Study I), the Design Study (Study II), and the Feedback Study (Study III). The tasks relating to our goal is seen in Figure 8.



**Figure 8:** Methodology Objectives

In Chapter Two: Study I, the group analyzed both previous and ongoing campaigns. Based on the perceived strengths of these campaigns, the appropriate elements to fulfill each component of our marketing framework were determined. In Chapter Three: Study II, the researchers held Design Sprint workshops to receive a large pool of prototypes. Additionally, the researchers narrowed down the prototypes to three campaigns and determined the respective methods of delivery. In Chapter Four: Study III, the researchers inquired feedback on the three campaign prototypes produced from Study II, and formulated recommendations.

## 1.7 SUMMARY

The high temperatures and scarce rainfall in regions of MENA pose greater risks to the naturally occurring water resources; limited water resources combined with excessive water consumption leads to a phenomenon known as water stress. Among these water stressed regions is the UAE, which ranks as one of the highest per capita water consumers in the world. To alleviate water stress, governments in places like the UAE, Jordan, and Israel have implemented educational campaigns to spread awareness of water conservation and sustainability as well as to mitigate water consumption. These campaigns require strong messages to change behavior. To do this, campaign creators can take into consideration marketing frameworks when developing a campaign from beginning to end. Additionally, applying psychological principles,

such as rewards and persuasive language, can help to influence and engage the consumer. Ultimately, building a culture which emphasizes the importance of water conservation holds many benefits when attempting to discourage excessive water consumption.

## 2.0 THE EXPLORATION OF CONSERVATION EFFORTS IN SHARJAH, UAE

In this chapter, we will discuss our exploratory qualitative study of current and previous campaigns focused on changing behavior of the residents of Sharjah in the United Arab Emirates (UAE). First, we will establish relevant context and our research questions. Then, we will discuss the exploratory methods we used to collect qualitative data. An analysis of the data will be presented, which included a deconstruction of the campaigns' elements using two marketing frameworks, the Marketing Mix and the Hook Model. Finally, we will end with a discussion, recommendations, and a conclusion based on our findings.

### 2.1 INTRODUCTION

The UAE's arid climate, characterized by infrequent precipitation and high temperatures, limits the total amount of water resources dependent on rainfall. Despite this, the UAE ranks among the highest per capita water consumers in the world (Khaleej Times, 2016). The high water consumption, combined with a rising population, increased tourism, and limited water resources, has led the country to become one of the most water stressed regions in the world, along with Kuwait, Qatar, and Saudi Arabia. (ICARDA, 2019)

The UAE's current state of water stress has led authorities within the Emirates to find new alternatives to meet water demands. Particularly in the Emirate of Sharjah, the Sharjah Electricity and Water Authority (SEWA) has been attempting to limit water consumption through studies and campaigns promoting water conservation. Instead of solely focusing on increasing water supply to meet the demands, SEWA has also been taking the approach of alleviating demands by encouraging water conservation among the citizens of Sharjah.

In order to impact water consumption among the citizens, it is important to understand the demographics of Sharjah. There are 171,698 students in the Emirate of Sharjah. These students are a high priority from the government of Sharjah—His Highness Dr. Sheikh Sultan bin Muhammad Al-Qasimi, Supreme Council Member and Ruler of Sharjah, advocates for higher education and established University City, which is a district that hosts over 15



educational institutions. (Gulf News, 2015) His Highness is the President of one of these institutions: American University of Sharjah (AUS).

When attempting to implement water conservation campaigns in Sharjah, an exploration of all campaigns that influence behaviors of the Sharjah community is helpful; whether the campaign is centered on water conservation or other topics, similar methods can be utilized to appeal to the same target. This then poses the primary research question guiding our study: “What are the social benefit campaigns that have already been created in Sharjah?”. Our exploratory study functions to answer this through methods of observation and interview.

In the following sections of this chapter, we first present the observation and interview methodologies used to explore our research question and achieve our research objectives. Then, we present our findings from the observational study and the interviews. Lastly, we end this chapter with a discussion, recommendations, and a conclusion.

## 2.2 METHODS

The goal of this study is to explore social benefit change campaigns within Sharjah. In order to achieve the goals of the study, we created and followed a methodology that consisted of the collection and analysis of observational and interview data. Our objectives of this study were to first identify the types of campaigns and then characterize common themes between them. In this section, we will describe in detail the research and data collection methods that we used to achieve our research objectives and goals.

First, we executed an observational study to identify current campaigns, including but not limited to those pertaining to sustainability. Then, we conducted interviews to get more insight on the campaign design process. From these two methods, data was collected and then analyzed.

### 2.2.1 PARTICIPANTS

The participants in our study include representatives from SEWA’s Conservation Department and the AUS Office of Sustainability. We planned to gain insight from these

representatives through interviews. The interview with SEWA representatives was scheduled in advance by contacting a liaison to recruit participants from the SEWA Conservation Department. For the Office of Sustainability interview, we discovered the Office of Sustainability during our observational study and set up an interview with one of the representatives.

## 2.2.2 DATA COLLECTION

Our study consists of two data collection procedures, an observational study and interviews. We conducted an observational study on the AUS campus. Additionally, we interviewed representatives from the SEWA Conservation Department and the AUS Sustainability Office.

### 2.2.2.1 Observational Study

The observational study was conducted on the AUS campus. The buildings that were explored included the Engineering and Sciences Building, Main Hall, Student Center, Business and Management Building, Library, and Dormitories. We spent several days photographing instances of campaigns and uploading them to a shared folder.

In addition to our data collection efforts on the AUS campus, SEWA also provided us with information about their previous campaigns. The document listed all their achievements in 2018, which included summaries of each campaign as well as statistical data indicating their respective successes. Each of the campaigns pertaining to conservation was screen captured and uploaded to a shared folder.

### 2.2.1.2 Interviews

Prior to the start of the interviews, the interviewees were presented with the Informed Consent Form (Appendix C and D). Once the form was signed, each researcher audio recorded the interview on their digital devices. One researcher used Otter, a voice transcription service, to automatically transcribe the audio recorded during the interviews. Similar protocols were followed for both the AUS and the SEWA interviews, with some minor differences. The protocols for each interview are discussed in the following paragraphs.

Regarding the SEWA Conservation Department interview, four researchers were present to conduct the interview. This interview lasted 40 minutes. The protocol can be seen in Table 1.

**Table 1:** Interview Protocol for SEWA Representatives Study I

Prior to the interview:

*We want to thank you for accepting this interview. We are working on a research study for SEWA. Part of our study is understanding the current state of water conservation efforts in Sharjah. This background will help us in the next step of our study which involves the designing of water conservation campaigns. The purpose of this interview is to gather information on the best ways to educate people on water conservation.*

*Could you please indicate by signing the Informed Consent Form that we have your permission to audio record this interview to help us in the transcription process of this interview?*

[Informed Consent Form is given to interviewees]

[We confirm yes or no with the participant to being audio recorded]

[If yes]

*Thank you for your permission; we will now begin the interview and begin recording.*

[If no]

*Thank you for letting us know; we will continue with the interview by only taking notes.*

<b>Topic Area</b>	<b>Explanation of Topic Area</b>	<b>Examples of a Type of Question</b>
Interviewee’s Background	Describe the role the interviewee has with the SEWA Conservation Department.	“Can you explain what your job and your role is with SEWA?”
Design Process	Describe the methods used to design a campaign (target, cost, media, duration, deliverable, etc.).	“How long does it take to design each campaign?” and “How do you create a name for a campaign?”

Ongoing and Future Campaigns	Describe current and future campaigns.	“What are the upcoming campaigns?”
Measurement of Outcome	Describe how the success of a campaign is measured after its execution.	“How do you measure other campaigns?”
Interviewee’s Recommendation	Provide any additional input, especially on how to design a campaign.	“What do you believe is the cost-effective way to spread the message?”

For the interview with the representative of the AUS Office of Sustainability, three researchers were present to conduct the interview. This interview lasted 25 minutes and was audio recorded. The protocol is presented in Table 2.

**Table 2:** Interview Protocol for AUS Students and Faculty Study I

Prior to the interview:

*We want to thank you for accepting this interview. We are working on a research study for SEWA. Part of our study is understanding the current state of water conservation efforts in Sharjah. This background will help us in the next step of our study which involves the designing of water conservation campaigns. The purpose of this interview is to gather information on the best ways to educate people on water conservation.*

*Could you please indicate by signing the Informed Consent Form that we have your permission to audio record this interview to help us in the transcription process of this interview?*

[Informed Consent Form is given to interviewee's]

[We confirm yes or no with the participant to being audio recorded]

[If yes]

*Thank you for your permission; we will now begin the interview and begin recording.*

[If no]

*Thank you for letting us know; we will continue with the interview by only taking notes.*

<b>Type of Question</b>	<b>Explanation of Topic Area</b>	<b>Example of Type of Question</b>
Interviewee's Role	Describe the role the interviewee has with the AUS campus.	"Can you explain what your job and your role is on the campus?"
Design Process	Describe the methods used to design a campaign (target, cost, media, duration, deliverable, etc.).	"What's the process like distributing flyers, holding these events?" and "How would you describe some of the design elements that you

		use?”
Ongoing/ Future Campaigns	Describe current and future campaigns.	“Are there any other upcoming campaigns, maybe they're not in the works, but something you guys plan to implement in the future?”
Measurement of Outcome	Describe how the success of a campaign is measured after its execution.	“How do you measure other campaigns?”
Interviewee’s recommendations	Provide any additional input, especially on how to design a campaign.	“Do you have any recommendations?”

### 2.2.2.3 Summary of Data Collection

Our exploratory study collected data on social benefit campaigns through an observational study and interviews. For the observational study, we explored different buildings on the AUS campus and documented the campaigns that we saw. The campaigns were photographed and uploaded to a shared folder. Additionally, the campaigns listed in the report of SEWA’s achievements in 2018 were screen captured and uploaded to the folder. The target of our interviews were people directly involved with campaign design processes. Therefore, we interviewed representatives from the SEWA Conservation Department and the AUS Office of Sustainability. Interview topics included the interviewees’ background and position, as well as the design, execution, and outcomes of their campaigns.

### 2.2.3 DATA ANALYSIS

For the observational study, we thematically coded the collected campaigns based upon their corresponding elements to two marketing frameworks: The Hook Model and the Marketing Mix. We completed this through NVivo, a qualitative analysis software. We transcribed the

interviews using Otter, a real-time transcription software. Once transcribed, the interviews were summarized into the key points and themes.

### 2.2.3.1 Observational Study

We analyzed the data from the observational study by using the two marketing frameworks, which are composed of design elements that aid in the marketing of a product. The Hook Model explores the campaign’s message, especially with behavioral changes, and the Marketing Mix focuses on the campaign’s physical structure and deliverables. We used these models as an analytical framework to determine each campaign’s executed elements. For example: What was the campaign’s hook? What was the product? The elements of each framework are presented in Table 3.

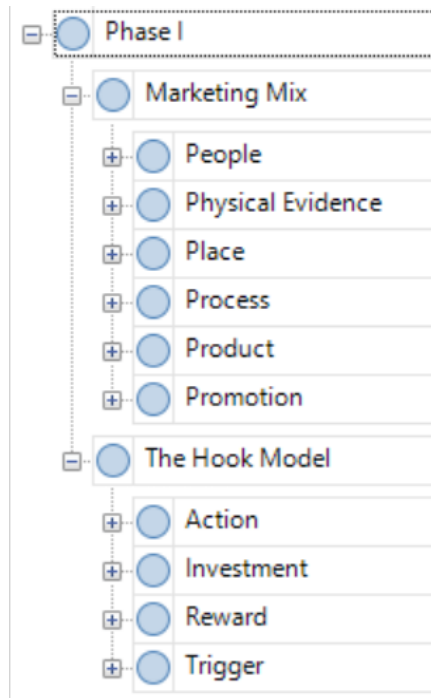
**Table 3:** The Elements of Selected Marketing Frameworks

<b>The Hook Model</b>	<b>The Marketing Mix</b>
Trigger	Product
Action	Promotion
Variable Reward	Price
Investment	Place
	People
	Process
	Physical Evidence

Images of each campaign was pasted into a document, where we noted the corresponding elements from the marketing frameworks. We imported the images into a qualitative analysis software, NVivo, in order to thematically code campaigns based upon the marketing frameworks elements. The nodes or “categorizations” were created corresponding to each element of both marketing frameworks. The campaign images were then coded. In other words, campaigns were



assigned to a certain node to indicate the presence of that characteristic; these nodes functioned as a folder to link our campaign files to certain elements of our framework. Seven nodes were created from the Marketing Mix, and four nodes were created from the Hook Model. The nodes we created in NVivo can be seen in Figure 9 below.



**Figure 9:** Marketing frameworks used for campaign analysis

### 2.2.3.2 Interviews

After the interviews with SEWA and AUS representatives were transcribed through the transcription software Otter, we then verified the accuracy of the transcripts. We ensured that the written texts matched the audio recordings. Then, we read the transcript for each interview to determine the main points. The main points were then highlighted and grouped together based on the general themes that arose from that interview.

### 2.2.3.3 Summary of Data Analysis

We qualitatively analyzed the data collected through the observational study and interviews by determining the emergent themes. For the observational study data, we assessed

campaigns one at a time by recording the elements of each campaign that corresponded to two marketing frameworks. These elements included Trigger, Action, Reward, Investment (from the Hook Model) and Product, Price, Place, Promotion, People, Process, Physical Evidence (from the Marketing Mix). A qualitative software called NVivo was used to thematically code each campaign by these elements. Once each campaign was annotated by its elements, comparisons were made across the campaigns; NVivo aided in determining similarities and differences between campaigns. We denoted these comparisons as themes.

Similarly, interviews were deconstructed into themes. Once the interviews were transcribed through a transcription software called Otter, the key points were highlighted. Themes from the interviews with representatives from SEWA and AUS were analyzed independently of each other.

#### 2.2.4 SUMMARY OF METHODS

In this section, we discussed the methods we used to explore social benefit campaigns implemented in Sharjah. Our methods include techniques of observation and extended interviews. We touched upon participant identification and recruitment, data collection procedures, and data analysis.

In our observational study, we reported AUS and SEWA campaigns we saw. AUS campaigns were found on campus and were photographed; SEWA campaigns were found in the report of SEWA's achievements in 2018 and were screen captured. We documented the elements of each campaign corresponding to the marketing frameworks. A qualitative analysis software, NVivo, allowed us to organize each campaign along with its elements. Once each campaign was inputted, we could make comparisons and identify themes.

For the second part of this study, we conducted interviews. We interviewed representatives from the SEWA Conservation Department and the AUS Office of Sustainability. We created a protocol for each interview that included a script and list of questions. During these interviews, questions were asked regarding the campaign design process. The interviews were recorded and transcribed in real-time. Following the interviews,

the researchers confirmed the transcription was accurate and began highlighting the main points of each interview and grouping them to create themes.

## 2.3 FINDINGS

First, we will present the findings from the observational study on the AUS campus, then we will present the findings from the interviews with the SEWA conservation department and the AUS Office of Sustainability.

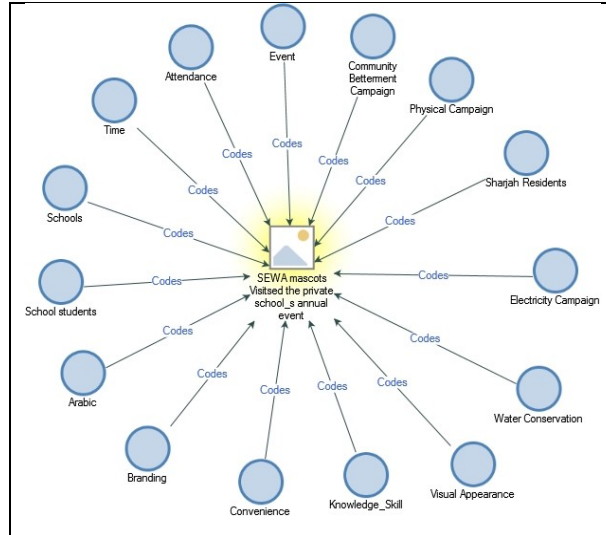
### 2.3.1 OBSERVATIONAL STUDY

In this section, we present the findings that emerged from the data collection and analysis procedures detailed in the previous section. Our thematic coding of the campaigns we observed produced several key findings that arose when we attempted to answer the research question. We identified common themes between seventy campaigns created by individuals affiliated with either AUS or SEWA; images of each campaign are included in Appendix K.

#### **Thematic Coding of Campaigns**

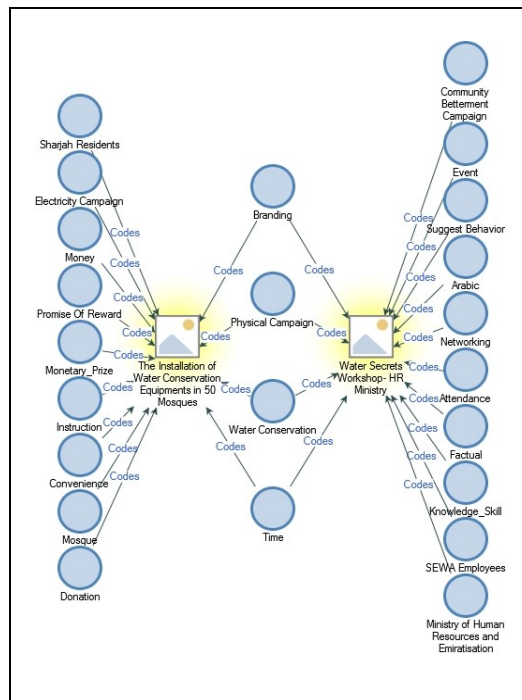
For instances where certain campaigns did not fit into a node, a new node was created to represent a more fitting categorization. This allowed the categorization process to be emergent with new themes actively being discovered to accurately represent each campaign, rather than forcing individual campaigns to fit into the pre-existing nodes. An illustration of our final marketing frameworks used in NVivo can be seen in Appendix L. In the sections below, we discuss the main themes we saw among both the AUS and SEWA campaigns.

Within each node, we created additional nodes to subcategorize the photographs of campaigns. Each campaign was coded into at least one subcategory for every marketing framework node. For the instances when certain campaigns could not be coded into a certain node, we created new nodes to fit the data. An example of the coding of a SEWA campaign can be seen below in Figure 10.



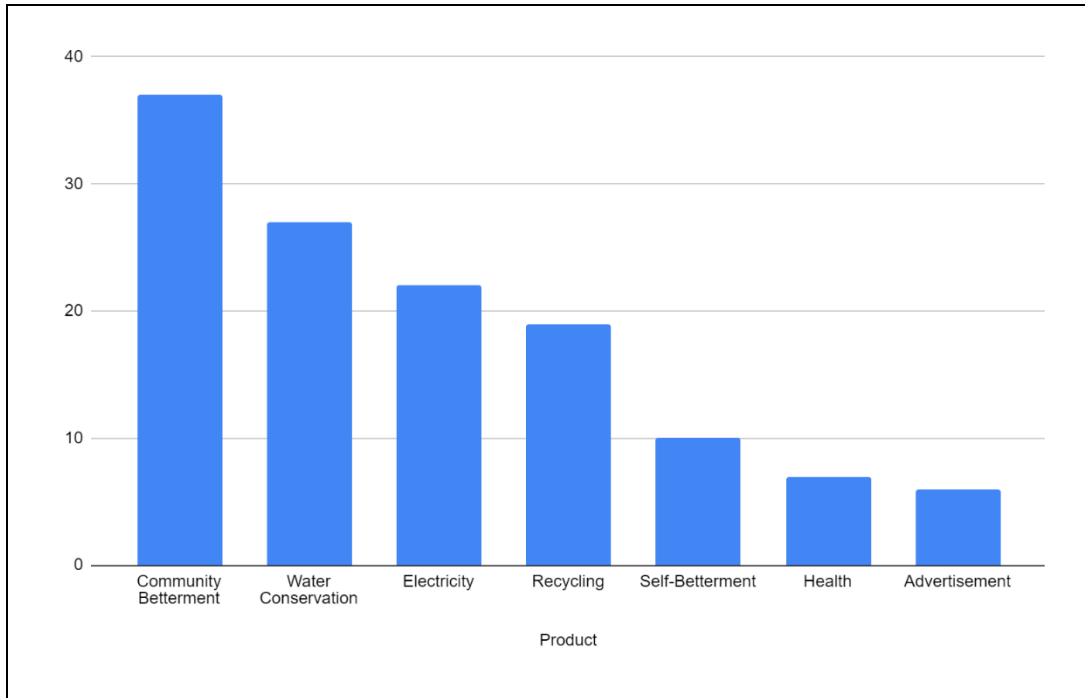
**Figure 10:** NVivo codes of a SEWA campaign

Within NVivo, we were able to compare the codes between different campaigns. This analysis tool allowed us to see the two campaigns side-by-side, depicting the nodes that the two campaigns share and the nodes they do not. An example of this is seen below in Figure 11.



**Figure 11:** Similarities and differences between two SEWA campaigns

One example of the subcategories that emerged from the thematic coding is seen in Figure 12 below, which indicates the topics of each campaign.



**Figure 12:** Campaign Topic Report from Observational Study

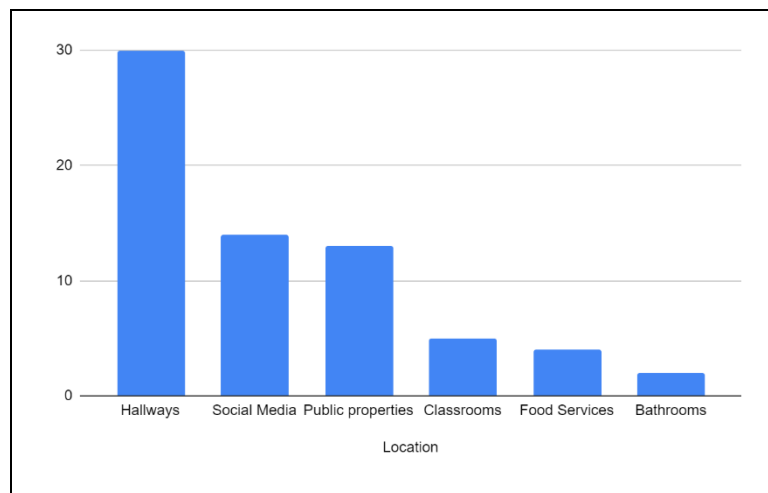
By comparing the subcategorized nodes of each campaign, we were able to visualize themes. In the following sections, we discuss our six findings regarding campaigns' location, design elements, target audience, investments, messaging, and rewards.

**Finding #1: A campaign's location is key to its success.**

During our observational study, the physical campaigns we saw on the AUS campus were almost always placed in high-traffic areas to increase the level of outreach. In the Student Center, flyers were pasted on mobile bulletin boards which were positioned around the floor. The placement of these mobile bulletin boards increased the visibility, as the bulletin boards essentially lined the pathway for people entering the space. Additionally, there were many bulletin boards on the outside walls of buildings with many flyers. Some flyers were pasted on bathroom doors, such as on the Library's main floor. Large stand-alone banners were placed by staircases or tables in large open spaces.

Conversely, some of the campaigns were virtual, meaning they were digitized. Social media sites like Instagram and Facebook were especially used by specific departments at AUS. For example, the Office of Sustainability would post educational campaigns on energy conservation, recycling, and water conservation, as well as advertise for specific sustainability events, such as the weekly Farmer’s Market. Students, faculty, and staff do not necessarily need to be on the AUS campus to see these posts; they can see the posts at any time and on any day. Even residents of Sharjah who are unaffiliated with AUS have access to these campaigns.

As for the SEWA campaigns, most of the campaign events took place in public properties like mosques, malls, parks, or education centers. For some of the campaigns, representatives of SEWA would go door-to-door to residents’ houses to inform them on both energy and water conservation. Additionally, many of the campaigns involved representatives going directly to classrooms in the schools to present to the children, especially using puppets and characters. The different locations of each campaign are shown in Figure 13 below.

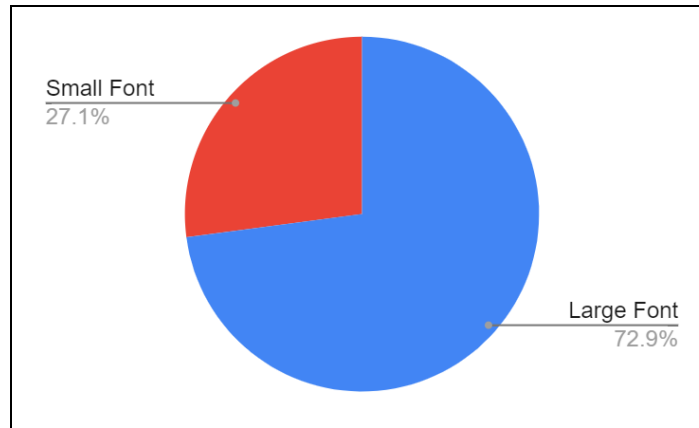


**Figure 13:** Campaign Location Report from Observational Study

**Finding #2: Design elements help convey messages.**

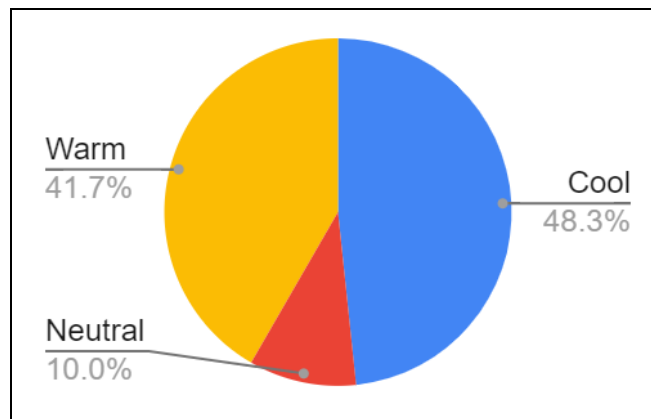
Most printed campaigns we saw utilized design elements like graphics, colors, and fonts to convey the message. Large fonts were used to highlight key points; that way, someone who was quickly looking at the campaign could easily see the most important information,

such as the core message or name of event. Below in Figure 14, the distribution between small fonts and large fonts is shown.



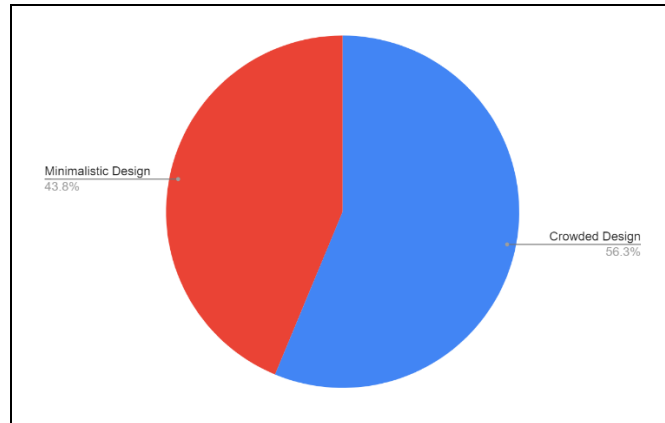
**Figure 14:** Campaign Font Size Reports from Observational Study

Different colors were used for each campaign. In many instances, the colors were associated with the message. Greens were often used for recycling and blues were used for water conservation. Figure 15 below shows the distribution of different color themes.



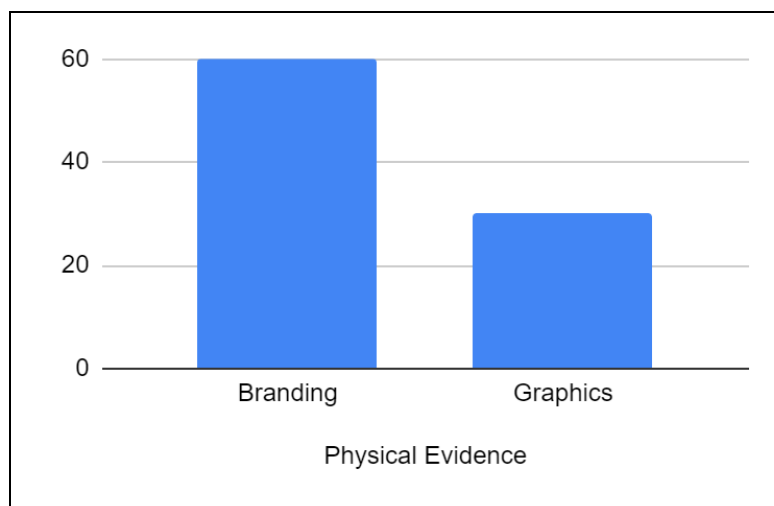
**Figure 15:** Campaign Colors Report from Observational Study

The layouts of printed campaigns were generally based upon the amount of text. We saw that campaigns with more details were sometimes crowded; there was a lot of content to fit into one campaign. Majority of the campaigns we saw had a crowded layout. Figure 16 below shows the ratio of minimalistic designs to crowded designs.



**Figure 16:** Campaign Layout Reports from Observational Study

The most telling design element we saw used in printed campaigns was graphics and branding. A large majority used either one or both. Graphics were usually supplemental to the message, and branding helped with contact information. In Figure 17 below, the frequency of branding and graphics used in the campaign is shown.

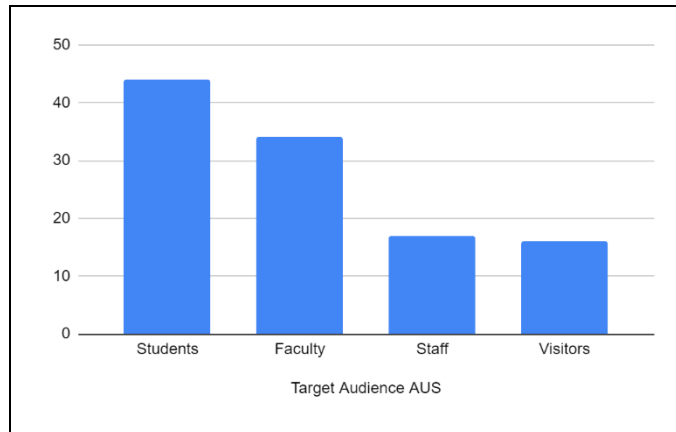


**Figure 17:** Campaign Physical Evidence Reports from Observational Study

**Finding #3: Campaigns should reach their target audiences through different methods.**

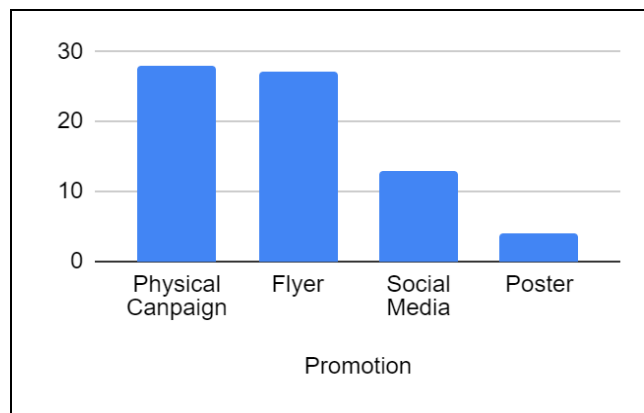
AUS comprises a broader demographic, consisting of students and faculty from all backgrounds and ages. The breakdown of the target audience of AUS campaigns is shown in Figure 18 below.





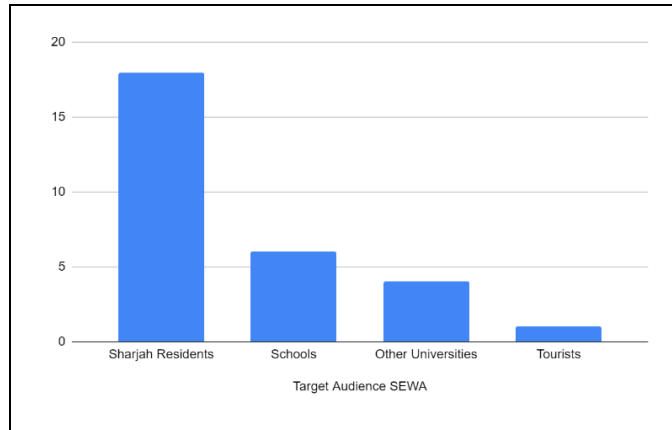
**Figure 18:** AUS Target Audience Report from Observational Study

The diverse nature of the AUS campus poses challenges when targeting campaigns towards the larger community of AUS, as individuals have different commitments and schedules on campus. Therefore, AUS uses different methods to reach their community of students, staff, and faculty rather than disrupt their tight schedules. These delivery methods include social media, events, and flyers. Each one of the campaigns reaches a similar demographic. For example, AUS announces events through multiple social media, reaching out to Facebook and Instagram users involved in the AUS community. The target audience has access to these campaigns for extended periods of time; for example, a social media post lasts longer than a verbal campaign. The different deliverables are shown in Figure 19.



**Figure 19:** Campaign Delivery Method Report from Observational Study

Conversely, some campaigns are targeted to narrower demographics which requires different delivery approaches. SEWA’s primary targets in the 2018 campaigns were children, families, mosques, students, and government departments. The targets of SEWA’s campaigns we observed are shown in Figure 20 below.

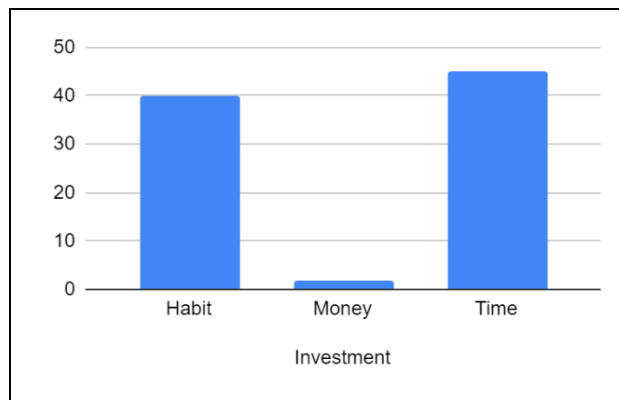


**Figure 20:** SEWA Target Audience Report from Observational Study

Each campaign strategically focused on one small group at one time, such as with workshops held in schools for young children. Since SEWA has a narrower demographic as the goal of their campaigns, the events need to be more tailored and focused. The narrower focus allows SEWA to execute more interactive campaigns, such as going door-to-door to educate families on how to conserve.

**Findings #4: Campaigns do not normally involve monetary investments.**

From the found campaigns, most included some sort of investment from the audience. The types of investments we saw are shown in Figure 21.

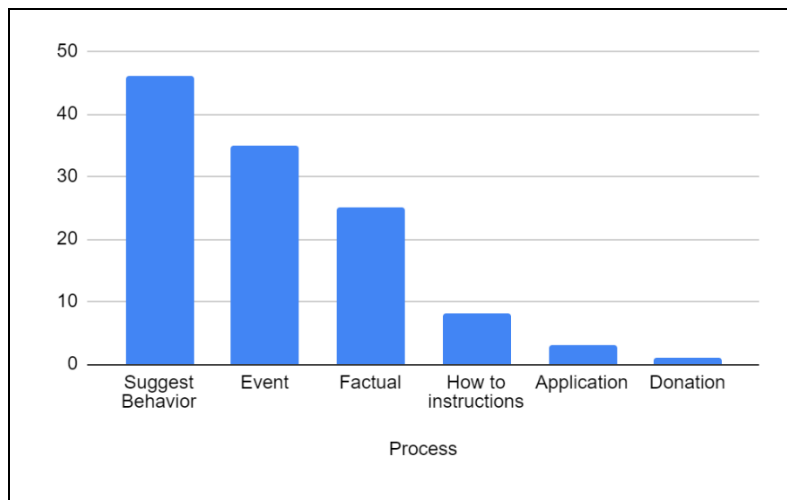


**Figure 21:** Campaign Investment Report from Observational Study

Most asked for the audience to use their time to engage with the campaign. In some cases, the messages of the campaigns encouraged continual engagement by forming a habit. We noticed that very few campaigns required a monetary investment from the target audience; a potential example of this type of campaign would be a fundraising or a competition that needed materials or had an entrance fee.

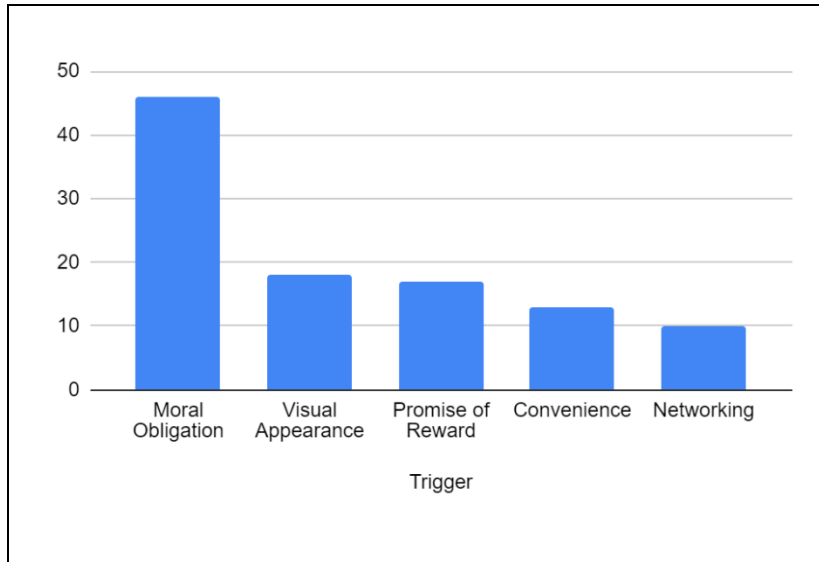
**Findings #5: Messages of campaigns are framed differently.**

Most of the campaigns consisted of a central message or hook with supporting details. Generally, the types of messages we saw fell into the categories Factual, Instructional, Behavioral Change, and Event Advertisement, to which we assigned nodes in NVivo. Many campaigns overlapped between these areas, such as a *Smoking Kills* campaign listing the negative implications on health (Factual) while also encouraging individuals to quit smoking (Behavioral Change). However, some campaigns fit into only one category, such as a step-by-step picture guide on proper handwashing (Instructional). The frequency of each category of message are shown in Figure 22.



**Figure 22:** Campaign Message Types Reports from Observational Study

Each type of message was framed to hook the audience in a unique way. We saw that many campaigns targeted moral obligation, such as by telling people to do their part. For other campaigns, the trigger was the visual appearance; recycling bins in the hallway catch people’s attention. The frequency of the trigger themes we saw are shown in Figure 23 below.

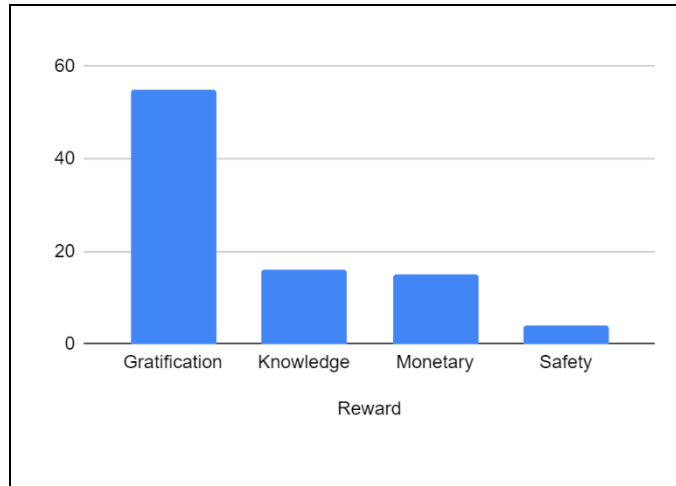


**Figure 23:** Campaign Trigger Reports from Observational Study

**Findings #6: Rewards convince the audience of potential benefits.**

We found a considerable amount of campaigns at AUS that offered an incentive or promise of reward in exchange for participation. Most campaigns that offered big prizes were events and competitions, which were promoted through flyers and posters with the reward in large font. Surveys offered a small amount for completion. SEWA also has offered economic incentives in return for participation in competitions and events. An example would be giving mosques water efficient devices or having them compete over decreasing consumption for a monetary prize.

Some rewards were more explicit than others. Monetary rewards were easily identified, while other rewards were more implied, like gratification, gaining new knowledge, or learning something for safety. The frequency of rewards based on themes is envisioned in Figure 24 below.



**Figure 24:** Campaign Rewards Report from Observational Study

### 2.3.2 INTERVIEWS

The interview with a representative from the AUS Office of Sustainability was twenty-five minutes; the interview with the SEWA Conservation Department was fifty minutes. From this, we determined the important elements of a campaign. The primary findings involved the campaign design process, message, delivery methods, target audience, incentives, and measure of outcomes.

#### **Finding #1: Designing a campaign takes time and reiterations.**

There are many stages to the design process of a campaign, such as drafting, inquiring feedback, and adjusting accordingly. During the design process, many decisions must be made including the language used, logos, budget, and method of delivery. These designs require approval before they can be published because the Conservation Department represent not only themselves, but also SEWA as a whole and the Emirate of Sharjah. Thus, the process often takes many iterations of the design and time. For example, one of SEWA’s largest and most successful projects is *Peak Hour*. Once a year, residents of Sharjah are encouraged to limit their energy consumption on July 1st from 2:30-3:30 p.m. Each year the *Peak Hour* campaign has occurred, the energy consumption has decreased. Even though this is a recurring campaign,

extensive planning is required each year to decide the theme, create advertisements, and have enough time to post the advertisements.

**Finding #2: Relating the campaign’s message to the target audience encourages engagement.**

We found that the language used in a campaign should strike the audience in a personal way. An example would be using language that appeals to their emotions and has them thinking of a personal experience associated with scarcity. For the AUS Office of Sustainability, the context of location is an important factor for their campaign messaging, as the students are removed from the mental context of living in the desert. AUS, located in University City, is an urbanized region, with many fountains, large buildings, roads, pavement, grass, and trees—it does not appear to be a desert at first glimpse. Campaigns must then remind students of the importance of conserving water in a desert climate.

**Finding #3: Different target audiences necessitate different delivery methods.**

The campaign’s delivery platforms can help promote the campaign to the target audience. Each audience has a different way to engage and attract; therefore, SEWA determines the message and delivery in the best way to attract targeted audience. Children, for example, are easily distracted and may not comprehend hard or difficult words. Thus, the message of the campaign is aimed to be understandable, fun, and interactive. Additionally, mascots and puppet shows are used to deliver the message in that manner. Moreover, SEWA has used different methods to target different audiences such as TV advertisements, newspaper, radio, brochures, table settings, lectures, banners in soccer stadiums, social media, events, and school visits.

Similarly, the AUS sustainability uses flyers, both physical and digital, to inform their audience. Physical campaigns are distributed around the campus on the bulletin boards, digital screens, and large posters typically placed in high-traffic locations. The digital flyers are posted to the AUS Sustainability Instagram and Facebook to notify their followers. Additionally, AUS also likes to randomize the deliveries of various campaigns to keep the community engaged. For example, four or five flyers may be created for one event to be switched out periodically to keep the audience's attention.

**Finding #4: Targeting the next generation helps create lasting impacts.**

SEWA has implemented different campaigns targeted to Sharjah residents, which includes children, housewives, and laborers. Many of these campaigns are primarily targeting children because they are the most receptive to new information, as they are the next generation. For example, SEWA has created cartoon characters *Kahroob* (Electricity), *Qatora* (Water), and *Peak Man* (Peak Hour) to promote conservation. Moreover, SEWA tends to educate housewives and families on conservation in hopes that they share and educate their children. For example, *Clean Energy Pioneers* and *Afternoon Tea* campaigns.

**Finding #5: Water conservation campaigns aren't the only social benefit campaigns in Sharjah.**

Educational campaigns at AUS have focused primarily on conveying the importance of energy conservation and recycling to students, faculty, and staff. The AUS campus focuses their campaigns towards sustainability regarding energy and recycling rather than water conservation. One of the AUS Office of Sustainability's biggest projects is a single-use plastic ban, which includes most water bottles and plastic shopping bags. In addition, the Engineering and Sciences Building and the Business and Management building have implemented categorized recycling bins.

**Finding #6 Incentives can be used to attract people towards a campaign.**

Campaigns on the AUS campus often use incentives when they are being executed to attract more people. For example, the AUS Sustainability Instagram has given away reusable water bottles for the first forty AUS students who follow the account, like the photo, and tag three other users. In return, the AUS Sustainability Instagram is getting more engagement and followers while also promoting sustainability and the campaign.

**Finding #7: The success of a campaign can be measured through surveys.**

The SEWA Conservation Department determines their campaigns' success by measuring the campaign's impact on consumer behavior either by measuring consumption as well as distributing surveys. For the *We Can Change* campaign, after every lecture, the Conservation Department would distribute surveys to determine the strengths and weaknesses

of each lecture to determine how to move forward stronger. As a result of the *We Can Change* campaign success, departments and government agencies requested the SEWA Conservation Department to hold lectures at their offices. The *Peak Hour* campaign was directly measured by looking at energy consumption data.

### 2.3.3 SUMMARY OF FINDINGS

From the observational study, we found several themes that emerged across the campaigns. Our analysis of these themes produced six main findings which were as follows: 1) A campaign's location is key to its success. 2) Design elements help convey messages. 3) Campaigns should reach their target audiences through different methods. 4) Campaigns do not normally involve monetary investments. 5) Messages of campaigns are framed differently. 6) Rewards convince the audience of potential benefits.

Additionally, several themes emerged from the transcription and analysis of the interviews with the SEWA Conservation Department and AUS Office of Sustainability. Consequently, we noted seven findings: 1) Designing a campaign takes time and reiterations. 2) Relating the campaign's message to the target audience encourages engagement. 3) Different target audiences necessitate different delivery methods. 4) Targeting the next generation helps create lasting impacts. 5) Water conservation campaigns aren't the only social benefit campaigns in Sharjah. 6) Incentives can be used to attract people towards a campaign. 7) The success of a campaign can be measured through surveys.

## 2.4 DISCUSSION

Our methods were observation and interviews to explore social benefit campaigns in Sharjah. These produced several findings—six findings from the observational study and seven from the interviews. There were many commonalities between the two sets of findings, which can be summarized in the following categories: campaign design, target audience, delivery method, messaging, location, investments, and rewards. All these elements help contribute to the effectiveness of the campaign.



Campaigns should be visible, and the delivery should cater to the target audience. The question “What’s in it for me?” should be answered by including a message relevant to the audience or using incentives. Design elements like graphics and suggestive colors help the audience understand the message of the campaign before reading text. Ultimately, campaigns should be created with the intention of the target audience to engage and invest, whether it’s time, habit, or money. The level of engagement can be measured through surveys or data reporting behaviors after the campaign, such as reporting drops in water consumption.

### **Limitations**

Although there were many strong findings from our study, we did face a few limitations. The SEWA campaigns we observed were solely from a report given to us by SEWA, which listed their achievements in 2018. The 80-page report was written entirely in Arabic, and therefore had to be translated by one of the researchers. The document focused mostly on outcomes of each campaign. For the AUS campaigns, we observed the campaigns while they were actively being implemented, whereas the SEWA campaigns we observed were simply documents of campaigns already executed. This means we were not able to access certain elements such as their promotion of the events.

### **Recommendations**

Based upon our findings, we have formed several recommendations, which are listed in the sections below.

#### **Recommendation #1: Use a marketing framework to provide structure in a campaign’s design process.**

Marketing frameworks can act as a skeleton during the design of a campaign. Starting the design with a clear layout helps to ensure the campaign’s elements were carefully considered in a multitude of areas.

#### **Recommendation #2: Use rewards to pique the interest of the target audience**

Incentives are a useful tool to attract the target audience. They prove to the audience the benefits for engaging with the campaign.

**Recommendation #3: Publish campaigns in high traffic areas to increase visibility.**

Placing campaigns in high traffic areas is one of the keys for a campaign's success. For a campaign to be engaged with, it must be seen first. The use of popular public properties and social media to spread a campaign can help increase the outreach of the desired message.

**Recommendation #4: Use campaign formats that best suit the target audience.**

Different demographics require different delivery methods. For example, campaign deliveries could be tailored to a specific age group. (While children might be easier to reach through events like puppet and mascot shows, teenagers might be more susceptible to engage with different types of social media and events.)

**Recommendation #5: Use a qualitative analysis software, such as NVivo, to help organize campaigns based upon their elements.**

A qualitative analysis software like NVivo can help organize data collection of campaigns. Some nodes that would be beneficial in categorizing are target audiences, location, and method of delivery. This would help to see which campaigns were the most similar. It would also be a useful way to store any data regarding campaign outcomes. Pictures, videos, and feedback of each campaign can be imported, classified, and renamed to be easily identified.

## 2.5 CONCLUSION

The research question guiding our study was "What are the social benefit campaigns that have already been created in Sharjah?". Our approach to this study was to explore how educational campaigns are currently delivered in Sharjah. More specifically, this Exploratory Study was done to establish a baseline of the current efforts made by AUS and SEWA in their water conservation campaigns. Additionally, the observational study and interviews associated with this study helped us to get insight on the design process for campaigns that are aimed to educate and change behaviors.

We began our study by conducting an observational study on the AUS campus. We observed campaigns presently implemented around the campus while also looking at

campaigns SEWA had completed in the year 2018. For each campaign, we recorded their characteristics corresponding to the elements from two marketing frameworks: The Hook Model and the Marketing Mix. We used a software called NVivo to categorize each campaign based upon such characteristics in order to determine general themes across the AUS and SEWA campaigns.

Alongside the observational study, we conducted interviews with a representative of the AUS Office of Sustainability and representatives of the SEWA Conservation Department. Each person we interviewed had experience with conservation campaigns, sustainability, and public awareness which helped us understand essential background regarding the design of educational water conservation campaigns. The interviews were automatically transcribed using Otter, which accelerated the analysis process.

From our analysis of the observational study and interview data, we saw that each campaign was carefully cultivated in a way to appeal to the specific audience in order to inform or change behavior. We discovered that AUS does in fact have many campaigns regarding sustainability, although most were centered on energy conservation and recycling. Conversely, SEWA heavily focuses on both energy and water conservation. While this study was an exploration on the current state of water conservation in Sharjah, the findings pertaining to the design of behavioral campaigns will help provide background and detail for the forthcoming articles in this series.

## 3.0 DESIGN SPRINT WORKSHOP: IDEATING WATER CONSERVATION CAMPAIGNS AT THE AMERICAN UNIVERSITY OF SHARJAH

This chapter focuses on our design study. First, we discuss the relevant context and the research questions guiding our study. Then, we introduce our methods, which consists of Design Sprint workshops conducted at the American University of Sharjah (AUS) with the intent to ideate water conservation campaign ideas. Next, we discuss the procedures used to collect and analyze the data produced from the Design Sprint workshops. Then, we explain the steps taken to produce three water conservation campaigns from the findings. We end with a discussion, recommendations, and a conclusion.

### 3.1 INTRODUCTION

Limited water resources and a high per capita water consumption places the United Arab Emirates (UAE) among the most water stressed regions in the world. The largest source of water consumption in the UAE is from irrigation and livestock, which accounts for 83%. However, in the third most populous of the seven emirates, Sharjah, the largest water consumer is the residential sector, which accounts for 61.8% of water produced (SEWA, 2018). Thus, authorities, such as the Sharjah Electricity and Water Authority (SEWA), have been attempting to alleviate the water stress by encouraging water conservation. Due to the nature of Sharjah's water consumption by sector, the primary target of SEWA's water conservation campaigns have been nationals and residents (refer to Chapter Two).

Before water conservation campaigns can be designed, the demographics of Sharjah's residents must be understood. Sharjah's urban areas population growth is at a rate of 6.32% per year since 2015 (World Population Review, 2019). The Sharjah Electricity and Water Authority is responsible for providing water to meet the demand of their consumers—the over one million inhabitants of Sharjah. Within SEWA's jurisdiction is University City, which holds fifteen educational institutions and 171,698 students (Gulf News, 2015). His Highness Dr. Sheikh Sultan bin Muhammad Al-Qasimi, Supreme Council Member and Ruler of Sharjah, is the President of one of these institutions, the American University of Sharjah.

To fulfill this need for water conservation campaigns targeted to the residents of Sharjah, the primary research question guiding our design study is “How can we design three creative campaigns aimed to change the behavior of water consumers and encourage water conservation?”. We will approach this question by utilizing Design Sprints, where people are tasked to answer questions and solve challenges within a time-constraint. This methodology was developed by many creators, including those within GV (formerly Google Ventures). This method is used by software development companies to brainstorm new ideas applications and features within a limited amount of time. The Design Sprint methodology goes beyond just software development; it is used to generate a large amount of creative ideas around any situation. (GV, n.d) Similarly, our goal is to use this framework to acquire ideas about water conservation campaigns directly from people who reside in Sharjah.

In the following sections of this chapter, we first present our methodology for Design Sprint workshops, which we will use to answer our research question and achieve our research objectives. Then, we present our findings from the Design Sprint workshops and our process to create three campaign prototypes. Lastly, we end this chapter with a discussion, recommendations, and a conclusion.

## 3.2 METHODS

The goal of this study was to create three water conservation campaigns. To achieve this goal, we executed Design Sprint workshops. A Design Sprint is a process where participants work together to solve questions or problems using rapid brainstorming and prototyping. Usually, a Design Sprint is a five-day-long workshop consisting of five stages which are *Understand*, *Diverge*, *Decide*, *Prototype*, and *Validate*. Our methods modified the five-day Design Sprint to become one two-hour-long workshop with the addition of a sixth stage, *Define*.

Our methods began with the identification of our participants, who we recruited through flyers and registration forms. Then, we completed a pilot test before the event in order to determine any areas for improvement. Two sessions of the Design Sprint workshop were held and were two hours in length. In this section, we will describe in detail the research and

data collection methods that we used to achieve our research objectives and goals. From this methodology, data was collected and then analyzed.

### 3.2.1 PARTICIPANTS

The intended target audience for the Design Sprint workshops were members of the AUS community. This included students, faculty, staff, and any other individuals affiliated with AUS, such as family members of faculty.

#### **Recruitment**

In order to recruit participants for the workshop, we designed a flyer to distribute around the AUS campus. There were many design steps taken to publish the final flyer. When creating each version of the flyer, we aimed to make the focus the title, which was strategically placed in the center in a large font. We also incorporated supporting details in the flyer, especially the date, time, and location. The QR code and condensed link, both attached to the registration form, were placed at the top of each version of the flyer.

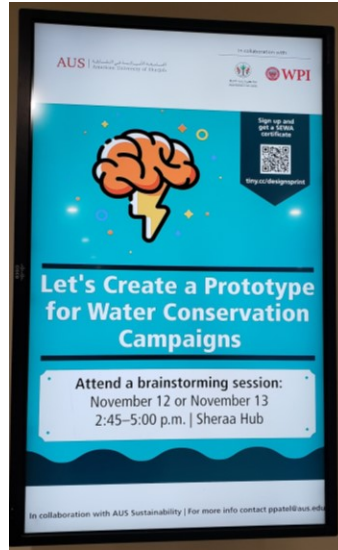
The original version of the flyer went through many rounds of feedback, which resulted in several iterations of flyers. We received feedback primarily on clarity, design, and wording. After receiving feedback, we made changes accordingly, such as renaming titles and changing graphics. We received feedback on the flyer from the AUS Office of Sustainability, AUS Office of Student Affairs, professors, the Sharjah Entrepreneurship Center, and the AUS Office of Strategic Communications and Marketing.

Upon receiving this critique, we were able to publish the flyer; however, due to the limited time from the last round of feedback we received, there were two different designs published through the distribution channels. The two designs are seen in Table 4.

**Table 4:** Published flyers for Design Sprint Workshops



To reach a diverse group of students and faculty, we aimed to distribute our flyers through as many distribution channels at AUS, including social media, email, in-person, and physical advertisement. To promote our workshops through social media, we first determined the correct offices at AUS that had social media audiences that would be receptive to our event; these include the Office of Sustainability, the Office of Student Affairs, and the Office of International Exchange. Our flyer was posted through Instagram, WhatsApp, and Facebook. Additionally, the flyer was sent via email. The Office of Sustainability emailed the flyer to the AUS Sustainability Club; the Associate Dean in the College of Engineering emailed all Engineering students; the Provost of Student Life at AUS emailed all registered students and faculty. Moreover, we reached out to three professors in person from different departments, who agreed to announce the workshop to their students during class. Lastly, the flyer was displayed on digital screens around the AUS campus through the Office of Strategic Communications and Marketing, as shown in Figure 25 below.



**Figure 25:** Digital Screen promoting Design Sprint Workshops

Along with this method of physical advertising, we printed thirty posters of the workshop flyer to post on the bulletin boards of all the different buildings around campus. The breakdown of where the campaigns were posted is seen below in Table 5.

**Table 5:** Number of flyers distributed for each building on the AUS campus

Location	Number of Posters
Student Center	10
Main Building	2
Academic Buildings	16
Library	2

## Enrollment

In order to register for the Design Sprint workshop, participants used either the link or the QR code from the distributed flyers. The registration form was created using a Qualtrics



survey as seen in Appendix M. Qualtrics is a software used to design forms and analyze data. The first question on the form was the Informed Consent. If the participants agreed, they continued with the form; otherwise, they were directed to the end of the survey. For participants that consented, the remaining questions required them to answer the following fields: first name, last name, email, major and the session they would like to attend. At the end of the registration, individuals had the choice for photo release. Participants who attended the workshop without registering online were given the Informed Consent Form and Photo-Release Form upon arrival before they could participate.

### Summary of Participants

For the design workshop, the target population was the AUS community, which included AUS students, staff, and faculty. The flyer used to advertise the event included a sign-up link and was distributed through several distribution channels. Participants signed up for the workshop, either by registering in advance through the registration form or upon arrival at the workshop. Registration included Informed Consent, Photo Release, and a choice for which session the participant will be attending.

### 3.2.2 DATA COLLECTION

In order to obtain ideas for water conservation campaigns, we held two-hour-long Design Sprint workshops, which was adapted from the five-day-long methodology; the Design Sprint framework was condensed to better accommodate the schedules and availability of the participants. Our Design Sprint workshop consisted of six stages, which are *Understand*, *Define*, *Diverge*, *Decide*, *Prototype*, and *Validate*. The six stages included in our Design Sprint workshops can be seen below in Figure 26.



**Figure 26:** Design Sprint Six Stages

### 3.2.2.1 Materials

For the workshop, participants were given tools to ideate and prototype educational campaigns. Below is a table of the materials used during the workshops.

**Table 6:** Materials used during the Design Sprint Workshops

	<b>Product</b>	<b>Purpose</b>
<b>Ideate</b>	Black markers	For writing/brainstorming
	Sticky notes (different colors)	Write pros/cons of campaigns
	Sticky tabs	Used for voting
<b>Prototype</b>	Packs of Markers	Writing utensils for sketching and prototyping
	Colored Printer Paper	For designing campaigns that require certain colors
	Colored pencils	Used for sketching and prototyping
	Scissors & Glue Sticks	Cut and adhere paper

To increase interest for the event, we decided to include an incentive that would attract members of the AUS community. We created a Certificate of Participation, which was given to the attendees after finishing the six stages of the design sprint. This certificate was signed by the Head of Research Section at SEWA and an assistant professor from Worcester Polytechnic Institute (WPI).



**Figure 27:** Certificate of Participation for Design Sprint Workshop participants

### 3.2.2.2 Pilot Test

Before the workshops, we executed a test Design Sprint to assess the workshop protocol we had created. The purpose of this test was to give us important insight on how the actual workshops would run and determine if there should be any modifications regarding the timing and delivery of tasks. The pilot test included two facilitators, five participants, and two observers. Out of the four researchers, two acted as facilitators and two acted as participants; this combination of roles for the researchers provided the perspectives of facilitator and participant, equally. The two observers took notes during the test run and determined main areas to improve on. The pilot test followed the protocol. The researchers, participants, and observers then debriefed.

### 3.2.2.3 Design Sprint Workshops

After the feedback from the pilot test was considered, we moved forward with the Design Sprint workshops. There were two sessions for the workshop; the sessions were on 12th and 13th of November 2019. Each session had a capacity of twenty-eight participants, who were grouped into teams of four. After participants signed in, they randomly selected a token

with a letter written on it; each letter corresponded to a table to determine where the participants would sit. The protocol for the Design Sprint workshop is seen in Appendix N.

The workshops were hosted in the Sharjah Entrepreneurship Center, which is located on the AUS campus. This center is managed by a government agency called SHERAA and primarily focuses on the creation of businesses and startups. The layout of the room consisted of seven circle tables with four chairs each, as well as a digital screen to present on. Throughout the workshop, there was a presentation that was displayed on the digital screen to guide the event. This presentation can be seen in Appendix O.

## **Introductions**

The workshop began with the researchers introducing themselves to the participants. This was followed by a quick ice-breaker activity within groups to familiarize them with the workshop setup and each other. In forty-five second intervals, the participants were asked to brainstorm both colors and animals that began with the letter assigned to their table. They were then given forty-five seconds to decide on a group name, composed of one color and one animal (e.g. Pink Panther). Finally, each group announced their team names. For each of the following rounds, there were timers on the presentation slides to indicate the remaining time to complete the tasks. At the end of the timer, an alarm would sound to alert the room. Prior to beginning a new stage, the researchers would command the attention of the room to quickly recap the previous stage and check understanding of the directions for the current stage.

## Understand

The first stage was *Understand*. This stage is meant for participants to understand and learn more about the problem. Researchers presented the goal of the Design Sprint, which is to create water conservation campaigns for SEWA. There was no activity for this stage. Instead, the participants were informed on the situation: the stress on Sharjah's water resources. The participants were challenged to find an impactful way to change consumer behavior on water consumption. Finally, it was stated that the outcome of the sprint would be prototyping a campaign that could take any form. The researchers presenting the *Understand* stage can be seen in Figure 28.



**Figure 28:** Design Thinking Workshop Understand Stage

## Define

In the *Define* stage of the workshop, participants were asked to think about the broader problem, being water stress in Sharjah, and tasked to further dissect the problem. Each team was given the same list of twelve questions to aid them in their discussion. Ten minutes was allocated for the group discussion. It was emphasized that the questions were more so to guide the conversation than dictate it; any relevant topics were encouraged to be covered as well. The questions focused on the presence of water conservation in Sharjah, personal experiences with water scarcity, perceived causes of water stress, and potential approaches through campaigns. Some examples of the questions used are “What water conservation campaigns have you already seen around Sharjah?” and “What do you think is the largest source of wasting water?” The remainder of the questions can be seen in Appendix P. By the end of this stage, each team should have had a better idea on what route they were going to take for the next stage. An example of the discussion questions given to the participants is shown in Figure 29 below.

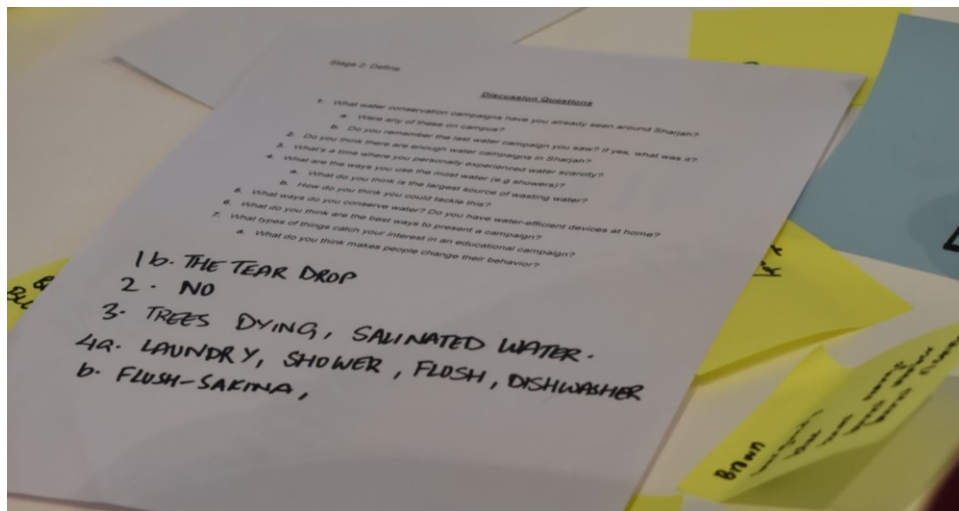


Figure 29: Design Thinking Workshop Define Stage

## Diverge

In the next stage, *Diverge*, the researchers communicated the outcome to the participants, which was a campaign idea that later could be developed into a prototype. For five minutes, each group would engage in a short group brainstorming session, where participants would individually contribute ideas for water conservation campaigns. This entailed each participant writing as many ideas on yellow sticky notes with black markers and then placing them in the middle of the table; all supplies were the same color to maintain anonymity of ideas. There was no group collaboration in this portion. Examples of sticky notes during the brainstorming portion are shown in the image on the left side of Figure 15 below.

For the following ten minutes, teams were tasked to categorize their ideas and find any common themes; this portion was collaborative. Additional sticky notes of different colors were given to each team to help organize or label the categorizations. This was done to help the participants in the next part of the Design Sprint, *Decide*. Examples of categorized sticky notes are shown in the image on the right side of Figure 30 below.

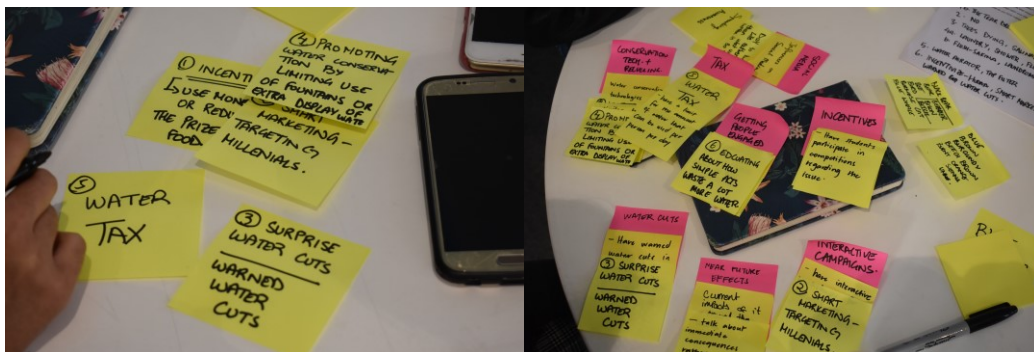
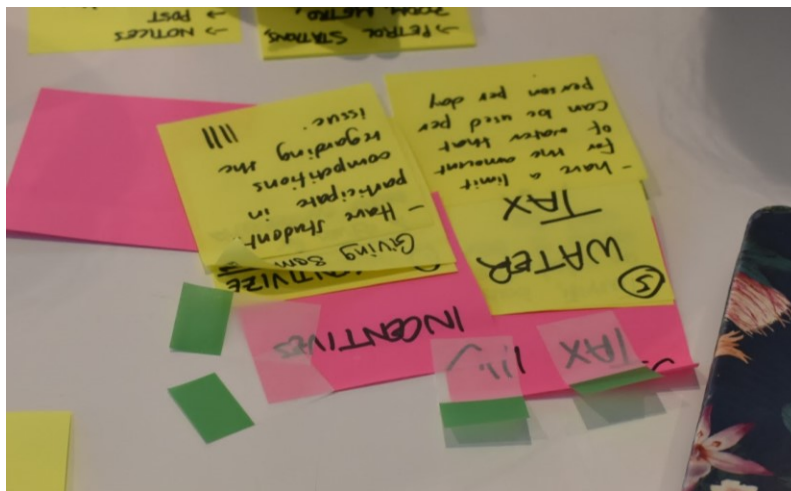


Figure 30: Design Thinking Workshop Diverge Stage

## Decide

During the *Decide* stage, the goal was for each team to agree on one idea to prototype in the next part of our Design Sprint workshop. At the beginning of this stage, participants were allotted ten minutes to discuss the pros and cons of each campaign or category they created. These conversations were driven solely by the participants; the researchers only intervened when participants asked for assistance. There were no guiding prompts for this discussion.

After the discussion, the teams were allotted five minutes to vote on one campaign to develop during the next step of the Design Sprint. The researchers then distributed one sticky tab to each participant to vote with. The participants would indicate their votes by adhering their sticky tabs to the idea they would prefer to use in the next stage. It was strongly encouraged that the selected idea was unanimous. If the vote was not unanimous, the group would need to discuss further and reach a compromise. By the end of this stage, each team must have had only one idea to move forward with. In Figure 31 below, a sticky note representing a campaign idea with voting tabs pasted onto it can be seen.



**Figure 31:** Design Thinking Workshop Decide Stage



## Prototype

The next stage of our Design Sprint workshop was *Prototype*. The outcome from this twenty-five-minute stage was that each team must have one campaign prototype completed by the end to present to the other groups. During this stage, teams worked together to create one finalized campaign from the idea voted on in the *Decide* stage. The teams were presented with a variety of materials that were used for prototyping. The researchers were available to answer any questions but did not interfere in the prototyping. At the end of the twenty-five minutes, the timer on the presentation alerted the teams. The researchers examined the teams' progress and determined if five additional minutes should be given to complete the final touches. An example of a team prototyping a campaign is shown in Figure 32 below.



**Figure 32:** Design Thinking Workshop Prototype Stage

## Validate

The Design Sprint workshop concluded with the last stage, *Validate*. This stage was allocated for the teams to present their prototypes to the other teams. There was no defined time limit for the presentations, as it depended on how lengthy each one was. The researchers allowed teams to volunteer when to present, and in the case no group offered, the researchers randomly decided. At the end of each presentation, the audience would applaud the presenters, ask questions, and make comments. After the final group presented, the researchers concluded the workshop, thanked the participants, and acknowledged contributors to the workshop. The participants were handed their Certificates of Participation prior to leaving the workshop. Shown in Figure 33 below, a group photograph was taken of SEWA representatives, researchers, and the participants with their prototypes.



**Figure 33:** Design Thinking Workshop Validate Stage

There were several methods used to capture the process and outcome of the Design Spring workshops. Firstly, we documented the event through photographs and videos. Photographs were taken during each round of the workshops; these photos captured the final products of each stage and the participants working together. Presentations of the campaign prototypes from the *Validate* stage were video recorded. Additionally, at the end of the workshop, we collected the physical campaigns produced by each of the teams during the event.

### 3.2.2.4 Summary of Data Collection

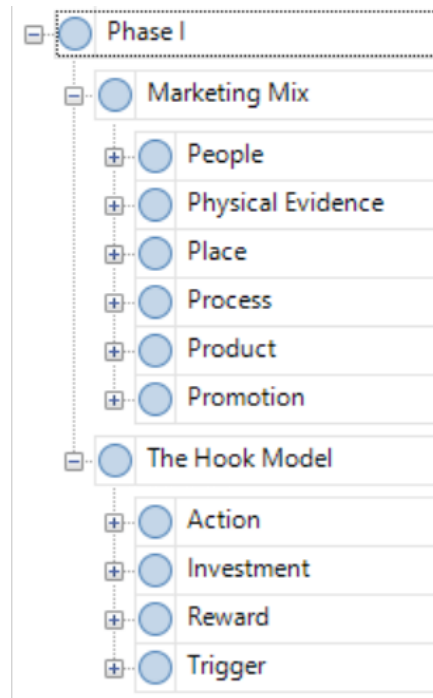
Members of the AUS community were recruited to participate in our Design Sprint workshop, where they would help ideate water conservation campaigns. Flyers were distributed with links to the registration form for the event. A pilot test was run before the event to determine any necessary changes to be made; two researchers facilitated and two participated alongside three additional participants. The workshops were split into two-hour-long sessions on two consecutive days; participants were encouraged to attend either one. Each session was split up into six stages: *Understand*, *Define*, *Diverge*, *Decide*, *Prototype*, and *Validate*. The workshops began with the *Understand* stage, where researchers discussed the problem and its context as well as projected outcomes of the participants. This was followed by the *Define* stage, where the participants split into teams of three to five to begin thinking about the problem in a narrower scope. Next, the *Diverge* stage participants brainstormed ideas of how to approach the problem. In the *Decide* stage, each team was prompted to choose one idea to create in the *Prototype* stage by using the materials provided at the event. The event concluded with the *Validate* stage, where each team presented their prototype to the other teams. Upon completion of the Design Sprint, participants received a Certificate of Participation.

### 3.2.3 DATA ANALYSIS

The campaigns produced from the Design Sprint were analyzed by comparing the strengths and weaknesses of each. The marketing frameworks—The Hook Model and the Marketing Mix—were used to segment each campaign by its corresponding elements. Components of a campaign that were not represented in the marketing frameworks were not inputted into NVivo, instead they were observations. Photographs of the campaign prototypes were taken and assessed by these frameworks. A qualitative software program called NVivo helped us to organize our categorizations of the campaigns.

Through NVivo, the images of the campaigns were imported using the same methods described in Chapter Two. These images of the campaigns were thematically coded or, in other

words, linked to the design elements from the marketing frameworks. The elements of each campaign were coded to a node. Each node was an element from one of the marketing frameworks. From the Hook Model, four nodes were created, and from the Marketing Mix, six nodes were created. The nodes can be seen in the figure below.



**Figure 34:** Marketing framework nodes in NVivo

In addition to the data representations from NVivo, charts were made to help compare the products of the Design Sprint. We looked for commonalities as well as differences among the campaigns. From these, we formed generalizations and noted emergent themes.

### 3.2.4 SUMMARY OF METHODS

Two Design Sprint workshops were used as a process for members of the AUS community to collaborate and create different water conservation campaigns for Sharjah. Participants included the AUS community and were recruited through a flyer distributed by emails, social media, bulletin boards, and printouts. Participants registered for the event either through the registration form or by completing printed forms at the event.

The two-hour-long sessions of the workshop were held on the AUS campus. Before the workshops were executed, a pilot test was held by the researchers to see the efficiency of the protocol, time, and delivery of the stages. After the results of the pilot test were considered, we executed our Design Sprint workshops. Each session included six stages: Understand, Define, Diverge, Decide, Prototype, and Validate. Participants worked in teams of three to five to brainstorm ideas for water conservation campaigns. The participants were provided markers and sticky notes to brainstorm ideas as well as other materials for campaign prototyping. At the completion of each session, there was one campaign prototype produced from each group. Each participant was given a Certificate of Participation as a reward for finishing the Design Sprint. The campaigns produced from the Design Sprint workshops were collected and photographed. Finally, marketing frameworks were used to dissect the elements of each campaign to make comparisons and determine strengths and weaknesses.

### 3.3 FINDINGS

First, we will present the findings from the pilot test of the workshop protocol, the two Design Sprint workshops, and the campaigns produced by the researchers from the prototypes created during the workshops.

#### 3.3.1 PILOT TEST

The pilot test for the Design Sprint workshop lasted two hours. The pilot test was to test our protocol, as such we structured the test as close to real as possible. The final prototype the group produced was a social media campaign about a water efficient device. Below are our findings from the pilot test.

#### **Finding #1: Prior to conducting a Design Sprint workshop, ensure the time needed for each stage is correct**

We found that even though the original timing was mostly correct, less time was needed for the Define stage and Diverge stage. The timing was a critical aspect of the Design Sprint workshops. Each stage was allotted a certain amount of time for the participants to

complete an activity. Ensuring there was enough time for the activities to be done was critical for the workshop to run smoothly.

**Finding #2: Instructions must be clearly written for participants**

It was determined that the clarity of the presentation could be improved by specifying the objectives of each stage before the participants began each activity, as well as having the specific details listed out directly on the slides for the Understand stage. In other words, we included the outcome for each stage on the same slide as the timer to ensure the participants knew what the task was at any given moment of the stage.

**Finding #3: Reminding participants of the time remaining to fulfill the activity will help the participant manage their time**

Additionally, we found it would be a good idea to remind participants of the time remaining (e.g. by stating “Five minutes left”). The participants were often engaging in activities that were meant to be quick, so reminding them to utilize their time wisely would help them manage their time and prioritize objectives to meet the outcome of the stage.

**Finding #4: Check for understanding after directions are given out to participants**

A final finding from the Design Sprint workshops pilot test was that it was critical to check for understanding after delivering instructions. This would allow for questions to be asked. By clarifying the tasks, the participants would know exactly what was required of them. As such, we implemented checking for understanding after giving directions out.


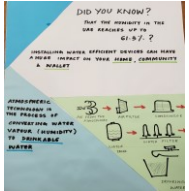
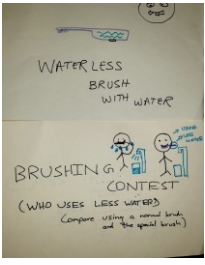
### 3.3.2 DESIGN SPRINT WORKSHOP

The Design Sprint workshop had two sessions, each session lasted approximately two and a half hours. From our registration form, a total of fifty-four participants registered for the workshops. The first session had nineteen participants and the second workshop had twelve participants. A total of thirty-one participants joined a session. This means that there were people who registered but failed to attend a session of the workshop. Below are our findings from the Design Sprint workshops.

### Finding #1: Nine prototypes were produced from the Design Sprint workshops

There were nine campaigns prototypes that were generated from the design sprint. Six of these campaigns were created during the first session, and three campaigns were from the second session. All the teams used the materials provided from the workshop to prototype their campaigns. There were no restrictions on how each team could present their campaign, which led to more creativity during the prototyping stage. The campaigns produced from the Design Sprint workshops can be seen labeled below in Table 7.

**Table 7:** Campaigns produced from Design Sprint Workshops

<p style="text-align: center;"><b>1</b></p> 	<p style="text-align: center;"><b>2</b></p> 	<p style="text-align: center;"><b>3</b></p> 
<p style="text-align: center;"><b>4</b></p> 	<p style="text-align: center;"><b>5</b></p> 	<p style="text-align: center;"><b>6</b></p> 
<p style="text-align: center;"><b>7</b></p> 	<p style="text-align: center;"><b>8</b></p> 	<p style="text-align: center;"><b>9</b></p> 

**Finding #2: Themes regarding content, delivery, incentives, and messaging emerged from the prototypes**

The campaign prototypes produced in the Design Sprint workshops were analyzed using the marketing frameworks and observation, as a result, several themes emerged. Many of the campaign prototypes shared similar messages and framing of the problem; there was a motive for the consumer to reduce water consumption. For example, money was used as an incentive in several campaigns to promote water conservation. Also, some teams used the local culture to reach the target population, such as by incorporating the respect for elders as well as using Arabic terms. Table 8 is a matrix of the campaign prototypes labeled as they were in Table 7 and the themes that emerged from each.



**Table 8: All Campaign Prototypes Matrix**

		Campaign								
		1	2	3	4	5	6	7	8	9
Theme	Culture				✓	✓				✓
	Environment					✓	✓			
	Device								✓	
	Graphics	✓	✓		✓	✓	✓	✓	✓	✓
	Influencers			✓						
	Rewards/ Incentive		✓		✓	✓	✓	✓		
	Social Media							✓		
	Competition								✓	
	Game									✓
	Flyer		✓				✓		✓	✓
	App				✓	✓				
	Event	✓		✓					✓	
	Consumption Tracker		✓		✓	✓				
Minimal		✓		✓	✓	✓				

	Cluttered	✓						✓	✓	
	Statistics	✓	✓				✓	✓		
	Informative	✓					✓	✓	✓	

**Finding #3: Five campaign deliveries emerged: Informative, App, Event, Device, and Game**

From our analysis, we found some groups used phone applications as a method for delivering their campaigns; others used events, social media posts, or water-saving devices. The prototypes were then categorized by their deliverables and additional themes. The categories of deliverables were Informative, which includes social media and flyers, App, Event, Device, and Game. The themes that emerged include content, target audience, and location. In Table 9 is a reduced matrix of the one seen in Table 8.

**Table 9:** Campaign Prototype Deliverable Matrix

		Campaign				
		Informative (1,2,5,6-9)	App (4,5)	Event (1,3,8)	Device (8)	Game (9)
<b>Theme</b>	Conservation	✓	✓	✓	✓	✓
	Target: Adults	✓	✓	✓	✓	✓
	Target: Students	✓		✓		
	Target: Children			✓		✓
	Location: Outdoors			✓		
	Location: Digital	✓	✓			

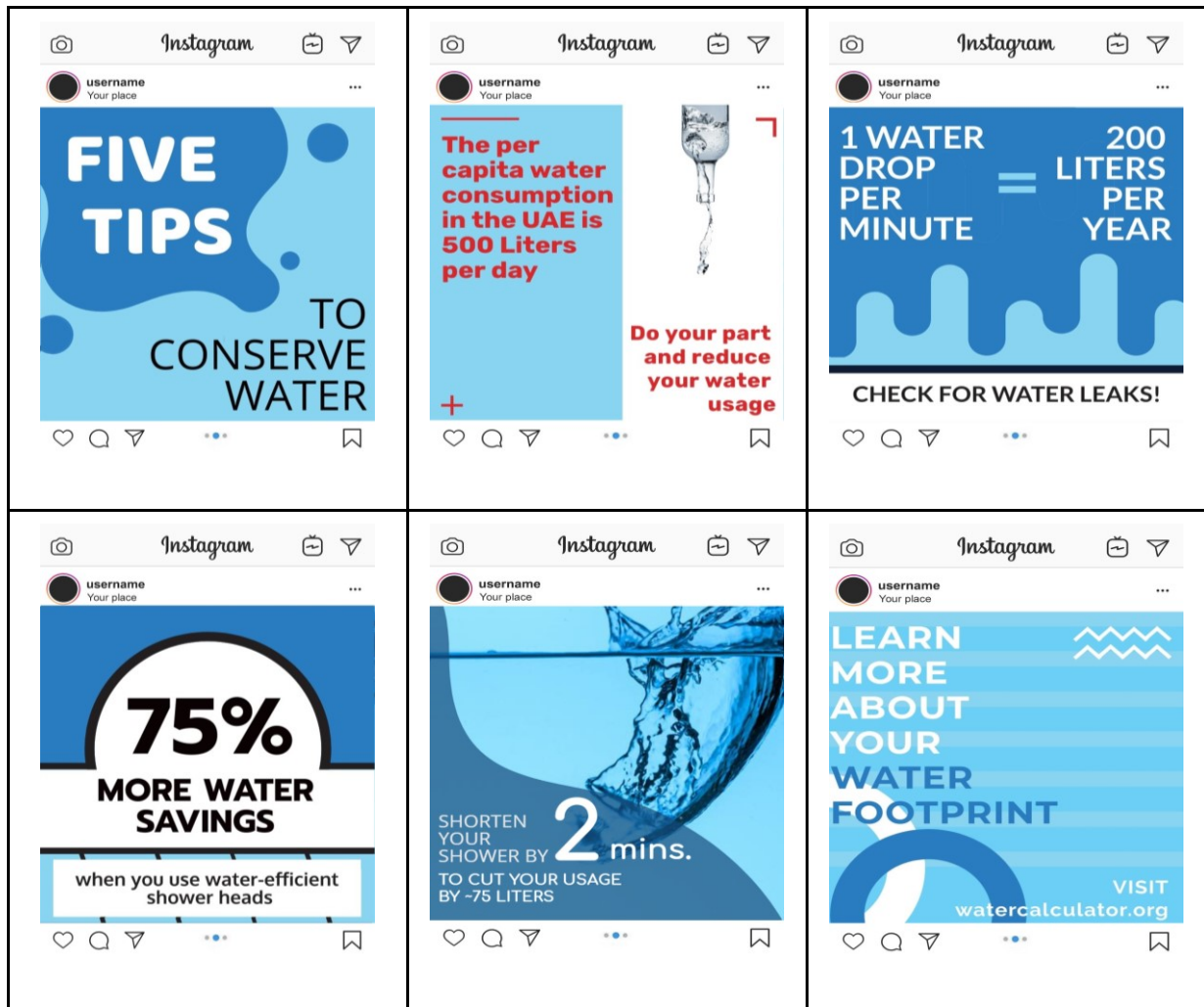
### 3.3.3 THREE CAMPAIGN DESIGNS

Out of the nine campaigns produced in the Design Sprint, three were redesigned from the deliverables present in the reduced matrix in Table 9 to be presented to the Sharjah community for feedback. The three campaigns’ deliverables that were redesigned includes social media, phone app, and an event. For the social media campaign, a series of Instagram posts were created depicting five tips for conserving water. For the phone app campaign, we created a redesigned mockup of SEWA’s app to track monthly water consumption. Lastly for the event campaign, we created an agenda and map for a water conservation awareness event.

## Finding #1: Social Media campaign was a final prototype

The first campaign we produced was one Instagram post, consisting of six images. This idea was reproduced but with modifications to the content and designs of each slide. We used a free graphic design software called Crello to make each picture, which we then pasted onto an Instagram post mockup. The topic for these posts was “Five Tips to Conserve Water”, as depicted on the title slide. The content of the following five slides were adapted from the tips Sustainable Living Plan Project Leader at Unilever Gulf, May Tahboubin, gave in the article *18 Ways to Cut Your Water Bill*. (Tahboub, 2015) Each of the next five slides correspond to one tip for conserving water. These posts can be seen in Table 10 below.

**Table 10:** Social Media Campaign Post

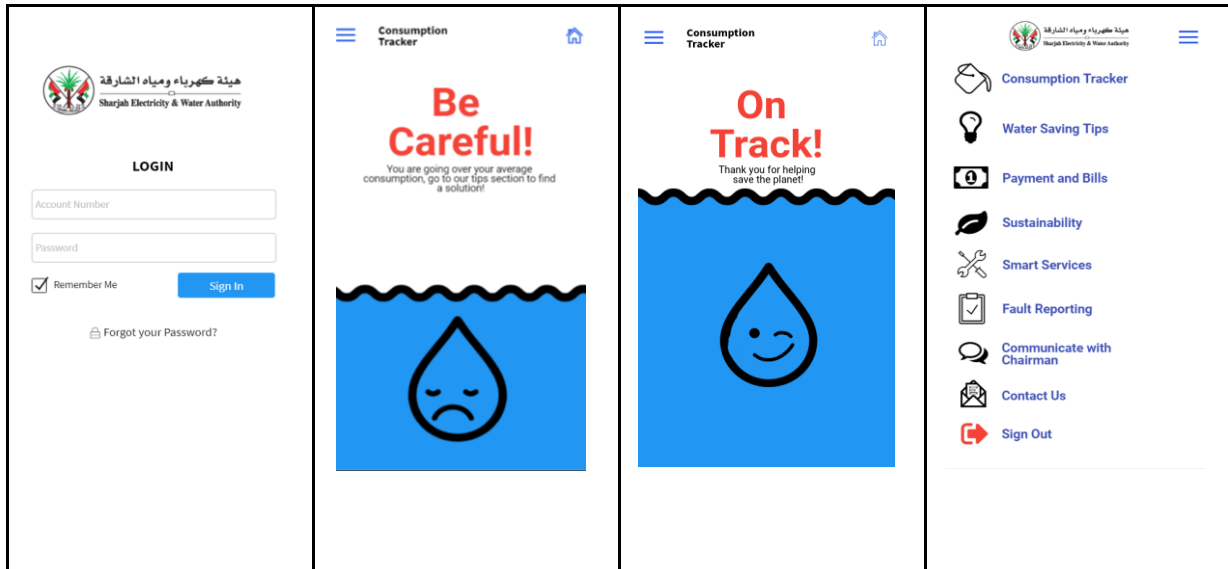


The design and spatial layout of each post was considered in order to catch the attention of someone using Instagram. In some of these slides, statistics were incorporated to justify the importance of following the tip. Numbers were emphasized to stand out amongst the other text. Minimal text was used to make each point. Blue colors and graphics were used to represent water. White, black, and red were used as accent colors to contrast with the blue.

### **Finding #2: Mobile App campaign was a final prototype**

For our second campaign, we created a redesign of SEWA's mobile application, mainly focused on improving the user experience. A mockup for the application was created using Invision, a design tool to make a clickable and interactive software interfaces. This redesign included the addition of a water conservation tracker, o from one of the ideas created during our Design Sprint workshop. A water savings tips page was also added to encourage water conservation. Users log into the app with their SEWA account number. Then, the app redirects them to the water conservation tracker, which displays a water drop mascot. The mascot's mood changes depending on the user's water savings level. For example, a happy expression will be displayed if the users are consuming less water than average and a sad expression if they are exceeding their average water consumption. Users are also prompted to visit the water saving tips page if their water consumption is higher than average. The users are also able to reach any of the features of the previous version of the app through the redesigned menu. The app and its features are seen in Table 11.

**Table 11: App Campaign Mockup**



**Finding #3: Event campaign was a final prototype**

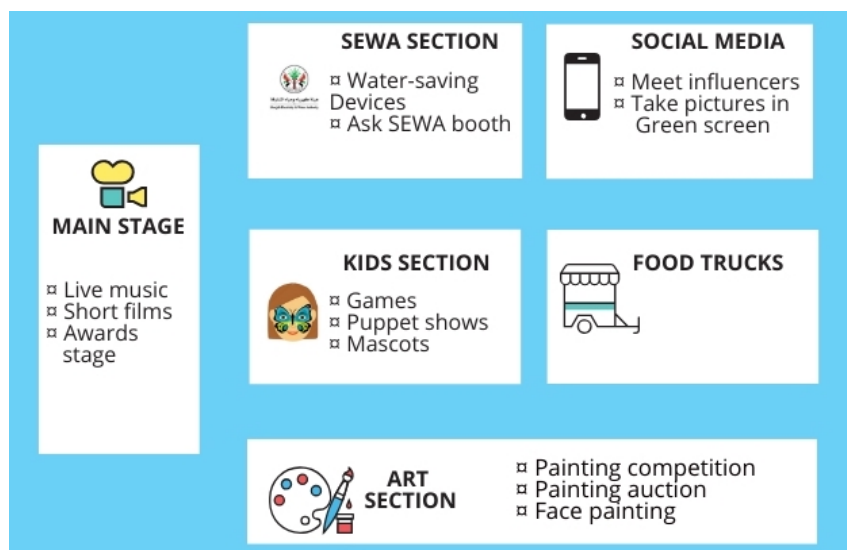
The third campaign we redesigned was an event. The aim of the event was to attract as many visitors to an interactive, fun day that raises awareness on water conservation. The target audience was modified from the original Design Sprint prototype to be aimed at families with children; thus, sections and activities in the event were redesigned to satisfy their interest. The theme of the campaign was based on “World Water Day”.

To present this event, we created a flyer to promote and inform people of the activities at the event. The flyer stated the date, time, and activities within the campaign. The date was chosen to be on World Water Day, and the event’s duration would be eight hours long for visitors to come and go as they please. Several different activities were mentioned in the flyer, such as meeting social media influencers and participating in a short film festival, to attract more people to visit the event. Below, Figure 35 shows the flyer for the World Water Day campaign.



**Figure 35:** Flyer for the World Water Day Event

Additionally, we created a map that showcased the set-up of the event and activities within each section. There are four sections, a main stage, and food trucks at the event. The first section is a SEWA booth where visitors can ask for tips on conservation and can buy water-saving devices. The art booth has different activities, such as face painting, painting competition, and an art auction. In addition, visitors can meet social media influencers and take pictures. Lastly, there is a kids' booth, where parents can watch their kids play games, attend a puppet show, and meet the SEWA mascots *Qatora* and *Kahroob*. The main stage will host a water conservation short film competition and live music for most of the event.



**Figure 36: Map of the Event**

### 3.3.4 SUMMARY OF FINDINGS

Several themes emerged in the pilot test, Design Sprint workshops, and three campaigns. Findings were produced from the debriefing on the pilot test. We noted the following four findings: 1) Prior to conducting a Design Sprint workshop ensure the time needed for each stage is correct. 2) Instructions must be clearly written for participants. 3) Reminding participants of the time remaining to fulfill the activity will help the participant manage their time. 4) Check for understanding after directions are given out to participants.

Three findings from the Design Sprint workshops are as follows: 1) Nine prototypes were produced from the Design Sprint workshops. 2) Themes regarding content, delivery, incentives, and messaging emerged from the prototypes. 3) Five campaign deliveries emerged: Informative, App, Event, Device, and Game.

Using these themes, we created three campaigns. The following three findings reflect the type of campaign that was designed: 1) Social Media campaign was a final prototype. 2) Mobile app campaign was a final prototype. 3) Event campaign was a final prototype.



### 3.4 DISCUSSION

We found that the Design Sprint workshops are a valuable process to generate a lot of unique and creative ideas in a short period of time. The benefits of our workshop lie in the proximity of the participants to the problem; the water stress of Sharjah is their everyday reality. Our findings can be attributed to the planning, execution, and products of the Design Sprint workshops. We assessed the nine prototypes produced from the Design Sprint to determine emergent themes, which we found to be content, delivery, incentives, and messaging. Regarding delivery, we came up with five main categories (Informative, App, Event, Device, and Game). From these deliveries, three were created into new prototypes—social media post, smartphone app, and awareness event. In the sections below, we detail observations we made that led us to our findings.

#### **Observation #1: Giving clear instructions and checking for understanding is a learning process for the facilitators.**

After the pilot test of our Design Sprint, we learned that we could improve the clarity of our instructions to make sure the participants were on track. Additionally, we learned that our timings allotted for each stage could be adjusted and that reminders for time remaining would help participants. Based upon this feedback, we decided to better explain the goal of each stage and check for understanding before the participants began the activity. We also added prompts to the timer slides to remind them of the objectives.

Although we made changes accordingly, similar problems with clarity arose during the Design Sprint workshops. For example, during the Decide stage, some participants were not certain about the purpose of the given sticky tabs. This made us realize we needed to improve on our delivery of the outcome for each activity before each group began working independently. Asking “Is everything clear?” before the start of each stage made a significant improvement on the clarity of each step of the Design Sprint. This improvement was seen on the second day of the workshop; the participants asked fewer questions and needed less guidance from the researchers during each activity. With each run of the Design Sprint workshop, we learned better ways to facilitate the workshops.

**Observation #2: Two different types of team dynamics arose during the workshops.**

Another observation of the Design Sprint workshops was that some teams were homogeneous (entirely students or entirely faculty), while some teams were heterogeneous, with a mixture of both. When observing and facilitating the design sprint, we noticed different dynamics depending on which of the three types. Discussions appeared more productive when the groups were homogeneous, as there were less obvious power differences. We observed that heterogeneous groups had differing levels of participation from each group member; some individuals took the initiative as the leader while others contributed less.

**Observation #3: Facilitators should be mindful of their ability to impact participant's approach to the problem.**

One challenge that arose during the Design Sprint was with helping teams who were stuck in the process of moving their ideas into the prototyping stage. We needed to find a way to support and guide the participants, while also not swaying them towards specific approaches and ideas. Since this was a process where we would not influence the outcome of the teams, we gave the participants a multitude of options on how to proceed. By giving a variety of solutions instead of one or two, we ultimately allowed it to be their decision on how to create the prototype.

**Limitations**

During our study, we were presented with one limitation, which was our lack of a large sample size of local participants in our workshops. We were unable to capture the perspectives of local residents, who were not students or faculty, because everyone who participated in the workshop was affiliated with AUS as students or faculty. Expanding participation to other members of the Sharjah community may have presented more ideas that otherwise wouldn't have with participants solely from AUS.

**Recommendations**

Based on the findings and analysis from this study the researchers generated the following three recommendations:

**Recommendation #1: Run and participate in Design Sprint workshops to generate a large amount of ideas around a topic.**

We recommend facilitating Design Sprint Workshops on different subject areas. From our workshops, we have seen firsthand how Design Sprint Workshops generate a multitude of ideas. Though our theme for the workshops was water conservation, we believe this method would be beneficial for other topics as well. For example, this type of workshop would be beneficial to generate ideas around improving a product. The two workshops we facilitated produced nine prototypes, all with unique ideas and characteristics. Due to the flexibility of Design Sprints, adapting and modifying the stages to fit the theme or expected outcome of the workshop is easily done. As a result, SEWA would be able to take the framework we used for the Design Sprint Workshops and modify them to fit different subject areas.

**Recommendation #2: Test protocols for workshops to check for proof of concept**

By testing the protocol for the workshop, issues such as clarity and understanding can be determined and resolved. Feedback from participants and observers can help guide the workshop to be better. Also, by conducting a pilot test, the time required for each stage can be checked to ensure the participants have enough time for the activities of the stage.

**Recommendation #3: Involve the target audience in workshops**

Additionally, we recommend facilitating Design Sprint workshops to the target audience of the intended theme. This process would be beneficial in gathering a large pool of ideas from the anticipated audience. Moreover, this type of workshop would be a good method to engage the public in the development of a new product. The Design Sprint workshop ultimately produces a large amount of creative ideas in a limited time frame.

### 3.5 CONCLUSION

The research question that prompted this study was “How can we design three creative campaigns aimed to change the behavior of water consumers and encourage water conservation?”. Our approach to this primarily consisted of a Design Sprint methodology used to generate a large amount of creative ideas on water conservation campaigns. The methods

used consisted of several steps—recruiting participants, acquiring materials, completing a pilot test of the Design Sprint, and executing two Design Sprint workshops.

In order to obtain meaningful input, we targeted the locals of Sharjah; thus, the participants we recruited were members of the AUS community, including students, faculty, and staff. Participants were enrolled in the study by registering through links presented on flyers which were distributed on campus in a multitude of ways. Additional planning for the workshop required the creation of a Certificate of Participation and list of materials with estimated costs. A pilot test was conducted to assess the effectiveness of the Design Sprint protocol we created.

Two Design Sprint workshops were held as two-hour-long sessions. The workshops were broken into six stages: Understand, Define, Diverge, Decide, Prototype, and Validate. Participants sat in randomly assigned teams of three to five. The Understand stage introduced the problem and presented relevant context to all participants simultaneously. Then, in the Define stage, participants discussed the problem in more detail within their teams. The third stage, Diverge, prompted participants to brainstorm campaign ideas individually and then categorize them as a group. In the next stage, Decide, the teams were tasked to weigh the pros and cons of each campaign to ultimately select one idea to actualize in the following stage, Prototype, where teams were provided a variety of materials. The final stage, Validate, was allocated for the teams to present their prototypes to the other teams. Each stage of the Design Sprint workshops was photographed, and the group presentations were video recorded.

At the end of the Design Sprint workshops, the campaign prototypes were collected and photographed. Each campaign was analyzed by its elements corresponding to the two marketing frameworks—The Hook Model and Marketing Mix. The qualitative software NVivo was used to categorize campaigns based on commonalities to determine emergent themes. As a result, we discovered that groups tended to produce campaigns that were either informative, an app, or an event. We then narrowed these themes into specific deliveries (apps, social media, and events) which we then designed into three new prototypes. While this study heavily focuses on the Design Sprint workshop process, the outcomes of this study will guide the next chapter, which functions to inquire feedback on the three prototyped campaigns.

## 4.0 FEEDBACK ON WATER CONSERVATION CAMPAIGNS IDEATED BY RESIDENTS OF SHARJAH

In this chapter, we will discuss the evaluation of three water conservation campaign prototypes designed by members of the Sharjah community. First, we will establish all relevant context for this study, which includes the design of the three prototypes (described in Chapter Three) and the consequent research questions. We will then detail our methods of receiving feedback from Sharjah Electricity Water Authority (SEWA) and the Sharjah community regarding our three water conservation campaign prototypes. Finally, we will conclude this chapter with an assessment of these campaigns based on the feedback we received, and we provide recommendations.

### 4.1 INTRODUCTION

Due to infrequent precipitation and high temperatures, the arid climate and desertification of the United Arab Emirates (UAE) has adversely contributed to a scarcity of water resources. Thus, water stress brought on by scarce water resources and a high per capita water consumption has necessitated the efforts of water conservation in the UAE. In the third most populous emirate, Sharjah, a variety of campaigns aimed to encourage water conservation have been implemented by the Sharjah Electricity and Water Authority. Many of these campaigns have targeted the residents of Sharjah, as the resident sector accounts for 61.8% of water produced by SEWA. (SEWA, 2018) Included in this demographic are students; in University City alone, there are 171,698 students belonging to fifteen educational institutions (Gulf News, 2015).

Through the first study of our three-study project, detailed in Chapter Two, we found that one institution within University City, namely the American University of Sharjah (AUS), has also been making efforts towards conservation and sustainability. However, majority of the social benefit campaigns at AUS center on energy conservation or recycling rather than water conservation. Consequently, our second study focused to gather ideas for water conservation campaigns directly from the locals of Sharjah. This was carried out through Design Sprint workshops at AUS, which ultimately produced nine campaign prototypes. The prototypes were

compared and assessed based on strengths and weaknesses. This analysis produced three overarching themes of the prototypes: Informative, Application, and Event. From these themes, we designed three water conservation campaigns, which were a social media post, a smart phone app, and an awareness event.

The research question guiding the third study of our project was: “How will each of three campaigns produced in the Design Study be perceived by Sharjah residents?” We approach this question by inquiring feedback on the campaigns from representatives of SEWA and members of the Sharjah community. Our objective is to receive meaningful responses that evaluate the three campaigns in terms of design, message, and delivery.

In the following sections of this chapter, we first present the interview and survey methodologies used to receive feedback and answer our research question. Then, we present the responses from the interviews and surveys and our resulting interpretations. Lastly, we finish this chapter with a discussion, our recommendations, and a conclusion.

## 4.2 METHODS

Feedback on the three water conservation campaigns designed in the previous study, Chapter Three, was obtained by presenting the campaigns to the participants and obtaining responses through interviews and surveys. The surveys assessed the participants’ perception of the design, content, and engagement of one campaign. The participants’ responses were transcribed for the interview and inputted into a digital survey by the researchers for the surveys. The data was then analyzed based on sentiment and occurrences.

### 4.2.1 PARTICIPANTS

The participants in the first part of the study include SEWA representatives. The SEWA interview participants were the same participants from the study presented in Chapter Two. The participants were two SEWA representatives from the SEWA Conservation Department. We scheduled the interview in advance by contacting them through email. The interview was held at the SEWA Customer Happiness Center- Halwan.

The participants in the second part of the study include the Sharjah community. The Sharjah community includes the AUS students and faculty and Sharjah residents. We surveyed people in the following two locations: the American University of Sharjah (AUS) campus, and Sharjah National Park.

#### 4.2.2 DATA COLLECTION

This study's objective was to receive feedback on the three water conservation campaign prototypes from SEWA and the Sharjah community. To answer our research objectives, we collected the participants' responses to analyze. For the interview and the survey, we determined methods of collecting and organizing the data.

##### 4.2.2.1 SEWA Interview

The four researchers conducted an interview with two SEWA representatives from the SEWA Conservation Department to get their feedback on the three campaigns we designed. Prior to the interview, the SEWA interviewees were taken through the Informed Consent process, the form can be seen in Appendix H. Once the participants consented, the interview began, and the researchers started to record the interview on their recording devices. In addition to the standard audio recording, one researcher used the software Otter during the interview. This application transcribed the voice recording in real time. We asked questions about the content, design, and delivery of the campaigns and then asked the interviewee's to rank campaigns based on what they perceived to be the best. Table 12 presents an abbreviated protocol of the interview.

**Table 12:** Interview Protocol for SEWA Representatives Study III

Prior to the interview:

*We want to thank you for accepting this interview. We are working on a research study for SEWA. Part of our study is to get feedback on three water conservation campaigns that we have designed based upon the ideas of AUS students and faculty. The purpose of this interview is to gather information on some of the best ways to educate people on water conservation.*

*Could you please indicate by signing the Informed Consent Form that we have your permission to audio record to help us in the transcription process of this interview?*

[Informed Consent Form is given to interviewees]

[We confirm yes or no with the participant to being audio recorded]

[If yes]

*Thank you for your permission; we will now begin the interview and begin recording.*

[If no]

*Thank you for letting us know; we will continue with the interview by only taking notes.*

<b>Topic Area</b>	<b>Explanation of Topic Area</b>	<b>Examples of a Type of Question</b>
Content	Assess the clarity of each campaign's core message	"Is the campaign clear?"
Design	Assess the design elements of the campaigns and their effectiveness	"Does the layout effectively display the message?"
Delivery	Assess whether the delivery method chosen was suitable	"Was the delivery method used appropriate for this message?"



Ranking	Rank the three campaigns from most favorable to least favorable	“Can you rank the campaigns from least favorable to most favorable?”
Additional Comments	Provide final remarks and suggestions for the campaigns	“Do you have any additional comments?”

#### 4.2.2.2 Sharjah Residents Survey

We received feedback from the Sharjah community by going to public spaces to administer our surveys. Three researchers administered the surveys while the fourth aggregated the responses as they were submitted. Each of the three researchers conducted surveys for one of the three campaigns in order to keep the delivery of campaigns to participants constant. Additionally, it was decided that each of the three researchers were to survey the same number of people to get a more accurate finding. The number of people who were surveyed was set to be approximately forty for each campaign.

The researcher approached a potential participant, introduced themselves and the project, and asked if the participant would like to continue with the survey. If the participant consented, the researcher would either directly input the responses into the Qualtrics survey or handwrite the responses to insert later. The researcher would present a printed or digital copy of one campaign and allow a few minutes for the participant to review it. Once the participant announced that he or she was ready to continue, the researchers proceeded to ask a series of questions. Three questions regarded content, five regarded design, two regarded engagement, and the last two were optional closing questions.

In order to have a streamlined process to collect feedback, we created a survey protocol and we administered it via Qualtrics. A digital survey was created through Qualtrics, which is a software used to collect and analyze data. The survey was created to ensure all the data we received was uniform, organized, and able to be aggregated based on type of campaign. The complete protocol and survey can be seen in Appendix R and Q respectively. An abbreviated protocol can be seen in Table 13 below.

**Table 13:** Survey Protocol for Sharjah Residents Study III

Prior to the survey:

*Researchers will explain the study briefly and ask if the participants wish to continue:*

*Hi! My name is \_\_\_\_\_, and I'm a student from WPI in the United States. My research team and I are working with SEWA and the AUS College of Engineering to design water conservation campaigns. Here, we have a campaign based upon the ideas from AUS students and faculty. Would you be interested in giving your feedback on this campaign?*

*If yes, continue script.*

*If no, thank the participant for their time.*

**Social Media Campaign Script**

*Imagine you're scrolling through your Instagram feed, and you see this post about water conservation tips.*

**App Campaign Script**

*Imagine you downloaded this app to track your monthly water consumption.*

**Event Campaign Script**

*Imagine you're walking around, and you see this flyer advertising an event on World Water Day.*

<b>Topic Area</b>	<b>Explanation of Topic Area</b>	<b>Examples of a Type of Question</b>
Content	Assess the clarity and value of the message	“What do you think the purpose of this campaign is?”
Design	Assess the aesthetics of the campaign (graphics, color, and layout)	“What do you like about the layout and design?”

Engagement	Gauge if people would participate in the campaign	“Would you keep using this app to track your water consumption?”
Additional Comments	Provide final remarks and suggestions for the campaigns	“Do you have any additional comments?”

#### 4.2.2.3 Summary of Data Collection

We presented the three campaigns to SEWA representatives and the Sharjah community by conducting an interview and surveys to receive feedback on the water conservation campaigns. We created a protocol for the interview and the surveys. Based on the surveys, a Qualtrics form was created for the researchers to input the responses during or after the survey. We asked the participants questions regarding content, design, and engagement.

#### 4.2.3 DATA ANALYSIS

Responses were collected from the SEWA Conservation Department representatives and the participants of the surveys. The SEWA interview had notes taken during the interview as well as a transcription. The survey responses had all been inputted into a digital Qualtrics form. Thus, the data was organized upon exporting. The data was analyzed based on sentiment and occurrences.

##### 4.2.3.1 SEWA Interview

During the interview with SEWA representatives, one researcher was recording the interview with Otter, a transcription software. Otter was used to record and transcribe the SEWA interview. Additionally, during the interview two researchers were taking notes of the key feedback the interviewees said. Before the analysis, the accuracy of the interview transcript was verified by ensuring that the written script and notes matched the audio recording.

#### 4.2.3.2 Sharjah Residents Survey

The feedback responses were all collected in Qualtrics. The first step in our analysis was to first export the data from Qualtrics. The data was exported into Google Sheets for data analysis. All the data from the survey was compiled into one sheet. In order to make sense of the data, we segmented the feedback data into the following sheets labeled as: Master, Social Media, App, and Event. The Master sheet included all the response data that Qualtrics exported. The following three sheets only included the responses for the respective campaign. For example, all the social media campaign's responses were stored in the Social Media sheet. In addition to these sheets, there were three more sheets—one sheet per campaign dedicated to organizing charts.

There were two types of responses we collected, multi-word and Yes/No. The multi-word responses for positive questions were highlighted green. For example, “What do you like about layout and graphics?”. The responses from the negative questions were highlighted red. For example, “What do you dislike about the layout and graphics?”. For the additional comments, the responses were highlighted green or red based on the sentiment. For the highlighted positive/negative responses and additional comments, we counted the occurrences of certain keywords that appeared often. For example, “statistics” and “colors”. These occurrences were measured in bar graphs. For the responses that were Yes/No, we determined the count of occurrences for each and then produced pie charts.

#### 4.2.3.3 Summary of Data Analysis

Data for each feedback method was analyzed differently. The SEWA interview was transcribed and important feedback was noted. The surveys were analyzed by organizing the data and then by sentiment and the occurrence of keywords in responses. The data was organized by segmenting the data by campaign type.

#### 4.2.4 SUMMARY OF METHODS

The three campaigns produced in Chapter Three were presented to two representatives of the SEWA Conservation Department and the Sharjah community to receive feedback. The

surveys to collect feedback from Sharjah residents were administered in two public spaces: the AUS campus and the Sharjah National Park. For the surveys, three researchers were assigned one of the three campaigns to present to participants. The fourth researcher was aggregating the responses as they were being submitted. The researchers asked participants to give feedback on open-ended questions regarding the design, content, and engagement of the water conservation campaign. The responses were inputted into a survey, based on a protocol, through Qualtrics. The data was then exported for analysis. The data was analyzed based on the main points made in the SEWA interview and the sentiment and occurrence of responses for the surveys. Regarding the surveys, each researcher had the goal to receive thirty responses for their campaign on the AUS campus and ten at the Sharjah National Park. Collectively, the goal was to reach 120 responses.

## 4.3 FINDINGS

First, we will present the findings that presented themselves during the SEWA interview and then from the Surveys with the AUS community and Sharjah residents.

### 4.3.1 SEWA INTERVIEW

The interview with the SEWA representative took around forty-five minutes. We structured the interview to present one campaign at a time and ask for feedback after each one. The campaigns were presented in the following order: social media posts, app, and event.

#### **Finding #1: Social media is the best method to deliver campaigns**

The SEWA representatives were pleased with the social media post's message and content of the Instagram post campaign. They found the blue colors of the post suitable and indicative of the message presented. The SEWA representatives stated that social media is one of most methods of delivery they used for campaigns, due to features that allow campaigns to be easily advertised.

For example, hashtags can make posts more interactive, and Instagram allows for posts to be sponsored by an organization. Some suggestions they made were to include a source for the statistics and to separate the five tips to be posted on different days. In addition, they

recommended to change the colors of the images depending on the theme of the post and season, in order to keep people interested in the design of each tip.

**Finding #2: User-friendly designs are preferred over cluttered designs**

Regarding the redesign of the app, the SEWA representatives appreciated the simple and clear layout of the app in comparison to SEWA’s current mobile application. They mention that the tracker is very valuable, as they would personally use it in their daily lives to help keep track of their water consumption. Recommendations for this campaign were mostly regarding the water conservation tips page; they noted it might be useful to make the font bigger and the graphics smaller. It was also mentioned to change the colors of the label on the tracker; making the “On Track” label green and keeping the “Be careful” label red would provide a clear contrast between good and bad water consumption.

**Finding #3: Social media influencers would be a good draw to engage the public**

For the event, SEWA representatives were pleased with the campaign. Even though it is similar to previous campaigns that SEWA has done, some of the activities and sections our event had were different. They liked the SEWA, social media, and children’s sections. They recommended to use a lot of influencers to promote water conservation and the event; people would be drawn to the event to take pictures with them. In addition, even with the variety of these different sections, they still believe that the water conservation message of the campaign will not get distracted. Because there are a lot of responsibility that comes with hosting an international event, there must be extensive preparation and planning.

**Finding #4: SEWA’s ranking of our water conservation campaigns**

When prompted to rank the campaigns, the SEWA representatives ranked the campaigns in the following order:

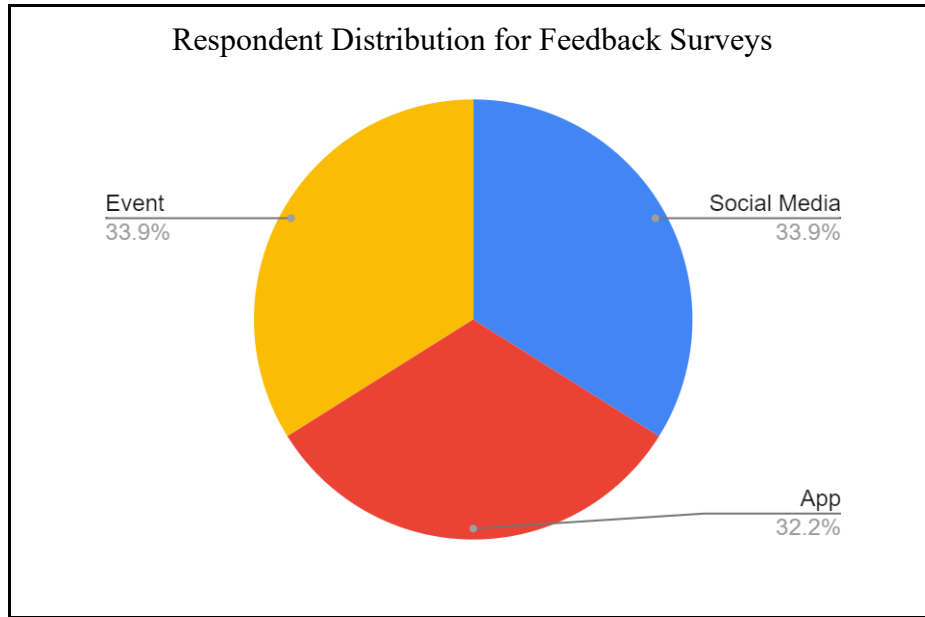
**Table 14:** SEWA Representatives Ranking of our Campaigns

SEWA's ranking of the campaigns
1. Social Media
2. Event
3. Phone Application

The reasoning for this ranking was that the social media campaign required less preparation and it lasts forever. The event was next; even though it was only one day, it was interactive, which added a lot of value to the campaign. The app campaign was ranked last; while it had value and was easy for people to use, they did not consider it a campaign.

#### 4.3.2 SHARJAH RESIDENTS SURVEYS

For each campaign, our goal was to target about the same number of respondents. Ultimately, for the AUS community, both the social media and event campaigns reached thirty respondents, and the app campaign reached twenty-eight. When surveying Sharjah residents at the Sharjah National Park, each campaign received ten responses. Therefore, the total number of responses was 118, distributed between each campaign as follows: forty for the social media campaign, forty for the event campaign, and thirty-eight for the app campaign. Shown below, Figure 37 depicts the distribution of responses per campaign.



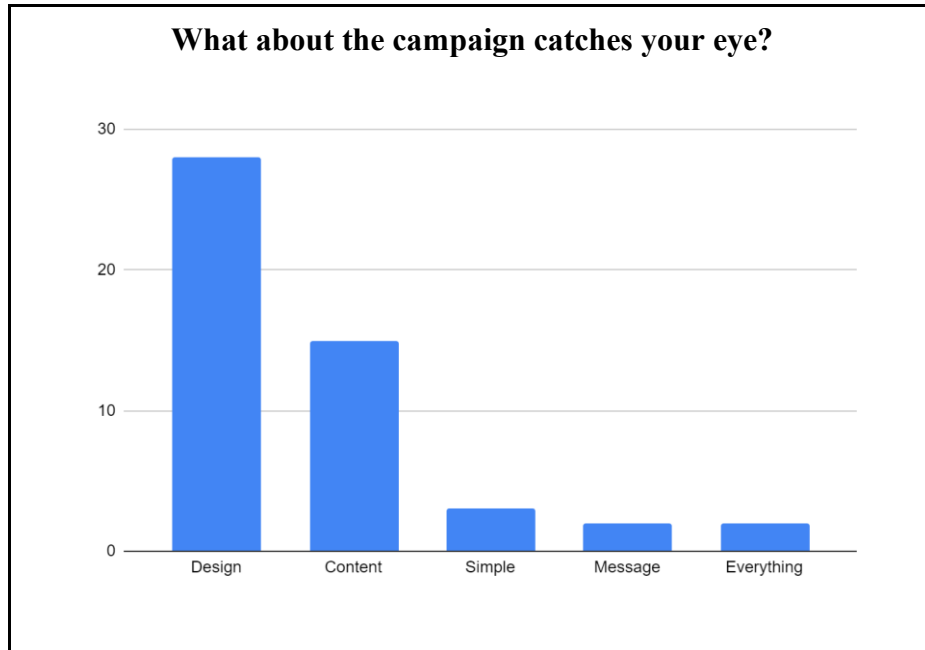
**Figure 37:** Respondent Distribution for Feedback Surveys

### **Social Media Campaign**

Regarding the social media campaign, there were forty responses total. Thirty responses were received on the AUS campus, and ten responses were received at a Sharjah National Park event. People of varying demographics were targeted.

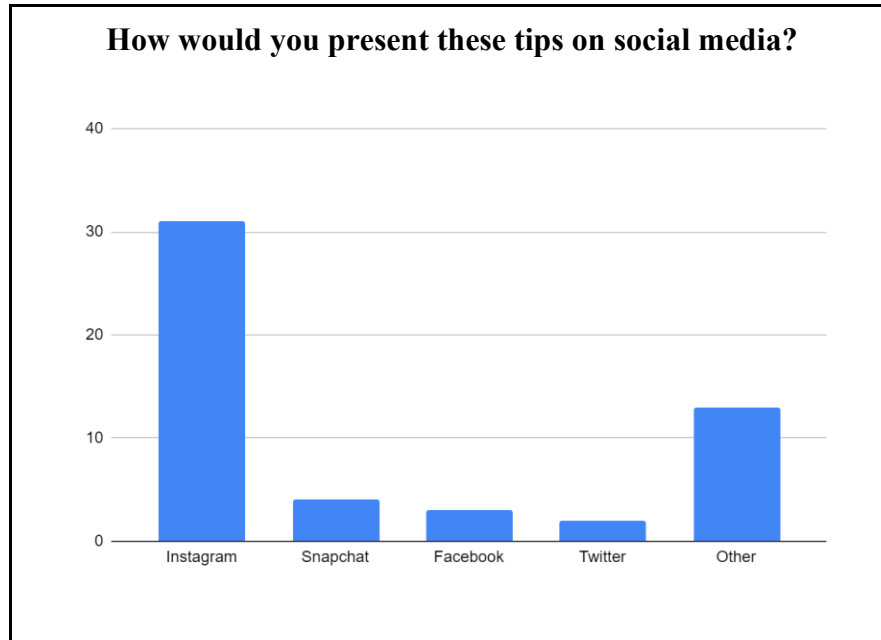
When asked which elements of the campaign were eye-catching, many participants chose design; second to that was content. The distribution of responses for this question can be seen in Figure 38.





**Figure 38:** Eye-Catching Elements of Social Media Campaign

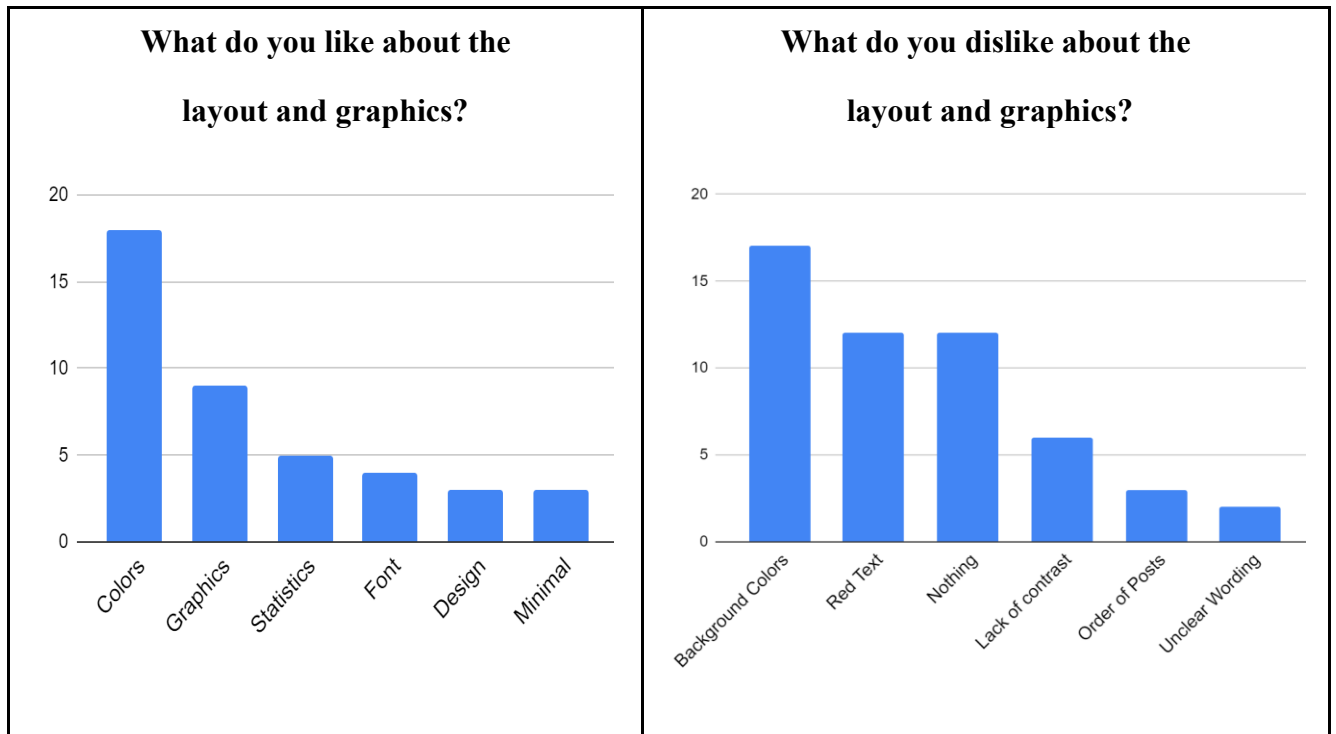
When asked if there was a better way to present the five tips on social media, 77.5% of participants responded that Instagram was effective, which indicated the delivery chosen for this campaign was appropriate. Other deliveries suggested were Snapchat, Facebook, Twitter, and others. The responses to this question are seen in Figure 39 below.



**Figure 39:** Suggested Delivery of Social Media Campaign

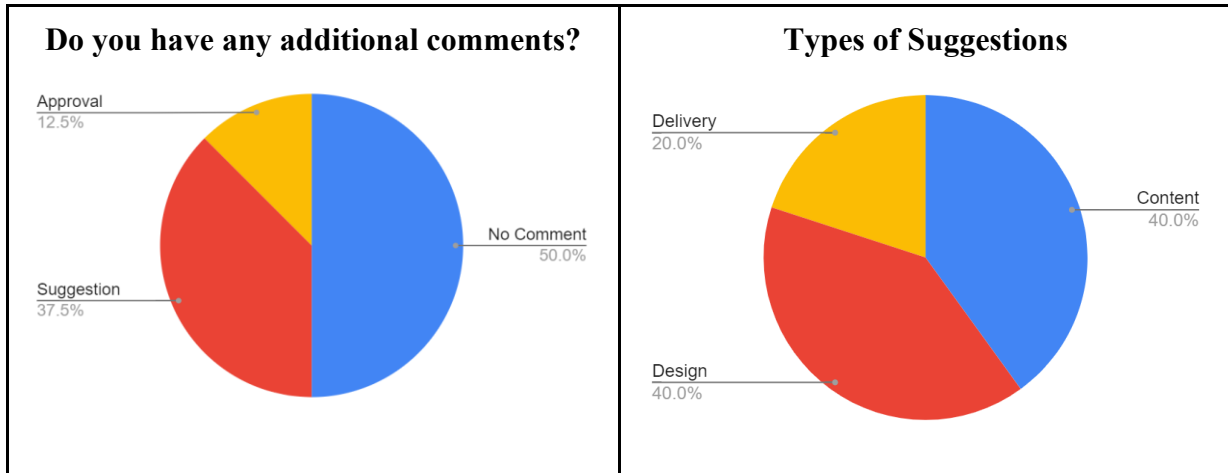
Participants were asked to list elements they liked and disliked about the design of social media campaign. Responses regarding the colors were split between being liked and disliked, with 45% of participants responding they liked the colors and 42.5% responding they disliked them. One important note is how out of these responses, only a very small fraction of the disliked elements affected the clarity of the message; the top four disliked elements were purely in regard to aesthetics, while the last two were the only to regard the content of the campaign.

**Table 15:** Liked and Disliked Design Elements of Social Media Campaign



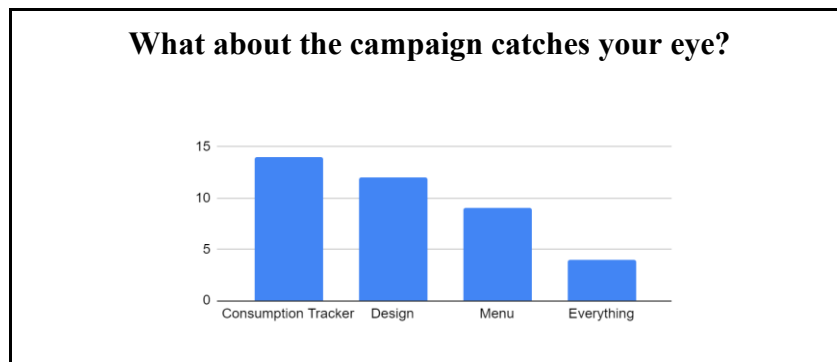
The interview for the social media campaign concluded with additional comments. 50% of the respondents had no additional comments. 12.5% voiced their approval for the campaign, meaning they did not have any suggestions. 37.5% of respondents provided suggestions to improve the campaign. 20% of responses gave suggestions for delivery, such as saying to expand the outreach through Snapchat, events, or themed t-shirts. The 40% that regarded content focused on clarity of the message or provided additional topics to cover (e.g. wastewater reuse). Lastly, the 40% responses giving suggestions for design covered colors, fonts, order of the slides, and the addition of graphics.

**Table 16:** Additional Comments for Social Media Campaign



### Phone Application Campaign

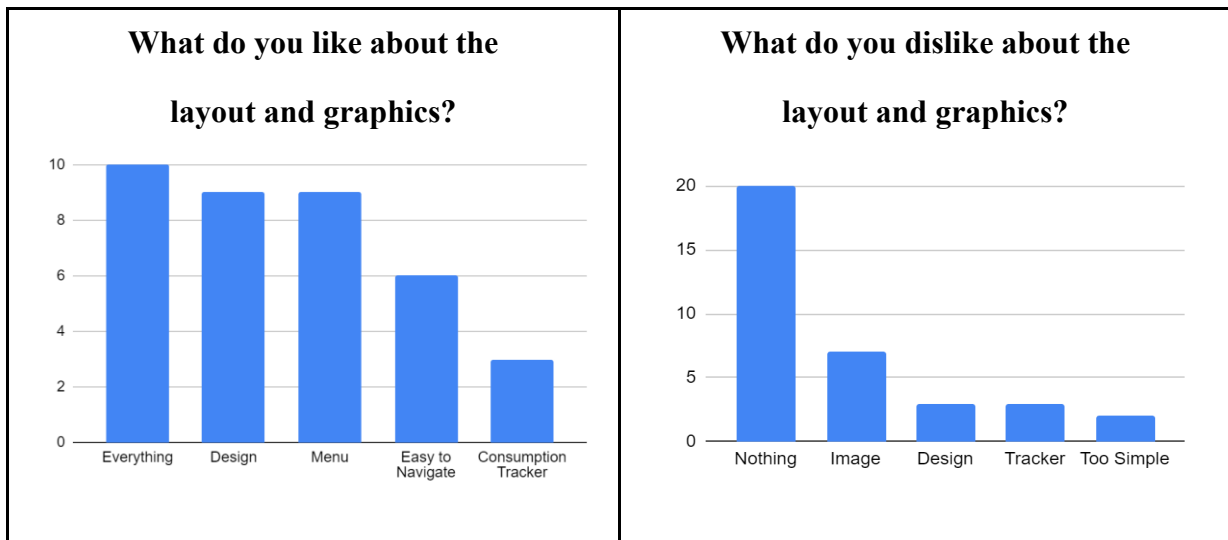
The application campaign had a total of thirty-eight responses. Twenty-eight responses were received on the AUS campus, and ten responses were received at a Sharjah National Park event. People of varying demographics were targeted. Most people's attention was drawn into specific features of the app. The consumption tracker was noted by 35.9% of the participants, who mentioned that it appeared to be useful and informative. The menu was mentioned by 23.1% of the respondents, who described it as simple and easy to use. 30.8% of participants drew their attention to the overall design of the app, which included the icons and overall layout of the app. The distribution of responses for this question can be seen in Figure 40.



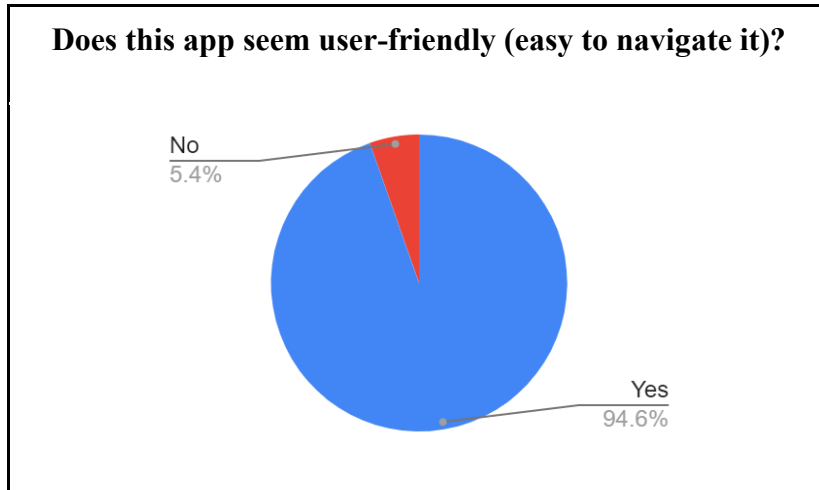
**Figure 40:** Eye-catching Elements of App Campaign

When asked more in depth what they liked about the app, participants emphasized the menu, the overall design, easy navigation, and the consumption tracker. When specifically asked what they disliked about the layout and graphics, 18.4% of participants mentioned that the mascot used in the consumption tracker could be improved. Additionally, 7.9% of participants mentioned that the design could be improved. Another 7.9% mentioned they disliked the tracker. 5.2% mentioned that the app was too simple. The last 60.6% of the participants mentioned they disliked nothing about the app. The distribution of responses for this question can be seen in Figure 17.

**Table 17: Liked and Disliked Design Elements of App Campaign**



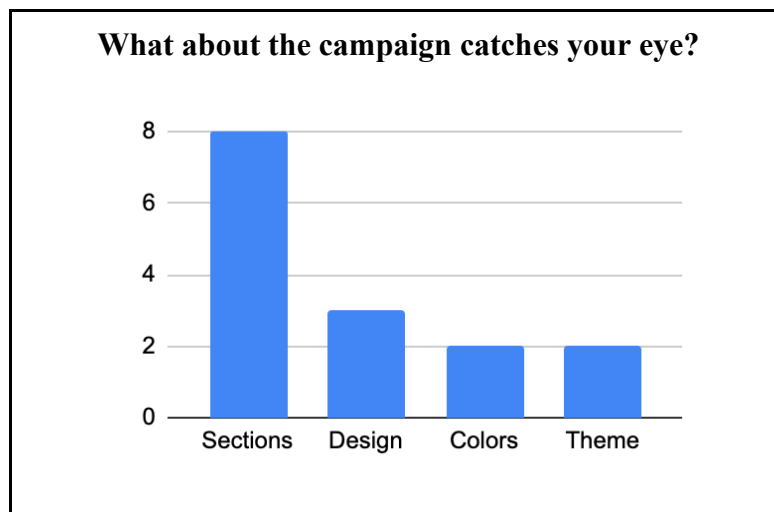
When asked about the user-friendliness of the app, 94.6% of participants agreed that it was user-friendly. The participants that were familiar with the SEWA app expressed admiration for the app campaign, due to the redesigned menu and less crowded screens. The distribution of responses for this question can be seen in Figure 41.



**Figure 41: User Friendliness of App Campaign**

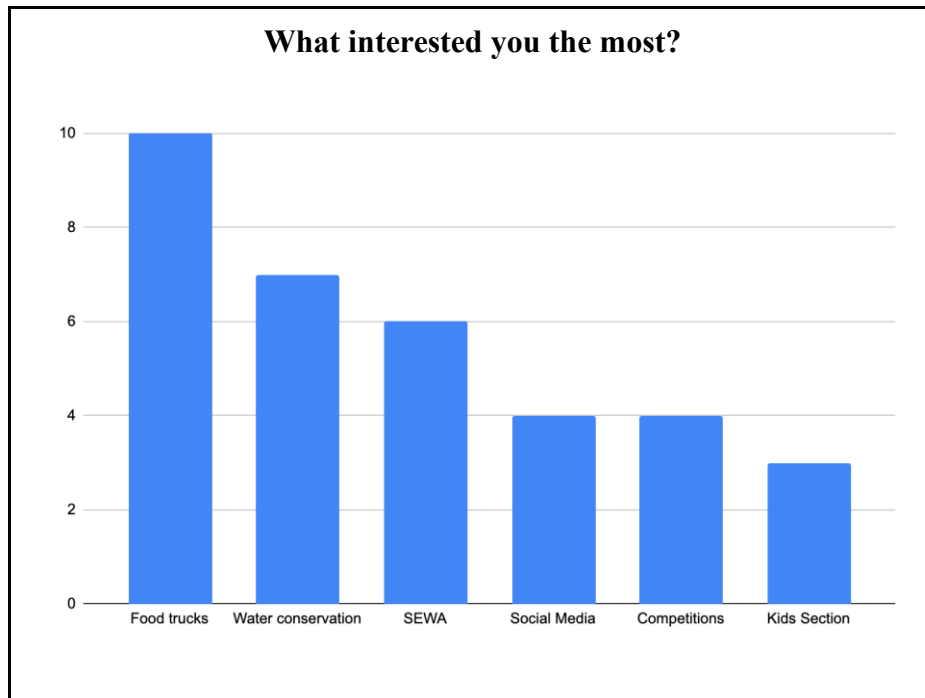
### Event Campaign

The event campaign had a total of forty responses. Thirty responses were received on the AUS campus, and ten responses were received at a Sharjah National Park event. People of varying demographics were targeted. When participants were asked about which elements of the campaign caught their eye, the sections in the event were mentioned in eight responses. Five responses in total stated that the design and color of the event flyer was what caught their eyes. Figure 42 show the responses to that question.



**Figure 42: Eye-Catching Elements of Event Campaign**

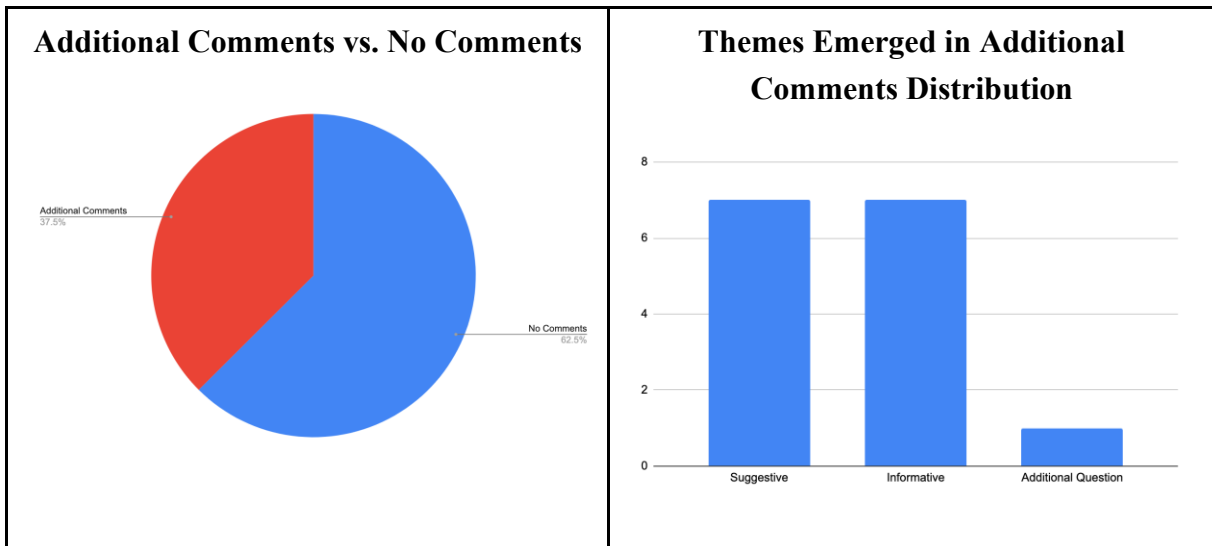
When the participants were asked about what interested them the most about the event campaign, around 25% of the responses mentioned the food trucks. Moreover, 37.5% of the responses were interested in SEWA’s booth and water conservation topic in general. The distribution of responses to this question can be seen in Figure 43.



**Figure 43:** Interesting Elements of the Event Campaign

Around 37.5% of the total responses had additional comments on the event campaign. A theme has emerged from these comments; they were either suggestive, questioning, or informative comments. The suggestive comments are comments where participants suggest or state something that they want to change or don't like about the event. Some examples are creating a website for the event or shortening the duration of the event. The informative comments showed participants’ interest, opinion, or information about the event, such as the event is good initiative or that they are not interested in water conservation. Table 18 below showcase the distribution of additional comments from the responses and a pie chart that depicts the themes of the comments.

**Table 18:** Additional Comments Distribution Event Campaign



#### 4.3.3 SUMMARY OF FINDINGS

We showed the three produced campaigns to SEWA representatives from the conservation department for feedback. For the social media campaign, most of the recommendations were regarding methods of delivery, noting that it might be better to release it as multiple posts, instead of one with multiple pictures. For the event, they considered it an interactive and engaging activity, and they recommended to use influencers to spread the word about the event. Also, they noted that for an event like this to happen, it would need lots of planning and preparation. The app was met with positive feedback, focusing on the design, simplicity and the conservation tracker.

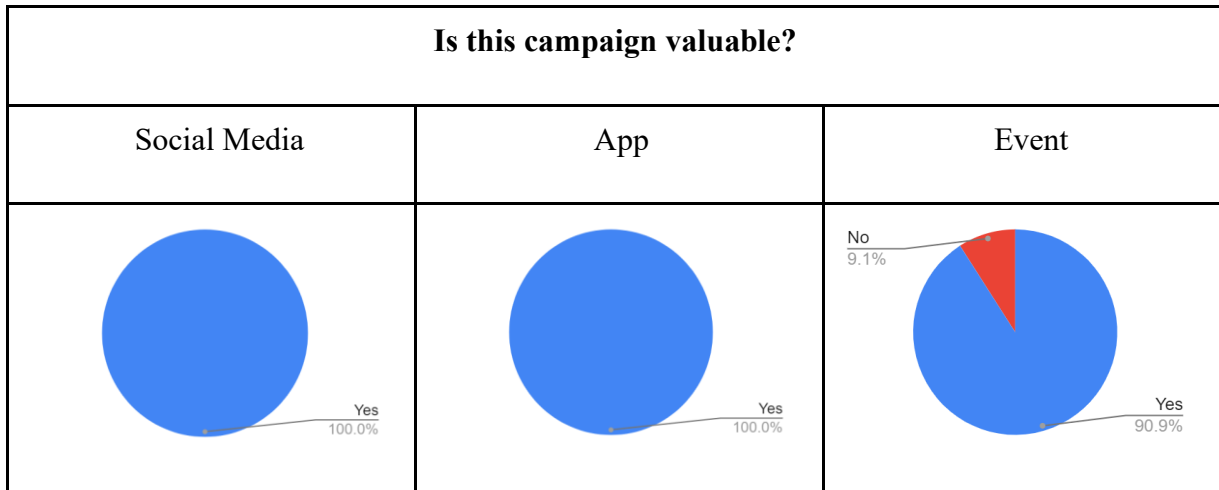
The three campaigns produced from the Design Sprint were presented to members of the AUS community and the Sharjah community for feedback. 118 responses were received in total: forty for the social media post, thirty-eight for the app, and forty for the event. In addition to the individual findings for each campaign, there were overall findings between the three campaigns. Majority of the questions were consistent among the three campaigns, which allowed for comparisons between responses to be visualized.

The first question was “Is this campaign valuable?”. We asked this question to determine a baseline, which indicated whether participants found value in the type of campaign



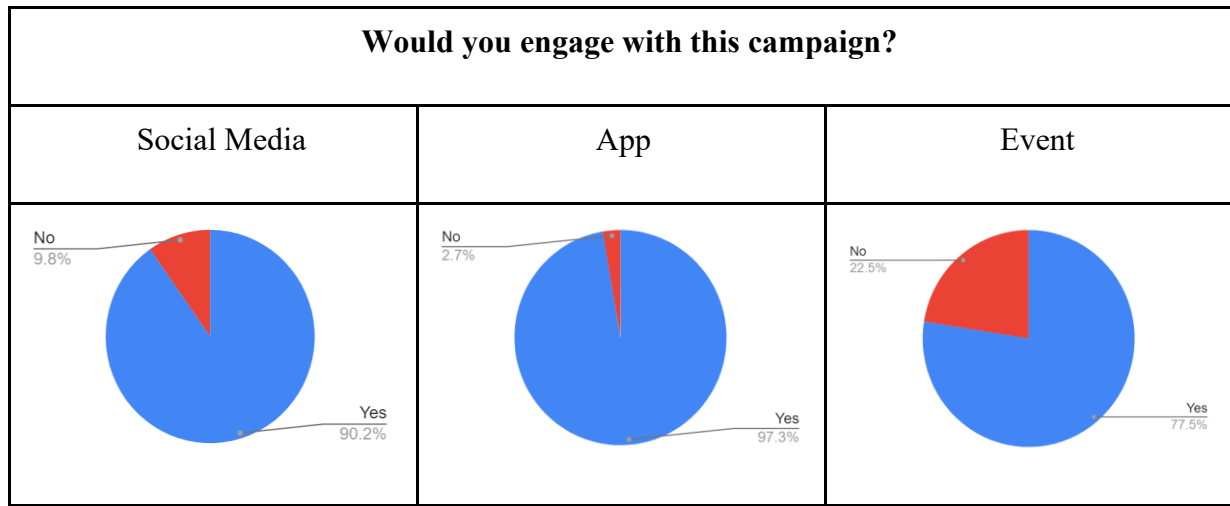
they were presented. We found that 100% of respondents for the social media and app campaigns found the campaigns to be valuable. However, for the event campaign we found that 90.9% of respondents viewed the event campaign as valuable. Below in Table 19 is the distribution of Yes and No responses for the participants value for each campaign.

**Table 19:** Campaign response distribution for “Is this campaign valuable?”



The second question was “Would you engage with this campaign?”. This question was asked to determine if respondents would like the social media post, use the consumption tracker app regularly, or if they would attend the event. We found that 90.9% of respondents for the social media campaign would like the Instagram post and that 97.3% of respondents for the app redesign campaign would keep the app downloaded. Finally, we found that 77.6% of respondents said they would attend the event. In Table 20 is the distribution of Yes/No responses for participants engagement for each campaign.

**Table 20:** Campaign response distribution for “Would you engage with this campaign?”



The campaigns that required the most time and level of effort generally had a greater number of responses that were “no” or negative. This reasoning is generally consistent with our findings and evaluation. The campaigns that required less engagement from the participants, the social media posts and app, had more ‘yes’ responses regarding value and engagement. Conversely, the event required the most time commitment and may be part of the reasoning behind the percentage of “no” responses from participants.

#### 4.4 DISCUSSION

We found that the three campaigns we asked for feedback on all had varying responses. Because the campaigns had different delivery, each faced unique difficulties when being presented. The social media campaign was the easiest to visualize, as the five tips were pasted onto an Instagram post mockup. The app campaign was also presented as a mockup but required participation from the participants to navigate through the different windows and elements of the app. The event was the most difficult to visualize. A flyer and a map of the event were the only visualizations; there was no mockup for this.

The conclusions we have drawn from the feedback we have received are the following: the social media and app campaigns were deemed valuable campaign deliveries and participant engagement would be higher the less the campaign’s level of engagement was. We found that SEWA primarily uses social media and events to create awareness on a campaign. From our

feedback survey responses, we found that many participants would engage with social media campaigns that were across multiple social media platforms.

#### 4.4.1 LIMITATIONS

During our study we were presented with two limitations. The two limitations regarding the presenting of the design mockups and the participants background knowledge. The limitations are the following:

##### **Limitation 1: Presenting design mockups**

One limitation of the study concerns the findings for the campaigns. Firstly, some respondents did not understand that all six images comprised one singular Instagram post; they interpreted the campaign as individuals posts to be compared amongst the others. For the event campaign, it was difficult to determine if participants had responded to the flyer or the event itself. For the app campaign, the app was presented on a digital form to the AUS community, it was not possible to present the interactive app mockup to the Sharjah residents; this was largely due to the nature of the setting posing technical difficulties with internet access. Developing a more standardized method, with more clarity of instructions, while also anticipating some of the technology issues that occurred, might have solicited more or different feedback.

##### **Limitation 2: Participant's lack of background knowledge**

There were some respondents who were unfamiliar with Instagram. This posed challenges for the researchers when explaining the layout of the post and asking, "Would you like this post?". It appeared as if these individuals were more receptive of the campaign, which may be because they did not have personal experience viewing other Instagram posts as a means of comparison.

#### 4.4.2 RECOMMENDATIONS

Based on the findings and analysis from this study the researchers generated the following recommendations:

### **Recommendation 1: Continue requesting feedback on campaigns**

First, we recommend SEWA to continue asking for feedback on the different campaigns. By doing so, SEWA can determine the elements of a campaign that are most desirable by the community of Sharjah and those that are not. By using online surveys, SEWA can collect data in an organized way to analyze the feedback they received. Getting direct feedback and suggestions from the target audience will help to design campaigns to be more receptive.

### **Recommendation 2: Continue social media campaigns**

The social media campaigns can be broadened to more than just what is currently being used by SEWA, which is primarily Instagram. We found that respondents suggested posting the campaigns on different social media including Snapchat, Facebook, and Twitter. Respondents also suggested using different formats including short videos and animations in the campaigns to catch people's attention.

### **Recommendation 3: Redesign the SEWA app with a user-friendly design**

The app campaign was a redesign of SEWA's existing app. The redesign featured a water consumption tracker that many people were interested in. Also, the design of the app was more minimalistic and user-friendly which many people liked.

### **Recommendation 4: Continue awareness events to promote conservation**

The event campaign was taking an approach to cover a variety of demographics and interests by offering a multitude of booths. By doing so, we were able to pique the interest of anyone we asked, as it was likely there would be at least one component they liked. Many respondents said they liked the different activities available and the food trucks. For a large event, SEWA should involve activities that anyone could participate in. This would increase the turnout of attendants.

## **4.5 CONCLUSION**

In this feedback study, the researchers asked for feedback from SEWA and the Sharjah community. The researchers created a protocol that included a script and a series of questions

for the participant; these questions focused on each campaign's content, design, and engagement. Following the protocol, a survey was created using Qualtrics, a survey and analysis software. The survey was intended for the researchers to input the participants' responses. This was done to organize and aggregate the data collection by campaign type. The survey first asked the researcher if the participants consented. If they answered yes, the survey would proceed to ask the researcher which campaign was being inputted for. If the participant did not consent, then the survey would end.

Once the survey was created, the researchers were able to begin asking for feedback. The goal for feedback responses was to receive roughly the same number of responses for each campaign. The goal was set to thirty responses per campaign on the AUS campus and ten for the Sharjah National Park. The actual breakdown of responses goes as follows: forty responses for the social media and event campaigns and thirty-eight for the app campaign on the AUS campus.

After all responses were inputted into the Qualtrics survey, we exported and segmented the data into separate spreadsheets for each campaign. Within each spreadsheet, charts were created to visualize the responses for each question. The multi-word responses were first highlighted based on their sentiment; a positive response would be highlighted green and a negative response would be highlighted red. These responses were then categorized into themes based on the occurrence of certain keywords. The other type of questions asked were Yes/No. To analyze these questions, the count for each 'Yes' and for each 'No' was recorded.

From our analysis of the feedback received for each campaign, we saw certain themes arise. We found that for the social media campaign many people first noticed the designed when looking at the campaign, followed by the content, simplistic design, and messaging. Additionally, majority of the respondents agreed with the use of Instagram, while others suggested different social media platforms. For the app campaign, we found that many respondents liked the user-friendliness and straightforward design. Most respondents did not dislike anything about the design of the app. For the event campaign, we found that most respondents did like the event for the activities and food truck options. Moreover, we found

that the event had the lowest engagement; we infer this was because the event requires more participation from the participants.

## 5.0 CONCLUSION

The United Arab Emirates' (UAE) scarce water resources and high per capita water consumption has created a state of water stress. SEWA and other authorities in the UAE are trying to alleviate this water stress by increasing water production to meet demands and encouraging water conservation through campaigns. These campaigns are designed to have a strong message with the intent to change the behaviors of water consumers. Thus, our project, in collaboration with SEWA, aimed to determine an impactful method of designing water conservation campaigns to influence water consumption within Sharjah.

In our first study, detailed in Chapter Two, we explored the current status of social benefit campaigns implemented in Sharjah. The research question guiding our first study was, "What are the social benefit campaigns that have already been created in Sharjah?". We specifically targeted campaigns from AUS and SEWA to observe. We conducted an observational study on the AUS campus to document and analyze the campaign efforts of AUS. We also included SEWA campaigns from 2018. Additionally, interviews with creators of campaigns were held to obtain insight on the design of campaigns designed to change behaviors of the target audience. AUS focused on campaigns that promote sustainability, such as recycling. On the other hand, SEWA focused on water and energy conservation campaigns. Still, both agree and have similar design processes for these campaigns.

In Chapter Three, our design study, we aimed to find a method for designing campaigns with the goal of finalizing three water conservation campaigns. The research question guiding our second study was, "How can we design three creative campaigns aimed to change the behavior of water consumers and encourage water conservation?". The Design Sprint was the method used to generate and prototype creative ideas for water conservation campaigns. The participants of this workshop were members of the AUS community, who were recruited and enrolled by marketing the event on different platforms. The Design Sprint workshop was held for two days and it produced nine campaigns. Each campaign was analyzed and categorized based upon its design elements corresponding to the marketing frameworks: The Hook Model and the Marketing Mix. We created three water conservation campaigns using the prototypes generated from the Design Sprint, which we modified using the elements from the second

chapter's findings. Each campaign used a different delivery method, which were a social media post, an app, and an event.

In Chapter Four, we did an evaluation of the three campaigns that were created from the Design Sprint workshops to receive feedback. The research question guiding the third study was, "How will each of three campaigns produced in the Design Study be perceived by Sharjah residents?". An interview was conducted with the same SEWA representatives we interviewed in our first study. Additionally, we surveyed the AUS community and Sharjah residents to get their feedback on the campaigns. For both the interview and the surveys, the campaigns were presented to these participants, and they were asked to give their opinion on the design, content, and engagement of these campaigns; the only difference was participants generally reviewed only one campaign, while SEWA reviewed all three. From the interview, we learned that SEWA representatives were keen to social media campaigns, using social media influencers, and having a user-friendly design. The responses from the survey were collected to the Qualtrics survey and categorized into different themes that emerged when analyzing the responses.

## 5.1 DISCUSSION

The findings from each of our three studies contributed to our goal of determining an impactful method to design water conservation campaigns in Sharjah. In our first study, we reported what we perceived as the most critical components of social benefit campaigns from what we observed. Marketing frameworks acted as a skeleton to help us identify common themes of each campaign we analyzed. We concluded that campaign design is a timely process that requires many iterations. Additionally, we found that campaigns should be visible, accessible, and cater to the target audience in terms of delivery, messaging, and rewards.

For the second part of our study, we executed Design Sprint workshops for the AUS community, which resulted in nine water conservation campaign prototypes. By completing a similar analysis to that of the previous study, we determined five main categories of the campaigns: Informative, Event, App, Device, and Game. Three water conservation campaigns (Social Media Post, App, and Event) were then created based on our findings from both studies.



In the third study, we received feedback from the AUS community and Sharjah residents on the content, design, and engagement of the campaigns we created. We found that participants were more likely to engage with the campaign that required the least investment from them—when participants were asked if they would engage in the campaign, more participants answered “no” to the event than the app and social media. In conclusion, we learned the different design elements of social benefit campaigns, gained insight from campaign creators, received nine water conservation campaign prototypes, and acquired meaningful feedback from the Sharjah community on campaigns we created. In the next sections, we present our recommendations based on the outcome of the three studies and list potential limitations.

### 5.1.1 RECOMMENDATIONS

In the following sections, we provide recommendations for SEWA in terms of the design, organization, and evaluation of campaigns, based upon our findings from our three studies.

#### **Recommendations Based on Study I: The Exploration of Conservation Efforts in Sharjah, UAE**

Based on the qualitative analysis of observational data and interviewee’s responses, we have the following recommendations for SEWA:

- **Use a marketing framework to aid in the design process.** By doing so, each campaign’s elements are organized and repeatable. Using the Hook Model and the Marketing Mix allows for campaigns elements to be categorized, which makes the identification of themes an easier process.
- **Continue to use rewards to pique the interest of the target audience.** Rewards prove to the audience the benefits of their participation, which can potentially increase the engagement of the campaign.
- **Publish campaigns in high traffic areas to increase visibility.** By publishing a campaign that can be distributed broadly and viewed by many people, the opportunities for people to engage increase.

**Continue to use campaign formats that best suit the target audience.** Audiences of differing demographics are more receptive of the deliveries that cater to them (e.g. kids and puppet shows).

### **Recommendations Based on Study II: Design Sprint Workshop: Ideating Water Conservation Campaigns at the American University of Sharjah**

Based on the analysis of our pilot test workshop, Design Sprint Workshops, and three campaign designs, we have the following recommendations for SEWA:

- **Run and participate in Design Sprint workshops involving the target audience.** This process would be beneficial in gathering a large pool of ideas from the anticipated audience.
- **Use different challenges and topics for Design Sprint workshops.** Due to the flexibility of Design Sprints, adapting and modifying the stages to fit the theme or expected outcome of the workshop is easily done. A multitude of unique ideas can be produced from different workshops.
- **Complete pilot tests to determine strengths and weaknesses of protocols.** By doing so, changes can be made to better facilitate a workshop. Feedback from participants and observers can help guide the workshop to be better.

### **Recommendations Based on Study III: Feedback on Water Conservation Campaigns Ideated by Residents of Sharjah**

Based on the qualitative analysis of interviewees' responses and survey responses, we have the following recommendations for SEWA:

- **Continue requesting feedback on campaigns.** By doing so, SEWA can determine the elements of a campaign that are most desirable by the community of Sharjah and those that are not. By using an online survey method or in-person survey methodology, feedback can be received to help better the campaign design process.
- **Continue using social media to distribute campaigns.** The social media campaigns can be broadened to more than just what is currently being used by SEWA, which is

primarily Instagram. Using different formats including short videos and animations in the campaigns would be a way to catch the audience's attention.

- **Redesign the SEWA app with a user-friendly design.** By doing so, the SEWA app will look more appealing to the users. By choosing a design that is minimalistic and incorporating an easily understood menu, users may be more likely to engage with the app. Including a feature like a water consumption tracker may appeal to the audience while promoting the idea of water conservation.
- **Continue to promote conservation through awareness events.** Events have the ability to have a big impact on the community. By continuing to hold events, SEWA's message will be able to be projected to a large audience.

#### **Additionally, we recommend longer term studies measuring the impact of campaigns**

By conducting long-term studies, SEWA will be able to measure the impact of campaigns on their target audience. This will help the campaign design process to determine elements of campaigns that worked and did not work. Long term studies allow for changes to be seen in the target audience, including behavioral and social changes. This would be beneficial to SEWA to see how campaigns are directly impacting water and energy consumption.

#### **5.1.2 SUGGESTED NEXT STEPS**

We were unable to explore several topics and questions due to time constraints and the nature of our project. Further research is required to address the following questions:

1. What are the short and long term impacts of social change campaigns within communities or universities?
2. What is the best method of delivery to target incoming generations?
3. Does implementing a five-day design sprint methodology produce different outcomes than that of a two-hour workshop?
4. What other campaigns have been conducted in Sharjah besides those from AUS and SEWA?

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## APPENDIX A: IRB Approval

### WORCESTER POLYTECHNIC INSTITUTE

100 INSTITUTE ROAD, WORCESTER MA 01609 USA

#### Institutional Review Board

FWA #00015024 - HHS #00007374

#### Notification of IRB Approval

**Date:** 15-Oct-2019

**PI:** Doiron, Joseph

**Protocol Number:** IRB-20-0156

**Protocol Title:** Water Conservation Campaigns in Sharjah, United Arab Emirates

**Approved Study Personnel:** Doiron, Joseph~Egenberger, Kyla~Patel, Pooja~Pimentel, Rafael~Algarni, Omar Ali D~Bergendahl, John A~

**Effective Date:** 15-Oct-2019

**Exemption Category:** 2

**Sponsor\*:**

The WPI Institutional Review Board (IRB) has reviewed the materials submitted with regard to the above-mentioned protocol. We have determined that this research is exempt from further IRB review under 45 CFR § 46.104 (d). For a detailed description of the categories of exempt research, please refer to the [IRB website](#).

The study is approved indefinitely unless terminated sooner (in writing) by yourself or the WPI IRB. Amendments or changes to the research that might alter this specific approval must be submitted to the WPI IRB for review and may require a full IRB application in order for the research to continue. You are also required to report any adverse events with regard to your study subjects or their data.

Changes to the research which might affect its exempt status must be submitted to the WPI IRB for review and approval before such changes are put into practice. A full IRB application may be required in order for the research to continue.

Use of consent sent via separate email

Please contact the IRB at [irb@wpi.edu](mailto:irb@wpi.edu) if you have any questions.

\*if blank, the IRB has not reviewed any funding proposal for this protocol



## APPENDIX B: Informed Consent Form (General Public)

### **Informed Consent Agreement for Participation in a Research Study**

#### **General Public Consent Form**

**Investigator:**

Omar Algarni, Kyla Egenberger, Pooja Patel, Rafael Pimentel

**Contact Information:**

oalgarni@wpi.edu, kyegenberger@wpi.edu, ppatel2@wpi.edu, repimentel@wpi.edu

**Title of Research Study:**

Water Conservation Campaigns in Sharjah, United Arab Emirates

**Sponsor:**

Sharjah Electricity and Water Authority (SEWA)

**Introduction**

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks or discomfort that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

**Purpose of the study:**

The purpose of our research study is to determine an impactful method for designing water conservation campaigns in Sharjah. We will be working closely with the Sharjah Electricity and Water Authority to explore past SEWA campaigns as well as other campaigns. From this exploration, we will determine the elements of design for our three pilot campaigns to present to SEWA representatives and the general public of Sharjah for feedback.

**Procedures to be followed:**

Two investigators for this research study will present three campaigns to you and ask a series of questions to receive your feedback. This interview will take around 10-15 minutes. It will begin with preliminary questions regarding campaigns in general. The three campaigns will be introduced to you sequentially, with time in between for you to answer questions about each campaign. The interview will be concluded with a series of questions specifically regarding the three pilot campaigns.

**Risks to study participants:**

There are not any foreseeable risks associated with this study. You will be able to withdraw from the interview at any point. There are no consequences for early withdrawal.

**Benefits to research participants and others:**

Your benefit to participating in the study is that you will have a voice in the design of future water conservation campaigns distributed in Sharjah.

**Record keeping and confidentiality:**

Your interview responses will be audio recorded to be transcribed later. Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or its designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you. Sensitive information will not be recorded in this study. You may remove responses from the records as you wish.

**For more information about this research or about the rights of research participants, or in case of research-related injury, contact:**

Investigators: See contact information at the top of the first page

IRB Chair: Professor Kent Rissmiller, Tel. 508- 831-5019, Email: [kjr@wpi.edu](mailto:kjr@wpi.edu)

Human Protection Administrator: Gabriel Johnson, Tel. 508-831-4989,  
Email: [gjohnson@wpi.edu](mailto:gjohnson@wpi.edu)

**Your participation in this research is voluntary.**

Your refusal to participate will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit.

**By signing below**, you acknowledge that you have been informed about and consent to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

\_\_\_\_\_

Date: \_\_\_\_\_

Study Participant Signature

\_\_\_\_\_

Study Participant Name (Please print)

\_\_\_\_\_

Date: \_\_\_\_\_

Signature of Person who explained this study

## APPENDIX C: Informed Consent Form (SEWA Study I)

### **Informed Consent Agreement for Participation in a Research Study**

#### **SEWA Study I Consent Form**

**Investigator:**

Omar Algarni, Kyla Egenberger, Pooja Patel, Rafael Pimentel

**Contact Information:**

oalgarni@wpi.edu, kyegenberger@wpi.edu, ppatel2@wpi.edu, repimentel@wpi.edu

**Title of Research Study:**

Water Conservation Campaigns in Sharjah, United Arab Emirates

**Sponsor:**

Sharjah Electricity and Water Authority (SEWA)

**Introduction**

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks or discomfort that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

**Purpose of the study:**

The purpose of our research study is to determine an impactful method for designing water conservation campaigns in Sharjah. We will be working closely with the Sharjah Electricity and Water Authority to explore past SEWA campaigns as well as other campaigns. From this exploration, we will determine the elements of design for our three pilot campaigns.

**Procedures to be followed:**

The investigators for this research study will ask you a series of questions about your involvement with SEWA campaigns as well as any additional input to aid the campaign design process. This interview will take around 20-25 minutes.

**Risks to study participants:**

There are not any foreseeable risks associated with this study. You will be able to withdraw from the interview at any point. There are no consequences for early withdrawal.

**Benefits to research participants and others:**

Your responses are beneficial to the investigators in their design process to develop three pilot water conservation campaigns.

**Record keeping and confidentiality:**

Your interview responses will be audio recorded to be transcribed later. Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or its designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you. Sensitive information will not be recorded in this study. You may remove responses from the records as you wish.

**For more information about this research or about the rights of research participants, or in case of research-related injury, contact:**

Investigators: See contact information at the top of the first page

IRB Chair: Professor Kent Rissmiller, Tel. 508- 831-5019, Email: [kjr@wpi.edu](mailto:kjr@wpi.edu)

Human Protection Administrator: Gabriel Johnson, Tel. 508-831-4989,  
Email:[gjohnson@wpi.edu](mailto:gjohnson@wpi.edu)

**Your participation in this research is voluntary.**

Your refusal to participate will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit.

**By signing below**, you acknowledge that you have been informed about and consent to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

\_\_\_\_\_

Date: \_\_\_\_\_

Study Participant Signature

\_\_\_\_\_

Study Participant Name (Please print)

\_\_\_\_\_

Date: \_\_\_\_\_

Signature of Person who explained this study

## APPENDIX D: Informed Consent Form AUS Community (Study I)

### **Informed Consent Agreement for Participation in a Research Study**

#### **AUS STUDENTS & FACULTY Study I**

**Investigator:**

Omar Algarni, Kyla Egenberger, Pooja Patel, Rafael Pimentel

**Contact Information:**

oalgarni@wpi.edu, kyegenberger@wpi.edu, ppatel2@wpi.edu, repimentel@wpi.edu

**Title of Research Study:**

Water Conservation Campaigns in Sharjah, United Arab Emirates

**Sponsor:**

Sharjah Electricity and Water Authority (SEWA)

**Introduction**

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks or discomfort that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

**Purpose of the study:**

The purpose of our research study is to determine an impactful method for designing water conservation campaigns in Sharjah. We will be working closely with the Sharjah Electricity and Water Authority to explore past SEWA campaigns as well as other campaigns. From this exploration, we will determine the elements of design for our three pilot campaigns to present to SEWA representatives and the general public of Sharjah for feedback.

**Procedures to be followed:**

The investigators for this research study will ask a series of questions regarding conservation campaigns and designing campaigns. This interview will take around 15-25 minutes. It will begin with preliminary questions regarding campaigns in general and then more specific. The interview will be concluded with a series of questions specifically regarding the design process of campaigns.

**Risks to study participants:**

There are not any foreseeable risks associated with this study. You will be able to withdraw from the interview at any point. There are no consequences for early withdrawal.

**Benefits to research participants and others:**

Your benefit to participating in the study is that you will have a voice in the design of future water conservation campaigns distributed in Sharjah.

**Record keeping and confidentiality:**

Your interview responses will be audio recorded to be transcribed later. Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or its designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you. Sensitive information will not be recorded in this study. You may remove responses from the records as you wish.

**For more information about this research or about the rights of research participants, or in case of research-related injury, contact:**

Investigators: See contact information at the top of the first page

IRB Chair: Professor Kent Rissmiller, Tel. 508- 831-5019, Email: [kjr@wpi.edu](mailto:kjr@wpi.edu)

Human Protection Administrator: Gabriel Johnson, Tel. 508-831-4989,

Email:[gjohnson@wpi.edu](mailto:gjohnson@wpi.edu)

**Your participation in this research is voluntary.**



Your refusal to participate will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit.

**By signing below**, you acknowledge that you have been informed about and consent to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

\_\_\_\_\_

Date: \_\_\_\_\_

Study Participant Signature

\_\_\_\_\_

Study Participant Name (Please print)

\_\_\_\_\_

Date: \_\_\_\_\_

Signature of Person who explained this study

## APPENDIX E: Informed Consent Form (SEWA Study III)

### **Informed Consent Agreement for Participation in a Research Study**

#### **SEWA Study III Consent Form**

**Investigator:**

Omar Algarni, Kyla Egenberger, Pooja Patel, Rafael Pimentel

**Contact Information:**

oalgarni@wpi.edu, kyegenberger@wpi.edu, ppatel2@wpi.edu, repimentel@wpi.edu

**Title of Research Study:**

Water Conservation Campaigns in Sharjah, United Arab Emirates

**Sponsor:**

Sharjah Electricity and Water Authority (SEWA)

**Introduction**

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks or discomfort that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

**Purpose of the study:**

The purpose of our research study is to determine an impactful method for designing water conservation campaigns in Sharjah. We will be working closely with the Sharjah Electricity and Water Authority to explore past SEWA campaigns as well as other campaigns. From this exploration, we will determine the elements of design for our three pilot campaigns to present to SEWA representatives and the general public of Sharjah for feedback.

**Procedures to be followed:**

The investigators for this research study will present three campaigns to you and ask a series of questions to receive your feedback. This interview will take around 10-15 minutes. It will begin with preliminary questions regarding your experience with SEWA campaigns. Then, the three campaigns will be introduced to you sequentially, with time in between for you to answer questions about each campaign. The interview will be concluded with a series of questions specifically regarding the three pilot campaigns.

**Risks to study participants:**

There are not any foreseeable risks associated with this study. You will be able to withdraw from the interview at any point. There are no consequences for early withdrawal.

**Benefits to research participants and others:**

Your benefit to participating in the study is that you will have a voice in the design of future water conservation campaigns distributed in Sharjah.

**Record keeping and confidentiality:**

Your interview responses will be audio recorded to be transcribed later. Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or its designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you. Sensitive information will not be recorded in this study. You may remove responses from the records as you wish.

**For more information about this research or about the rights of research participants, or in case of research-related injury, contact:**

Investigators: See contact information at the top of the first page

IRB Chair: Professor Kent Rissmiller, Tel. 508- 831-5019, Email: [kjr@wpi.edu](mailto:kjr@wpi.edu)

Human Protection Administrator: Gabriel Johnson, Tel. 508-831-4989,  
Email: [gjohnson@wpi.edu](mailto:gjohnson@wpi.edu)

**Your participation in this research is voluntary.**

Your refusal to participate will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit.

**By signing below**, you acknowledge that you have been informed about and consent to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before signing. You are entitled to retain a copy of this consent agreement.

\_\_\_\_\_

Date: \_\_\_\_\_

Study Participant Signature

\_\_\_\_\_

Study Participant Name (Please print)

\_\_\_\_\_

Date: \_\_\_\_\_

Signature of Person who explained this study

## APPENDIX F: Interviews with SEWA Representatives Study I

### Interview Protocol for SEWA Representatives

We introduce ourselves and identify our affiliation with SEWA. We give a brief overview of our project through an informed consent process. We explain our project involves the design of water conservation campaigns specifically in Sharjah. Then, we explain that the purpose of this interview is to gather information on the best ways to educate people on water conservation.

1. SEWA representative's job description
2. Degree of involvement in past campaigns
3. Overview of the conservation program
4. Methods used for campaign design and delivery
5. Perceived successes and failures
6. Preferred campaign elements and deliverables
7. Campaign outcomes
8. Input on current campaigns
9. Additional comments

## APPENDIX G: Interviews with AUS Students and Faculty Study I

### Interview Protocol for AUS Students & Faculty

We introduce ourselves and identify our affiliation with SEWA and AUS. We give a brief overview of our project through an informed consent process. We explain our project involves the design of water conservation campaigns specifically in Sharjah. Then, we explain that the purpose of this interview is to gather information on the best ways to educate people on water conservation.

1. Subject's role at AUS
2. Degree of involvement in campaigns on campus
3. Methods used for campaign design and delivery
4. Perceived successes and failures of campaigns
5. Preferred campaign elements and deliverables
6. Campaign outcomes
7. Input on current campaigns
8. Additional comments

## APPENDIX H: Interviews with SEWA Representatives Study III

### Interview Protocol for SEWA Representatives

We introduce ourselves and identify our affiliation with SEWA. We give a brief overview of our project through an informed consent process. We explain our project involves the design of water conservation campaigns specifically in Sharjah. Then, we explain that the purpose of this interview is to gather information on the best ways to educate people on water conservation.

#### Topics covered before the three campaigns are presented:

1. SEWA representative's job description
2. Degree of involvement in past campaigns
3. Preferred campaign elements and deliverables

#### Topics covered after the three campaigns are presented:

- 1) Perceived effective and ineffective elements of our campaigns
- 2) Input on campaign layout and delivery
- 3) Ranking of the three campaigns in the following areas:
  - A. Design
  - B. Message
  - C. Delivery
- 4) Additional comments

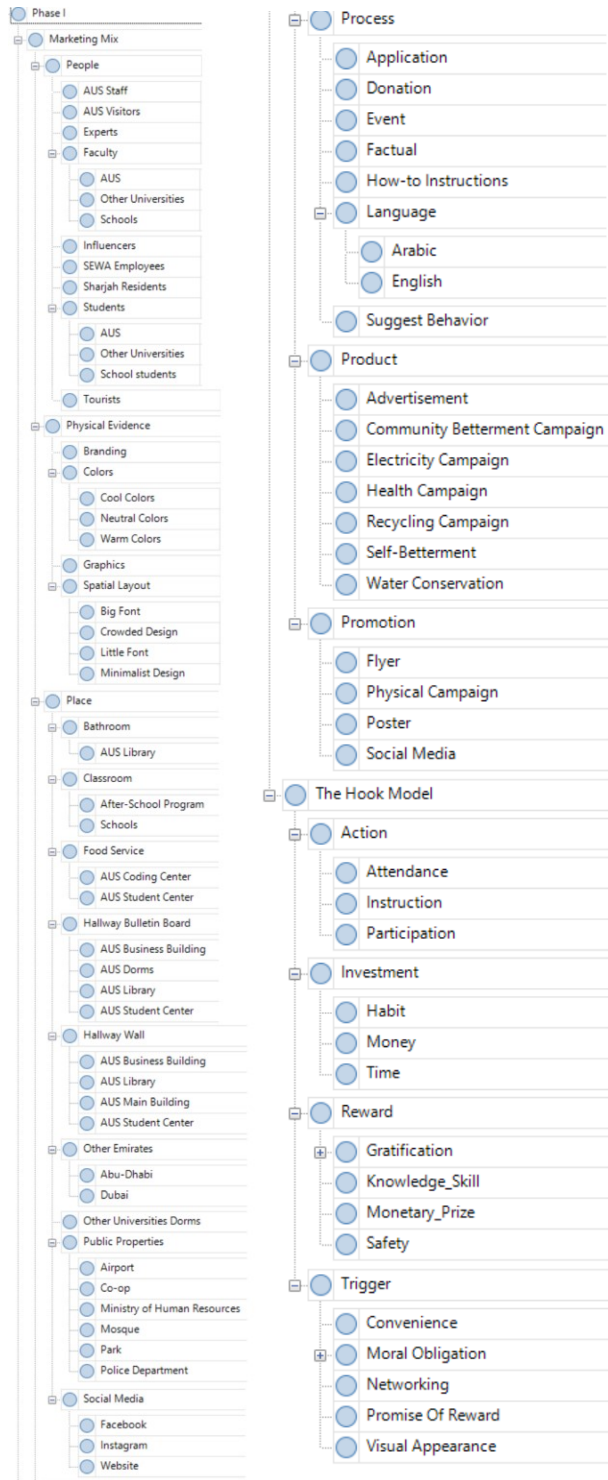
# APPENDIX I: OBSERVATIONAL STUDY CAMPAIGNS







# APPENDIX J: NVIVO NODAL STRUCTURE EXPANDED



# APPENDIX K: DESIGN SPRINT WORKSHOP QUALTRICS REGISTRATION FORM

[Start of survey]

## **Informed Consent**

### **Introduction**

You are being asked to participate in a research study. Before you agree, however, you must be fully informed about the purpose of the study, the procedures to be followed, and any benefits, risks that you may experience as a result of your participation. This form presents information about the study so that you may make a fully informed decision regarding your participation.

### **Purpose of the study:**

The purpose of our research study is to determine an impactful method for designing water conservation campaigns in Sharjah. We will be working closely with the Sharjah Electricity and Water Authority to explore past SEWA campaigns as well as other campaigns. From this exploration, we will determine the elements of design for our three pilot campaigns to present to SEWA representatives and the general public of Sharjah for feedback.

### **Procedures to be followed:**

You will participate in a group to ultimately create water conservation campaigns through a design sprint. This will take approximately two hours. The researchers will facilitate each step of the design sprint.

### **Risks to study participants:**

There are not any foreseeable risks associated with this study. You will be able to withdraw from the design sprint at any point. There are no consequences for early withdrawal.

### **Benefits to research participants and others:**

Your benefit to participating in the study is that you will have a voice in the design of future water conservation campaigns distributed in Sharjah.

**Record keeping and confidentiality:**

Your responses will be audio recorded to be transcribed later. Records of your participation in this study will be held confidential so far as permitted by law. However, the study investigators, the sponsor or its designee and, under certain circumstances, the Worcester Polytechnic Institute Institutional Review Board (WPI IRB) will be able to inspect and have access to confidential data that identify you by name. Any publication or presentation of the data will not identify you. Sensitive information will not be recorded in this study. You may remove responses from the records as you wish.

**For more information about this research or about the rights of research participants, or in the case of research-related injury, contact:**

Investigators: See contact information at the top of the first page

IRB Chair: Professor Kent Rissmiller, Tel. 508- 831-5019, Email: [kjr@wpi.edu](mailto:kjr@wpi.edu)

Human Protection Administrator: Gabriel Johnson, Tel. 508-831-4989,  
Email:[gjohnson@wpi.edu](mailto:gjohnson@wpi.edu)

**Your participation in this research is voluntary.**

Your refusal to participate will not result in any penalty to you or any loss of benefits to which you may otherwise be entitled. You may decide to stop participating in the research at any time without penalty or loss of other benefits. The project investigators retain the right to cancel or postpone the experimental procedures at any time they see fit.

**By agreeing below**, you acknowledge you are above the age of 18 and that you have been informed about and consent to be a participant in the study described above. Make sure that your questions are answered to your satisfaction before agreeing. You are entitled to retain a copy of this consent agreement.

I agree

I do not agree

[Skip To: End of Survey If Informed Consent Introduction You are being asked to participate in a research study. Before you... = I do not agree]

[Page break]

We are students from Worcester Polytechnic Institute in the United States conducting a research study alongside SEWA and AUS students/ faculty. The goal of our project is to design water conservation campaigns in Sharjah to present to SEWA. This event will be a workshop where we will use your help and feedback for designing these campaigns.

**1** Please fill out the following information.

First Name \_\_\_\_\_

Last Name \_\_\_\_\_

Email Address \_\_\_\_\_

Major/ Degree \_\_\_\_\_

**2** Which day would you be interested in attending?

Tuesday 11/12 at 2:45-5:00 PM in Sheraa

Wednesday 11/13 at 2:45-5:00 PM in Sheraa

Photo-Release I hereby grant permission to the researchers of Worcester Polytechnic Institute to use photographs and/or videos of me taken at the Design Sprint workshop in publications, news releases, online, and in other communications related to the mission of Worcester Polytechnic Institute.

I agree

I do not agree

[End of survey]

# APPENDIX L: DESIGN SPRINT WORKSHOP PROTOCOL

## COMPLETE DESIGN SPRINT WORKSHOP PROTOCOL

### **2:30PM Setup (15 minutes)**

- Researchers will distribute supplies to tables for each team.
  - Sticky notes
  - Markers
  - Nametags
- Researchers will set up food table and materials tables.

### **2:45PM Participants' Arrival (15 minutes)**

- Upon arrival, participants' names will be written down on a checklist. This checklist will include names, photo-release consent, and extra empty spaces for people who didn't sign up.
- Participants who didn't sign up will sign the photo-release and informed consent forms.
- All participants will randomly pick up a token with a letter, which will determine what table they will be seated at. Each of the facilitators will be assigned to each one of the tables

### **3:00PM Design Sprint Introductions (7 minutes)**

- The research team will introduce themselves. (SLIDES ONE & TWO)
  - Names
  - Majors / institution
  - Project purpose / collaborators
    - The participants' role in the study.
- The workshop time and outline will be explained. (SLIDE THREE)

### **3:07PM Icebreaker (3 minutes)**

- An icebreaker will be performed. (SLIDE FOUR) Depending on their table letter, they will decide on a group name, using a color and an animal (e.g. Pink Panther). Participants will fill out name tags and introduce themselves to each other with:
  - Names
  - Major
  - Reason for coming
- For 30 seconds each participant will write down as many options for color starting with the letter assigned
- For 30 seconds each participant will write down as many options for animal starting with the letter assigned
- All teams will announce their group names to the other teams.

Stage One: Understand

**3:10PM Goals/Context (5 minutes)**

- Researchers will state the goal of the design sprint. (SLIDES FIVE & SIX)
  - “Our goal is to generate lots of creative campaign ideas on the reduction of water consumption in Sharjah”
- Researchers will give context of the situation.
  - “Currently, Sharjah is experiencing a stress on their naturally-occurring water resources. SEWA is attempting to encourage water conservation through educational campaigns.”
- The participants will be included in the scenario by the researchers setting up a challenge (How Might We...).
  - “How might we create an impactful way to change consumer behavior on water consumption in Sharjah?”
- The outcome / deliverables of the workshop will be made clear.
  - “The outcome of the sprint will be designing a prototype of a water conservation campaign. The campaigns can be in any form you see as fitting.”

- “Potential deliverables include flyers, posters, social media, physical campaigns, events, workshops, and such.”

Stage Two: Define

**3:15PM Answering Prompts (15 minutes)**

- The researchers will sit at their assigned table and present questions for participants to answer. (SLIDES SEVEN & EIGHT & NINE)
  - See “Stage 2: Define Questions” document

Stage Three: Diverge

**3:30PM Rapid Brainstorming (8 minutes)**

- The researchers will ask the participants to brainstorm as many ideas and write them on yellow sticky notes as fast as they can. The intention is to get as many ideas possible After each participant finishes writing an idea, they will stick the sticky note in the center of the table. (SLIDES TEN & ELEVEN & TWELVE)
  - “Silently, for the next five minutes, you will all individually write down as many ideas as you can think of for water conservation campaigns, you have a limited time. You will write one idea per sticky Note and stick it in the middle of the table.”
- Researchers will help suggest certain areas to cover before the participants begin brainstorming.
  - “You should take into consideration the target audience, location, type of campaign / media, method of delivery, and incentive. ”

**3:38PM Categorize (12 minutes)**

- Participants will categorize sticky notes into groups. Each group of similar ideas will have a non-yellow sticky note with a word representing the general theme.

Stage Four: Decide

**3:50PM Discussing Each Group Ideas (10 minutes)**



- Participants will discuss the pros and cons of each idea as a team. (SLIDES THIRTEEN & FOURTEEN & FIFTEEN)
- Participants will be encouraged to consider differing perspectives, such as:
  - Optimist
  - Pessimist
  - Stakeholder
  - Idea generator
  - Technical feasibility
  - User advocate

**4:00PM Vote for the Best Campaign (5 minutes)**

- The researchers will ask the participants to vote and remind them by the end of this activity, they must decide on only one campaign. (Each participant will get one voting dot of the same color.)
  - If the final vote is tied, then more voting dots will be passed around to conclude where there is one winning idea.

Stage Five: Prototype

**4:05PM Creating a Campaign Prototype (25 minutes)**

- The researchers will ask the participants to create a complete prototype the chosen idea from Stage Four. (SLIDES SIXTEEN & SEVENTEEN & EIGHTEEN)
- The researchers will mention to the participants different ways of creating and presenting their campaigns. The supplies for designing the prototype will be on a separate table where all members of all groups are welcome to take from.
  - “You will create a campaign in any type of deliverable you would like to use. The materials are provided to encourage creativity, but you are not required to use them. You may use any of your own materials, such as smartphones, laptops, and such.”

## Stage Six: Validate

### **4:30PM Campaign Prototype Presentations (30 minutes)**

- Participants will hand in their team's campaign and researcher will put them up for display. Each team will present their campaigns, discussing:
  - Reason for media
  - Target audience
  - Location for campaign
  - Message
- After participants analyze the campaigns, they will vote for the one that appeals to them the most. Everyone will be given a final voting dot to vote on the best campaign out of all the prototypes created. (SLIDES NINETEEN & TWENTY) The campaign prototype with the most dots will be awarded as the winner.
- At the end of the event, participation certificates will be distributed. "Thank you." and acknowledgments are said. (SLIDES TWENTY-ONE & TWENTY-TWO)

### **5:00PM Workshop Completed**

- Researchers will clean up the venue and participants will be ushered out.
- Materials will be brought back to Professor Doiron's office in ESB.

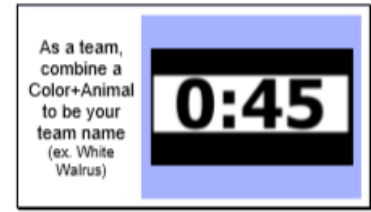
# APPENDIX M: DESIGN SPRINT WORKSHOP PRESENTATION



1



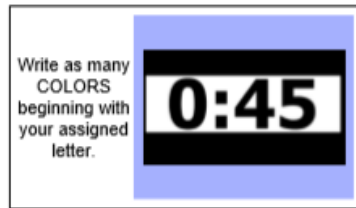
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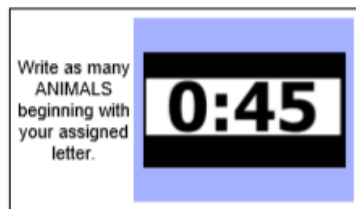
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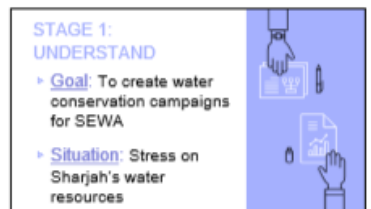
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3




6



9

**STAGE 1: UNDERSTAND**


- **Challenge:** To impact water consumption in Sharjah
- **Deliverables:** One campaign per team



10

Discuss the situation.


**10:00**



13

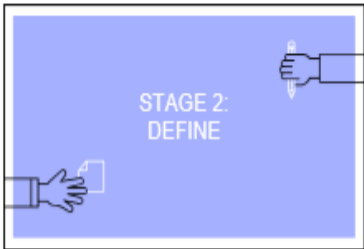
Write as many ideas on sticky notes.

**5:00**



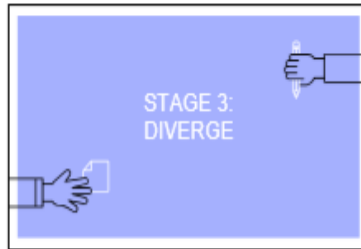
16

**STAGE 2: DEFINE**



11

**STAGE 3: DIVERGE**



14

Group similar sticky notes


**10:00**



17

**STAGE 2: DEFINE**


- Discuss the situation and discover the focus for your group's approach.



12

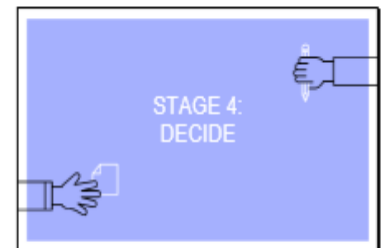
**STAGE 3: DIVERGE**

- Brainstorm ideas on sticky notes.
- Group similar ideas into categories.



15


**STAGE 4: DECIDE**



18

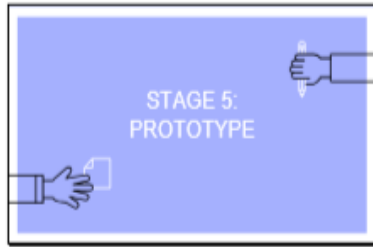
**STAGE 4: DECIDE**

- As a team, discuss pros & cons of ideas.
- Vote for one idea to prototype.



19

**STAGE 5: PROTOTYPE**



22


**STAGE 6: VALIDATE**



25

Discuss the pros & cons of ideas.


**10:00**



20

**STAGE 5: PROTOTYPE**


- As a team, create one campaign to present. This could be anything!



23

**STAGE 6: VALIDATE**


- Each team presents their campaign.



26

Vote on one idea to prototype.


**5:00**



21

Prototype one campaign.

**25:00**



24

**THANK YOU.**

We really appreciate your participation!

27

**ACKNOWLEDGEMENTS**

AUS College of Engineering	AUS Office of Sustainability	Sharjah Electricity and Water Authority (SEWA)
AUS Office of Student Affairs	AUS International Exchange Office	Sharjah Entrepreneurship Center



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## APPENDIX N: DESIGN SPRINT WORKSHOP DEFINE STAGE QUESTIONS

### Discussion Questions

1. What water conservation campaigns have you already seen around Sharjah?
  - a. Were any of these on campus?
  - b. Do you remember the last water campaign you saw? If yes, what was it?
2. Do you think there are enough water campaigns in Sharjah?
3. What's a time where you personally experienced water scarcity?
4. What are the ways you use the most water (e.g. showers)?
  - a. What do you think is the largest source of wasting water?
  - b. How do you think you could tackle this?
5. What ways do you conserve water? Do you have water-efficient devices at home?
6. What do you think are the best ways to present a campaign?
7. What types of things catch your interest in an educational campaign?
  - a. What do you think makes people change their behavior?

## APPENDIX O: STUDY III: AUS COMMUNITY AND SHARJAH RESIDENTS FEEDBACK PROTOCOL

### **Exploratory Interviews Protocol: Social Media Campaign**

*Researchers will explain the study briefly and ask if the participants wish to continue.*

“Hi! My name is \_\_\_\_\_, and I’m a student from WPI in the United States. My research team and I are working with SEWA and the AUS College of Engineering to design water conservation campaigns. Here, we have a campaign based upon the ideas from AUS students and faculty. Would you be interested in giving your feedback on this campaign?”

*If yes, continue script.*

*If no, thank the participant for their time.*

### **Social Media Campaign Script**

“Imagine you’re scrolling through your Instagram feed, and you see this post about water conservation tips.”

- **Content**

- What do you think the message is?
- Is it valuable? (y/n)
- Was this message clear?

- **Design**

- Does this campaign catch your eye? (y/n)
- What about it?
- What do you like about the layout and graphics?
- What do you dislike about the layout and graphics?
- How would you present these tips on social media?

- **Engagement**

- Would you like this post?
- Do you think others will?

- **Additional**

- What interested you the most?



- Do you have any additional comments?

## Exploratory Interviews Protocol: App Campaign

*Researchers will explain the study briefly and ask if the participants wish to continue.*

“Hi! My name is \_\_\_\_\_, and I’m a student from WPI in the United States. My research team and I are working with SEWA and the AUS College of Engineering to design water conservation campaigns. Here, we have a campaign based upon the ideas from AUS students and faculty. Would you be interested in giving your feedback on this campaign?”

*If yes, continue script.*

*If no, thank the participant for their time.*

### App Campaign Script

“Imagine you downloaded this app to track your monthly water consumption.”

- **Content**

- What do you think the message is?
- Is it valuable? (y/n)
- Was this message clear?

- **Design**

- Does this app catch your eye? (y/n)
- What about it?
- What do you like about the layout and graphics?
- What do you dislike about the layout and graphics?
- Does this app seem user-friendly (is it easy to navigate)?

- **Engagement**

- Would you keep using this app to track water consumption?
- Do you think others will?

- **Additional**

- What interested you the most?
- Do you have any additional comments?

## **Exploratory Interviews Protocol: Event Campaign**

*Researchers will explain the study briefly and ask if the participants wish to continue.*

“Hi! My name is \_\_\_\_\_, and I’m a student from WPI in the United States. My research team and I are working with SEWA and the AUS College of Engineering to design water conservation campaigns. Here, we have a campaign based upon the ideas from AUS students and faculty. Would you be interested in giving your feedback on this campaign?”

*If yes, continue script.*

*If no, thank the participant for their time.*

### **Event Campaign Script**

“Imagine you’re walking around, and you see this flyer advertising an event on World Water Day.”

- **Content**

- What do you think the purpose of this event is?
- Is it valuable? (y/n)
- Was this message clear?

- **Design**

- Does this event catch your eye? (y/n)
- What about it?
- Do you like the set-up of the event?
- Do you think this is a good selection of activities for people of all ages?

- **Engagement**

- Would you attend this event?
- Do you think others will?

- **Additional**

- What interested you the most?
- Do you have any additional comments?

## APPENDIX P: FEEDBACK QUALTRICS SURVEY

[Start of survey]

Did participant agree to participate and consent?

- Yes
- No

Skip To: End of Survey If Did participant agree to participate and consent? = No

What is the campaign?

- Social Media
- App
- Event

Display This Question:

If What is the campaign? = Social Media

### **Social Media: Content**

- What do you think the message is? \_\_\_\_\_
- Was this message clear? \_\_\_\_\_

Display This Question:

If What is the campaign? = Social Media

Is the post valuable?

- Yes
- No

Display This Question:

If What is the campaign? = Social Media

**Social Media: Design** Does this campaign catch your eye?

- Yes
- No

Display This Question:

If What is the campaign? = Social Media

- What about it? \_\_\_\_\_
- What do you like about the layout and graphics?  
\_\_\_\_\_
- What do you dislike about the layout and graphics?  
\_\_\_\_\_
- How would you present these tips on social media?  
\_\_\_\_\_

Display This Question:

If What is the campaign? = Social Media

**Social Media: Engagement** Would you like this post?

- Yes
- No

Display This Question:

If What is the campaign? = Social Media

Do you think others will?

- Yes
- No

Display This Question:

If What is the campaign? = Social Media

**Social Media: Additional**

- What interested you the most?  
\_\_\_\_\_
- Do you have any additional comments?  
\_\_\_\_\_

Display This Question:

If What is the campaign? = App

**App: Content**

o What do you think the message is?

---

Display This Question:

If What is the campaign? = App

Is it valuable?

o Yes

o No

Display This Question:

If What is the campaign? = App

Was this message clear?

o Yes

o No

Display This Question:

If What is the campaign? = App

Q34 Does this campaign catch your eye?

o Yes

o No

Display This Question:

If What is the campaign? = App

**App: Design**

o What about it? \_\_\_\_\_

o What do you like about the layout and graphics?

---

- What do you dislike about the layout and graphics?
- 

Display This Question:

If What is the campaign? = App

Does this app seem user-friendly (easy to navigate it)?

- Yes
- No

Display This Question:

If What is the campaign? = App

**App: Engagement** Would you keep using this app to track water consumption?

- Yes
- No

Display This Question:

If What is the campaign? = App

Do you think others will?

- Yes
- No

Display This Question:

If What is the campaign? = App

**App: Additional**

- What interested you the most?
- 

- Do you have any additional comments?
- 

Display This Question:

If What is the campaign? = Event

**Event: Content**

- What do you think the purpose of this event is?
- 

Display This Question:

If What is the campaign? = Event

Is the event valuable?

- Yes
- No

Display This Question:

If What is the campaign? = Event

Was this message clear?

- Yes
- No

Display This Question:

If What is the campaign? = Event

**Event: Design** Does this event catch your eye?

- Yes
- No

Display This Question:

If What is the campaign? = Event

- What about it? \_\_\_\_\_

Display This Question:

If What is the campaign? = Event

Do you like the set-up of the event?

- Yes



- No

Display This Question:

If What is the campaign? = Event

Do you think this is a good selection of activities for people of all ages?

- Yes
- No

Display This Question:

If What is the campaign? = Event

**Event: Engagement** Would you attend this event?

- Yes
- No

Display This Question:

If What is the campaign? = Event

Do you think others will?

- Yes
- No

Display This Question:

If What is the campaign? = Event

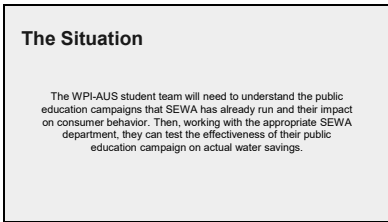
**Event: Additional**

- What interested you the most?
- 

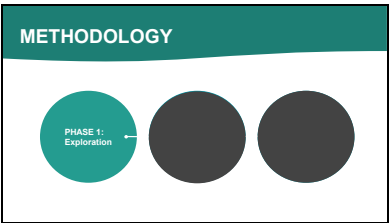
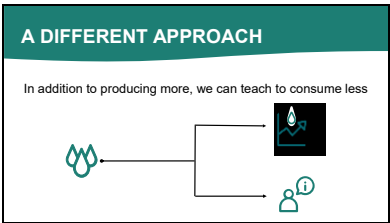
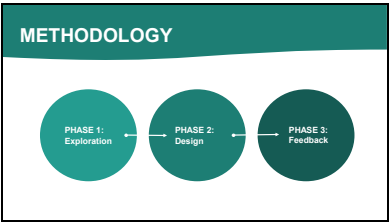
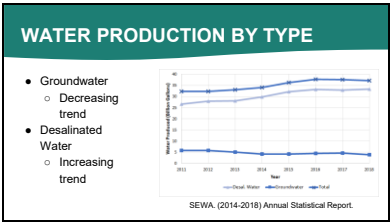
- Do you have any additional comments?
- 

[End of survey]

# APPENDIX Q: FINAL PRESENTATION SLIDES



OUR MISSION	01			
BACKGROUND	02			
METHODS	03	AGENDA		
			04	FINDINGS
			05	CONCLUSION
			06	RECOMMENDATIONS



# 03 METHODS

## PHASE 1: INTRODUCTION

**GOAL:** To explore educational campaigns implemented in Sharjah

Observational Study

Interviews with SEWA & AUS

## PHASE 1: OBSERVATIONAL STUDY

- 70 campaigns
  - AUS campus
  - SEWA 2018 Achievements Report

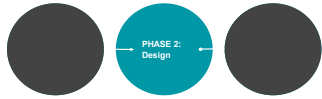


AUS Office of Sustainability  
Social Media Post



SEWA "Be Aware" and "Peak Hour" Campaigns

## METHODOLOGY



## PHASE 1: INTERVIEWS

- Discussed campaign design process and outcomes
  - SEWA Conservation Department
  - AUS Office of Sustainability
- Recorded and transcribed



Interview with SEWA Conservation Dept.

## PHASE 2: INTRODUCTION

**GOAL:** To generate creative ideas for water conservation campaigns to create three campaign prototypes

- 2-hour Design Sprint workshop consisting of 6 stages:

1. Understand

2. Define

3. Diverge

4. Decide

5. Prototype

6. Validate

### PHASE 1: DATA ANALYSIS

- Categorize campaign elements into Marketing Frameworks using a software called NVivo

**Marketing Mix**


- People
- Physical Evidence
- Place
- Process
- Product
- Promotion

**The Hook Model**

- Action
- Investment
- Reward
- Trigger

### PHASE 2: RECRUITMENT

- Participants
  - AUS community
  - Locals
- Flyer and registration form
- Certificate
- Pilot test




### 1. UNDERSTAND

- **Goal:** Communicate the Goals, Situation, Challenge, and Deliverables to the participants



### 4. DECIDE

- **Goal:** Have one campaign idea for the next stage
- **Activities:** Discussing the pros/cons of the each campaign and choosing one campaign to proceed with




### 2. DEFINE

- **Goal:** Narrow down the problem
- **Activity:** Discussing given topics



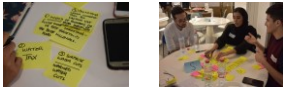
### 5. PROTOTYPE

- **Goal:** Transform the chosen idea into a physical prototype
- **Activity:** Creating one campaign using the provided materials




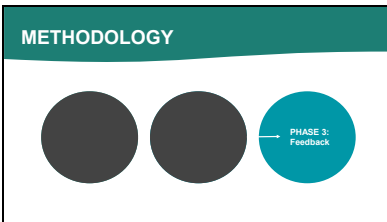
### 3. DIVERGE

- **Goal:** Come up with ideas for Water Conservation Campaigns
- **Activities:** Rapidly brainstorming and categorizing ideas



### 6. VALIDATE

- **Goal:** Present produced water conservation campaigns to the other teams

### PHASE 3: SURVEYS

**Engagement** Would you like this post?

**Content** Was this message clear?

**Design** What do you like about the layout and graphics?

### PHASE 3: FEEDBACK

**GOAL:** Present 3 campaigns and ask for feedback regarding content, design, and engagement

Interview with  
**SEWA**

Surveys with  
**Sharjah Residents**

# 04

## PHASE 1 FINDINGS

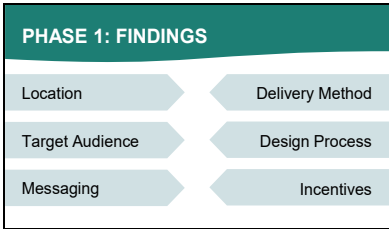
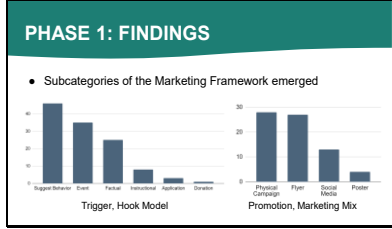


### PHASE 3: INTERVIEWS

- Presented 3 campaigns to representatives of SEWA Conservation Department
  - Content
  - Delivery
  - Design
  - Ranking
- Recorded and transcribed



Interview with SEWA Conservation Dept.



### PHASE 2: CAMPAIGN PROTOTYPES

Campaign Type	# of Campaigns
Flyer	2
Social Media	1
Phone App	2
Device	1
Game	1
Event	2

# 04

## PHASE 2 FINDINGS

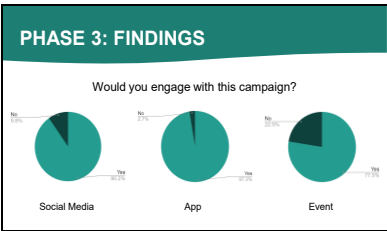
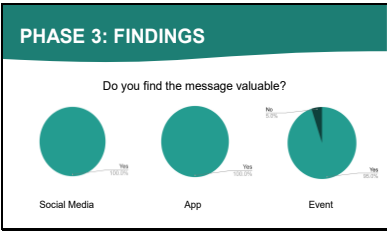
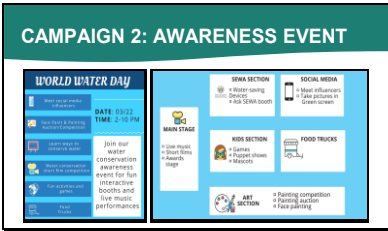
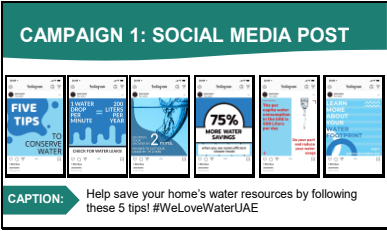
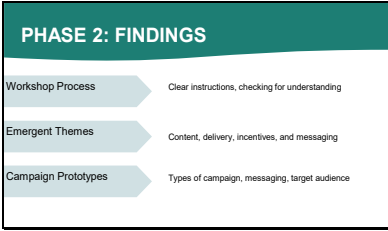
### PHASE 2: FINDINGS

Theme	Campaign Prototype			
	1	2	3	4
Graphics	✓	✓	✓	✓
Influencers			✓	
App			✓	
Event	✓	✓	✓	✓
Statistics	✓	✓		
Informational	✓			

Matrix Evaluation of 4 campaign prototypes

Theme	Campaign		
	Informational (1,2,5,6,9)	App (4,5)	Event (1,3,8)
Content	✓	✓	✓
Target: Adults	✓	✓	✓
Target: Students	✓		✓
Target: Children			✓

Matrix Evaluation of 3 campaign delivery methods





# 04

## PHASE 3 FINDINGS

PHASE 3: FINDINGS	
Social Media	Effective method to deliver informational campaigns through graphics
App	Minimalistic designs preferred over designs that used multiple colors and themes
Event	Incentives are a beneficial way to engage a target audience

# 05

## CONCLUSION

PHASE 1: EXPLORATION	PHASE 2: DESIGN	PHASE 3: FEEDBACK
<ol style="list-style-type: none"> <li>1. Use a marketing framework</li> <li>2. Continue to use rewards</li> <li>3. Publish campaigns in high traffic areas</li> <li>4. Continue to use campaign formats that best suit the target audience.</li> </ol>	<ol style="list-style-type: none"> <li>1. Run and participate in Design Sprint workshops</li> <li>2. Use different challenges and topics for workshops</li> <li>3. Complete pilot test</li> </ol>	<ol style="list-style-type: none"> <li>1. Continue requesting feedback</li> <li>2. Continue using social media.</li> <li>3. Redesign the SEWA app with a user-friendly design.</li> <li>4. Continue to promote conservation through awareness events.</li> </ol>

CONCLUSION	
PHASE 1:	Determined the different elements of campaigns
PHASE 2:	Created 3 water conservation campaigns based on ideas from the AUS community
PHASE 3:	Received feedback from the Sharjah community

ACKNOWLEDGEMENTS
<p>From Worcester Polytechnic Institute:</p> <ul style="list-style-type: none"> <li>• Our Project Advisors, Dr. Joseph Doiron and Dr. John Bergendahl</li> </ul> <p>From Sharjah Electricity and Water Authority:</p> <ul style="list-style-type: none"> <li>• Dr. Idris AliaEldin</li> <li>• Ms. Mayyada Al Bardan</li> <li>• Mr. Waleed El Damaty</li> <li>• Conservation Department</li> </ul>

# 06 RECOMMENDATIONS

- ## ACKNOWLEDGEMENTS
- From American University of Sharjah:
- Students and Faculty
  - International Exchange Office
  - Office of Sustainability
  - Office of Student Affairs
  - College of Engineering
    - Dean Naif Darwish
    - Associate Dean Assim Saghyroon
    - Dr. Maruf Mortula
- Student Partners:** Ibrahim Abutala and Mohammad Abuhalmeh

# QUESTIONS?