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# Water Sustainability Leadership Fostering Stakeholder Engagement

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This is to certify that the doctoral dissertation by

Rosa Bustillos Wong

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Walden University
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Abstract

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Dissertation Submitted in Partial Fulfillment

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## Abstract

Water conservation management and water use behaviors of U.S. citizens are critical to secure water for future generations. An American citizen consumes approximately 88 gallons of water per day. On a local scale, a Florida citizen uses 134 gallons per day and wastes 71% of the total municipal drinking water provision in landscape activities. The problem addressed in this study was that administrators working on water conservation programs undergo difficulty fostering stakeholder engagement to advocate a water use behavioral change. The purpose of this qualitative exploratory multiple case study was to understand how citizen water use behaviors influence stakeholder water conservation engagement in Florida municipalities. The conceptual framework consisted of Freeman's stakeholder theory. A series of semistructured questionnaires with 15 water managers in 5 companies in the water industry was conducted to generate thematic results. The data analysis involved NVivo coding analysis for thematic exploration using recurring codes to a pattern or node. The findings emerged into 6 themes: the need for water use behavior change among stakeholders, using water technology to diminish the health risks for COVID-19, the need of trust and cooperation in the public system, water infrastructure to reduce water consumption, engagement in water savings programs, and water use behavior change linked to smart water facilities. The study results can contribute to social change by providing new insights for leaders, managers, and policymakers to define policies and strategies to increase stakeholder engagement in water savings programs that focus on sustainable citizen water use behaviors and citizen well-being.

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# Dedication

I especially dedicate this dissertation to my late parents, Jose Bustillos Pazmiño and Rosa Wong Mayorga, who dreamed of seeing me succeed and reach great heights. They taught me the importance of education, hard work and determination. My mother's words guided my doctoral journey: If you want something in this life, hold yourself to the highest standard, wait for no one, and go get it. I also dedicate this study to my sister, Gisella. She never doubted my abilities to accomplish my doctoral degree. I am truly grateful for her support and encouragement. To my siblings, nieces, and nephews, thank you for being my cheerleaders in my academic career.

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# Chapter 1: Introduction to the Study

Water sustainable initiatives are water savings programs that strive to motivate citizens to adopt sustainable water consumption practices focused on water conservation. Citizen water use behaviors impact the capacity of municipal water plants in the United States and, as a result, urban well-being (Chaudhary et al., 2017). Prioritizing environmental policies and strategies across U.S. municipalities has the power to influence citizens' water waste behaviors. Variations in the adoption of water savings programs will help or hinder a change in sustainable citizen water use behaviors (Kwon & Bailey, 2019). The purpose of this qualitative exploratory multiple case study was to gain common understandings from water savings program administrators on how citizen water use behaviors will influence stakeholder water conservation engagement in Florida municipalities. The study findings may provide water savings project administrators and policymakers new insights on how stakeholder water use behaviors impact their engagement in water savings programs. By understanding the role of citizen perceptions of water conservation and how to implement such information on water savings initiatives and urban system projects, change can be fostered in the participation and well-being of all stakeholders in society.

In Chapter 1, I describe the background of the study and its primary purpose, establish the problem statement, and state the research question. I also discuss the conceptual framework, the nature of the study, assumptions, key definitions, scope, delimitations, and limitations to present the context of the research design. Lastly, I cover

the study significance, significance for practice, significance for theory, and significance for social change.

## Background of the Study

Organizational leaders of U.S. municipal water plants are challenged with increasing water demands mainly caused by water use behaviors (Rumble, Lamm, Martin, & Warner, 2017). Current academic literature on the role of citizen water use behaviors in water conservation has been published (Ma, Xue, González-Mejía, Garland, & Cashdollar, 2015). Researchers have described how the lack of engagement from stakeholders focused on water savings initiatives and urban system projects are impacted by the irrigation landscape activities of the stakeholders (Chaudhary et al., 2017). Past studies have also provided insights on the implications of citizen water use behaviors toward water conservation (Kohon, 2018). In the present study, the level of engagement in water savings initiatives by individuals, communities, and organizations helped measure water conservation engagement through three dimensions: (a) citizen water use behaviors, (b) organization water use behaviors, and (c) the behavior of community as a perceived group of individuals.

The contents of the stakeholder theory of stakeholders' trust and cooperation and stakeholder management contribute to the intention of behavioral change (Jones, Harrison, & Felps, 2018). Applying this theory to the present study's topic, if a reduction in careless citizen water use fails to have a progressive result on citizen mindset, sustainable water initiatives cannot succeed. Stakeholder engagement in water savings initiatives will ultimately result in reducing water demand. Sustainable development

requires the crucial factors of trusted governance to ensure social well-being and community wealth (Kwon & Bailey, 2019). Trusted governance that is oriented toward water conservation supports adopting more water conservation programs.

Another aspect of how citizen water use behaviors can influence stakeholder engagement is stakeholder well-being. Regulations on residential water usage and home landscape activities are not strengthening the adoption of water conservation behaviors (Ferguson, Chan, Santelmann, & Tilt, 2017; Rumble et al., 2017). On the contrary, community leaders use communication strategies focused on changing behaviors oriented to social well-being. Framed messages about economic and environmental contexts are relevant to promote water conservation. Therefore, the environmental promotion of water savings initiatives needs to target individuals and organizations to foster adoption of conservation behaviors (Kwon & Bailey, 2019; Yigitcanlar et al., 2018).

Water quality as environmental flow promoted by local governments sustains well-being and human livelihoods. Stakeholder participation helps water administrators tighten boundaries and set water governance (Ambrose, Goodchild, & O'Flaherty, 2017). Community behavior is perceived as a group of individual actions that help to build economic, environmental, and psychosocial performance of water savings initiatives.

The present study was needed to gain a common understanding of the role of citizen water use behaviors to add new insights into stakeholder water conservation engagement and improve the operational efficiency of municipal water plants through sustainable water consumption practices. Policymakers may find this study's findings useful to conceptualize water conservation policies more realistically. Further, a better

conceptualization of citizen water use behaviors toward water conservation may provide guidance for water administrators to enhance their understanding of how local water sustainability decisions influence stakeholders' engagement change.

## Problem Statement

Organizational leaders of water plants in U.S. municipalities are challenged with capacity demands caused primarily by water use behaviors (Rumble et al., 2017). Research conducted in 2017 among 1,063 companies confirmed positive intentions for water conservation in landscape irrigation in 39% of the participants (Chaudhary et al., 2017). The U.S. Environmental Protection Agency (EPA; 2019) reported that an American citizen consumes approximately 88 gallons of water per day, and a Florida citizen uses 134 gallons per day and wastes 71% of the total municipal provision of drinking water for landscape activities (Chaudhary et al., 2017; U.S. Geological Survey, 2019). Other researchers like Chaudhary et al. (2017), Curry et al. (2018), and Warner, Diaz, and Chaudhary (2018) researched water use practices that lead to water use behaviors but did not explore how stakeholders' perceptions of water conservation and how its sustainable actions positively influence their engagement toward community change in water use behaviors.

The general problem is that administrators of water conservation programs have difficulty fostering stakeholder engagement to advocate water use behavioral changes from stakeholders (Akhmouch & Clavreul, 2016). Based on a study of South Florida municipalities with higher water demand and population, local leaders need to understand residents' positive and negative water use behaviors to foster stakeholder engagement

(Warner, Lamm, and Chaudhary, 2018). The specific problem for Florida municipalities is that local administrators of water savings projects do not have a real understanding of the role of citizen water use behaviors in water conservation or of how to use such information to foster engagement in water savings initiatives and urban system projects (Florida Demographics, 2019; Migliaccio, 2017; Treuer et al., 2016).

## Purpose of the Study

The purpose of this qualitative exploratory multiple case study was to gain a common understanding of how citizen water use behaviors influence stakeholder water conservation engagement in Florida municipalities. To establish generalizations and achieve a multiple case study perspective, I purposely sampled 15 participants from five private and nonprofit U.S. organizations with offices in different Florida municipalities. Three water administrators from each company participated in the study, constructing five separate case studies. The three administrators were selected from different hierarchical levels in each firm. I emailed an invitation to the participants, including a link to an online questionnaire with six semistructured, open-ended questions. Analyzing the administrators' experiences provided common themes that I explored through holistic and pattern codes. The common themes included citizen water use behaviors and stakeholder participation. These themes contributed new insights on the role of citizen water use behaviors toward engagement in water savings initiatives and urban system projects. Other data sources were used in this research; I used corporate statistics from public records of different water organizations in the Florida municipalities.

## Research Question

The research question that guided this study was: What are the common understandings of how the citizen water use behaviors may influence stakeholder water conservation engagement in Florida municipalities?

## Conceptual Framework

This study's conceptual framework was grounded in the concept of stakeholder theory conceived by Freeman et al. (2017). Scholars suggest that stakeholder theory, with the cores of trust and cooperation, and stakeholder management link citizen water use behaviors with stakeholder water conservation engagement. Stakeholder theory applied by organizational leaders in their managerial activities embraces the core of trust and cooperation in stakeholder relationships. In this way, trusted water conservation management would need to occur to increase citizens' participation in water savings initiatives (Chaudhary et al., 2017). This conceptual framework allowed me to gain a common understanding of the stakeholders' cooperation by exploring the communication strategies administrators use. Stakeholder theory also supports a multistakeholder water conservation engagement between citizens with different perceptions of water use behaviors. Akhmouch and Clavreul (2016) applied the stakeholder theory to investigate stakeholder engagement using social water governance as a mechanism. For example, findings from the present study may help water program administrators formulate new policies to foster engagement in water consumption practices. The concept of stakeholder theory linked to theory-based stakeholder management and engagement was appropriate

for this qualitative study on citizen water use behaviors and their influence on water engagement in conservation initiatives in different Florida municipalities.

## Nature of the Study

I chose qualitative methodology to conduct this study. Researchers in qualitative studies use interviews, dialogue, and conversations to explore how or why a specific situation is occurring or has occurred (Park & Park, 2016). A qualitative method was appropriate for studying citizen water use behaviors as a situation of interest through semistructured interviews using open-ended questions. Primary data from the online questionnaires and secondary data collected from public statistics reports were analyzed by applying holistic and data pattern analysis to preset codes. The preset codes aligned to the responses of the questions and were analyzed using NVivo data analysis software. This approach allowed me to identify meanings and insights as emergent themes or common understandings. The coded themes reflected the role of citizen water use behaviors oriented to foster stakeholder engagement toward water conservation.

In contrast, quantitative researchers use numerical data collected using structured research mechanisms such as surveys, larger sample sizes, close-ended questions, and one or more hypotheses to obtain results (Rutberg & Bouikidis, 2018). I did not use close-ended questions and did not examine hypotheses or use numerical data. Therefore, a quantitative method did not apply to the current study. Further, researchers may combine quantitative and qualitative methodologies (Grootel et al., 2017). I did not assess different variables and their relationships using hypotheses or gathering numerical data. Therefore, a mixed methods approach was not appropriate for this study.

Grounded theory, narrative research, and case study are the three qualitative research designs that I considered for this study. After research and analysis, I selected a case study design. Some researchers use grounded theory to develop theory using the results of an extensive systematic inductive research (Barello et al., 2015). Grounded theory was not appropriate for this study because my purpose was not to create a new theory about citizen water use behaviors to foster sustainable water conservation engagement. Qualitative researchers use narrative research to investigate stories about a social situation as a group of approaches that emerge from the written or spoken storyline of individuals' experiences validated by the audience (Pandey & Gupta, 2019). The approaches to stakeholder perceptions regarding citizen water-waste behaviors were not the participants' stories, so this design was not suitable for this study.

Qualitative researchers conduct case studies to gain a common understanding between the participants through an analytic contextual analysis of a situation or occurrence (Mallette & Saldaña, 2019). Qualitative researchers conduct a single case study to investigate a single subject or situation to develop deeper understanding but not to redefine a theory (Yin, 2018). Conversely, a multiple case study entailing analysis of similarities and differences between cases allows in-depth common understandings and provides findings to enhance theory. Multiple case study was appropriate for the present study because I explored a unique situation by using exploring similarities and differences between the cases. I also established analytic generalizations to determine the common understandings of the role of citizens and their water use behaviors to influence stakeholder engagement. Keeping the focus on how organizational leaders of water plants

in Florida are missing contents of stakeholder theory on sustainable water consumption (see Jones et al., 2018), I provide a context of the causal relationships. The epistemological expectations of citizen water use behaviors and how they influence organizational leaders to promote stakeholder water conservation engagement was a goal in this study.

## Definitions

*Behavioral change:* A term that refers to any modification of behavior focused on the individual and community (Koop, Van Dorssen, & Brouwer, 2019).

*Behavioral intentions*: Predictive individual behavior is implicated with a higher likelihood that the behavior will be enacted (Chaudhary et al., 2017).

*Proenvironmental behavior*: A conscious human behavior focused on minimizing the harmful impact of an individual's actions on the environment (Koop et al., 2019).

*Stakeholder engagement*: An organizational process used to engage individuals or communities to achieve agreed outcomes (Akhmouch & Clavreul, 2016; Rustinsyah & Prasetyo, 2019).

*Stakeholder theory*: A conceptual framework of organizational management and business ethics that aims to address ethical values and morals in managing business relationships among employees, suppliers, customers, investors, and communities (Freeman, Kujala, Sachs, & Stutz, 2017).

*Sustainable urban development*: A process by which sustainability can be attained, underlying improvement and positive change by incorporating environmental premises and social dimensions (Yigitcanlar et al., 2018).

*Water conservation*: Activities oriented to reduce water demand, improve water usage efficiency, and reduce waste and losses (Koop et al., 2019).

*Water demand*: Water demand refers to the amount of water used by water consumers. It is a result of measuring the total amount of water used by the consumers in a water system (Borisova et al., 2019).

*Water scarcity*: A situation in which the amount of existing water does not meet all individuals' demand for water (Warner et al., 2018).

## Assumptions

Five assumptions were formulated for this study to ensure an argument of value and relevance. First, I assumed that citizen water use behaviors toward water conservation influence stakeholder engagement. This assumption was crucial to the study because the research question reflected this premise. The second assumption involved selecting a qualitative exploratory design as an appropriate tool for comparing the differences between themes related to water conservation caused by citizen water use and their water use behaviors as unsustainable water consumption practices.

The third assumption was that a multiple case study approach was the most appropriate design for an in-depth and detailed analysis of citizen water use behaviors and stakeholder engagement. The fourth assumption related to the study participants; I assumed that they had the necessary knowledge of managing water conservation programs. Thus, I assumed that the participants answered the online questionnaire with reliable and considered answers. The fifth assumption was that the participants were the

same individuals who answered the research questions, providing dependability to the present study.

## Scope and Delimitations

When organizational leaders fail to implement strategies and policies to diminish the impact of careless citizen water use behaviors, they place stakeholder water conservation engagement at risk. Citizen water use behaviors were the scope of this study due to the potential influence on stakeholder engagement as a condition that impedes water conservation (Warner et al., 2018). This study delimitation did not affect the study findings because the sampling approach was appropriate. Different situations among the participating organizations would have overlapped due to the various analytical data, as citizen water use behaviors were not limited to water conservation.

In this study, the administrators' responsibilities were used to determine which ones to include in the sample. The job position helped to differentiate sustainable administrators in their organization's facilities. Thus, the target population for this study was administrators involved in water savings programs in private and nonprofit organizations that administer sustainable water consumption programs. Administrators working in other areas, regardless of their job position or rank, were excluded from this study. Therefore, administrators handling water projects or programs were selected. The administrators were either managers, supervisors, or lead workers of a U.S.-based organization with offices in Florida and handling sustainable water programs. The participant companies were local and national providers of water engineering services,

water equipment, water operators, water laboratories, and water products to the water industry in Florida.

Further, a researcher using a qualitative exploratory study should investigate a situation to get meanings and insights about the potential causes for what it occurs (Yin, 2018). An invitation email, including an online questionnaire with open-ended questions, was designed to obtain opinions and beliefs from the participants about citizen water use behaviors toward water conservation, applying a free-response approach. The question design helped to diminish possible biases I might have had, such as inappropriately outlining the construal analysis of the participants' responses. Using exploratory questions helped to obtain reliable answers from the study participants and underpinned the possibility of transferability when I applied thematic analysis (see Mallette & Saldaña, 2019) to their responses. As the interpreter of the data, I considered the boundaries in this study. The outlined answers to the research questions delimited my analysis of the scope and discussion of some standpoints in the study.

## Limitations

The limitations or boundaries of a study are a procedural weakness (Englander, 2019). A limitation in the present study was the different sizes of the organizations, which could have affected the administrators' views about the same situation. However, public statistics reports associated with small and big companies used as secondary data supported the thematic analysis process within all participants' answers to facilitate the transferability of new knowledge. Different developmental levels of water savings

projects in the Florida municipalities limited the administrators' understandings of the situation of citizen water-water behaviors.

The aspects of dependability in this study was limited to the feasibility of collecting reliable data. There are regulatory barriers for obtaining water statistics and official opinions from Florida administrators about the results of the water conservation programs in Florida (Chaudhary et al., 2017). Because data about water program issues were not available, water-focused public data and water consumption statistics were used for data triangulation. Another limitation was the participants' authenticity and willingness to share explicit details of their subjective views in their answers. Distorted data can imply underlying barriers based on the low trust in public information and the honesty of public and private administrators' opinions (Rumble et al., 2017). Participants in the present study were assured of their anonymity to support objectivity in their responses to the questions asked during data collection.

Adherence to ethical standards include defining the researcher's role in a study. At the time of this study, I had a working relationship with an organization in the water industry, a supplier of drinking water and a developer of smart water conservation programs in a Florida county. Collecting data from 15 participants from five public and private U.S.-based organizations operating projects in different Florida counties allowed me to avoid potential bias in data collection and analysis. Using emails with links to an online questionnaire eliminated logistics costs and possible bias due to the absence of the researcher's physical presence. However, my not being physically present to administer the questionnaires delayed responses from the study participants. Participants responded

at their own pace and without a specific timeframe. The average time for collecting responses was 8 days.

## Significance of the Study

The study results provided new insights into citizen water waste behaviors as an influence on water conservation programs and enhanced the core of water sustainability literature and sustainability outreach programs in Florida communities. Water conservation is a major problem in U.S. municipalities, reflected in drought levels in water plants and careless water usage (Kwon & Bailey, 2019). Findings from the present study may provide administrators with insights on how to advance discussion with water leaders on influencing stakeholder participation for smart social community changes. Water conservation requires synchronous indicators comprising measurement methods to manage significant sustainable outcomes (Bitterman, Tate, Van Meter, & Basu, 2016).

### Significance to Practice

The study results provide new information to enhance the literature about water conservation management as a significant component of sustainable living. Exploring the role of citizens' perceptions of water sustainability initiatives through the views of water project administrators fosters utilitarian values in society (Han, Lee, Trang, & Kim, 2018). Understanding the role of citizens' water savings behaviors regarding conservation facilitated an understanding of what has happened in the Florida community. New insights from this study may provide policymakers with new considerations about sustainable water consumption that incorporate citizen water use behaviors as requisite in water conservation policy.

### Significance to Theory

In the study's findings, I present an explanation of the lack of stakeholder engagement in water savings initiatives. These findings may provide insights for project administrators to consider when developing and supporting new policies and programs for ensuring water for future generations in Florida. Environmental responsiveness in stakeholders has fostered constructive collective actions among public and private administrators and citizens regarding water consumption and water waste (Taylor & Lamm, 2017). The present study's findings built on an advancement in the practice of water management related to the role of citizen water use behaviors toward water conservation.

### Significance to Social Change

The potential implications toward a positive social change of this study are a community water use behavior change. Social change toward water conservation starts when multiple sources of knowledge converge in an egalitarian atmosphere with proenvironmental intentions and actions (Kwon & Bailey, 2019). The present study's findings may benefit nonprofit and private organizational managers and leaders as well as the citizens of Florida, providing literature to define local-scale actions to increase water conservation awareness and participation in water savings programs and urban development projects.

## Summary and Transition

In Chapter 1, I described the critical components of the study, including the problem statement, purpose statement, research question and conceptual framework as

well as the situation of analysis as indicated in the specific problem statement. The purpose of this qualitative exploratory multiple case study was to understand how citizen water use behaviors may influence stakeholder water conservation engagement in Florida municipalities. Citizen water use behaviors toward water conservation apply to all individuals in society. To enhance water management theory, scholars have studied water use practices but have not explored stakeholder engagement using the perspectives of water administrators who monitor water conservation projects and who develop and administer water savings programs.

Chapter 2 is a review of literature specific to this study, particularly on how the conceptual framework grounded in stakeholder theory provided the context for analyzing the data from the questionnaires answered by administrators of water savings projects. In Chapter 2, I review and synthesize findings in the existing literature about how citizen water use behavior impacts water conservation to foster stakeholder engagement in society. I also identify the gap in the literature that supported the need to conduct the present study and discuss current literature on citizen water use behaviors.

# Chapter 2: Literature Review

Citizen water use behaviors toward water conservation were explored in this literature review by scrutinizing related studies. Organizational managers and leaders in the role of managing water savings programs have sought knowledge to help them address the lack of engagement in the implemented initiatives. However, some administrators of U.S. water plants do not have the insight, leadership expertise, or organizational awareness to help water conservation by developing and implementing policies, strategies, and procedures that diminish citizens' wasteful water use behaviors (Akhmouch & Clavreul, 2016). Water administrators should intervene with citizens and organizations at the time of a perceived increase in water demand, before water plant capacity decreases and results in a severe drought condition (Kwon & Bailey, 2019).

Chapter 2 consists of a review of the literature search strategy and a description of this study's conceptual framework. The conceptual frameworks section includes the rationale for this framework and the logic in the analysis of this study. A systematic review of the existing literature bestowed insights, context, and knowledge related to citizen water use behaviors toward water conservation and stakeholder engagement.

## Literature Search Strategy

The purpose of this qualitative exploratory case study was to gain an understanding of how citizen water use behaviors influence stakeholder water conservation engagement in Florida municipalities. To address this purpose, I reviewed current studies by scholars, researchers, and practitioners. I also reviewed recently published books from higher education facilities that were relevant to citizen water use

behaviors and stakeholder engagement. This understanding of critical situations created the foundation of knowledge for conducting a study on citizen water use behaviors, water conservation, and stakeholder engagement. The results from this exploratory case study may contribute to the existing literature on water use behavior and water conservation and bridge the knowledge gap on how citizen water use behavior influences stakeholder water conservation engagement.

The reviewed literature in this chapter addressed the research problem—citizen water use behavior to foster stakeholder water conservation engagement. The concept map (see Figure 1) shows my literature exploration criteria. These concepts include the following: *water use behaviors*, *water conservation*, *citizen participation*, and *stakeholder theory.* The key terms included in my searches were *sustainable water management*, *water governance*, *stakeholder engagement*, *stakeholder behavior*, *proenvironmental behaviors*, *water use*, *sustainable behavior*, *good citizen*, *water sustainability*, *water savings initiatives*, *rainwater harvesting*, and *water efficiency and water scarcity.* To justify the research methodology selected for this study, I reviewed peer-reviewed articles, academic journals, and case studies in which qualitative or quantitative methods were used to explore the experience of citizen water use behavior and stakeholder water conservation engagement. The key terminology for finding these studies were *qualitative research*, *epistemological approach*, *perceptions*, *experience*, *case study*, and *exploratory research*. Each article was selected using specific criteria to ensure applicability to this study.

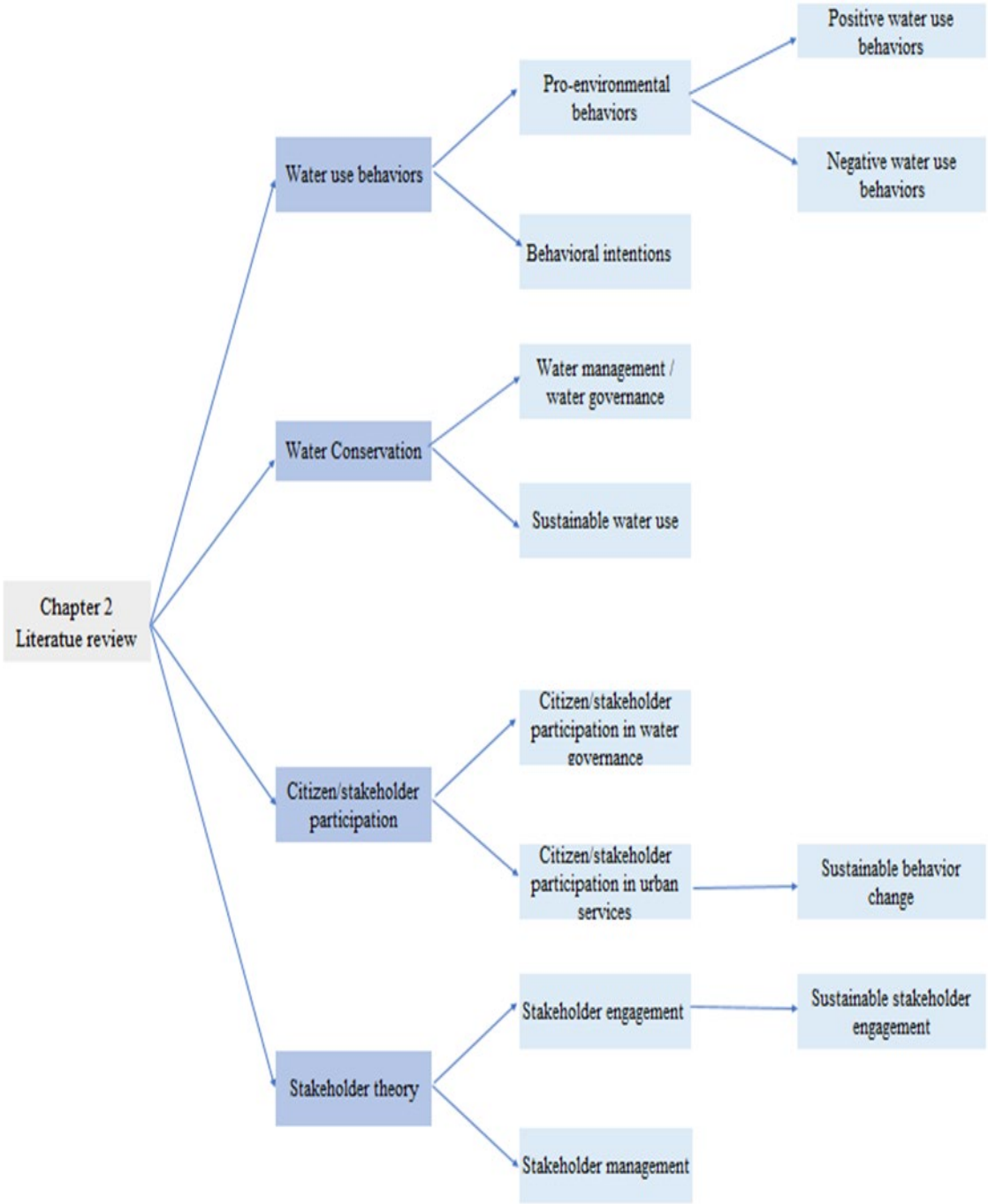


*Figure 1.* Concept map of the literature review.

To conduct this review, used the following sources, accessed through Walden University's online library. Ulrich's database at Walden University Library helped me determine if the selected journals were peer reviewed. EBSCOhost provided access to multiple databases, including Business Source Complete, ABI/INFORM Collection, Emerald Insight, ScienceDirect, and Sage Journals. I rejected articles that were not peer reviewed. Scholarly books used in this study provided the foundation for developing background information used to support conducting this study as well as the rational for the conceptual framework, research method, design, and methodology. Table 1 summarizes my search strategy.

Table 1

*Summary of Literature Review Databases and Key Terms*

| Content | Literature category | Database | Key terms |
|---|---|---|---|
| Stakeholder theory/ stakeholder engagement | Peer-reviewed journals | ABI/INFROM Collection<br>Emerald Insight<br>Business Source Complete<br>Science Direct<br>Sage Journals<br>Wiley | Sustainable water management<br>Water governance<br>Stakeholder engagement<br>Environmental stakeholders |
| Citizen water use behavior | Peer-reviewed journals | ABI/INFROM Collection<br>Emerald Insight<br>Business Source Complete<br>Science Direct<br>Sage Journals<br>Wiley | Water use<br>Good citizen<br>Sustainable behavior<br>Proenvironmental behavior<br>Stakeholder behavior |
| Water conservation | Peer-reviewed journals | ABI/INFROM Collection<br>Emerald Insight<br>Business Source Complete<br>Science Direct<br>SAGE Journals<br>Wiley | Water sustainability<br>Water savings initiatives<br>Rainwater harvesting<br>Water efficiency<br>Water scarcity |
| Dissertation method, design, and methodology | Peer-reviewed journals and books | ABI/INFROM Collection<br>Emerald Insight<br>Business Source Complete<br>Science Direct<br>SAGE Journals<br>Wiley<br>Harvard Business Publishing | Qualitative research<br>Epistemological<br>Perceptions<br>Experience<br>Case study<br>Qualitative exploratory research |

## Conceptual Framework

The conceptual framework of this qualitative exploratory multiple case study is grounded in the concept of stakeholder theory devised by Freeman et al. (2017). The conceptual framework for this study was founded on the two cores of stakeholder theory: stakeholder trust and cooperation and stakeholder management. Scholars employ stakeholder theory to examine sustainable stakeholder relationships among all stakeholders such as community leaders, water administrators, official representatives, and consumers (Amui, Jabbour, de Sousa Jabbour, & Kannan, 2017). The desire of community leaders to ensure water supply for new generations is a prerequisite for addressing stakeholders' behavioral intentions. Water governance exerted by organizational leaders influences patterns of performance of stakeholder management in the water sector (Berg, 2016).

In this chapter, I discuss the concepts of water use behaviors, water conservation, and stakeholder participation as they relate to how citizen water use behaviors influence stakeholder engagement. The primary concept is water use behavior, and I evaluated these practices through the adoption of water sustainability practices by an individual or community (Bollinger, Burkhardt, & Gillingham, 2018). This conceptual framework links the advantages of stakeholder theory that are missed in flawed behavioral intentions to benefit proenvironmental actions. Organizational leaders need to employ a stakeholder theory context of trust and cooperation to foster constructive water use behaviors in stakeholders (Kwon & Bailey, 2019).

The concept of water conservation is consistent with water management and governance as a multistakeholder framework for sustainable water use. Examining the role of stakeholders for changing water consumption practices can uncover the utilitarian benefits of ecological projects (Han et al., 2018). Opinion leaders use persuasive communications to increase the public's engagement levels in water conservation practices. General public residents and leaders through the stakeholder theory insights of trust and management connect opinion leadership with the audience (Taylor & Lamm, 2017). As agents of change, opinion leaders of for-profit and nonprofit groups, water agencies, and state agencies provide leadership of sustainable water governance and disseminate water-related issues.

Further, stakeholder participation is a widely recognized concept scholars use to study sustainable stakeholder engagement and the benefits of stakeholder behavior engagement. Organizational leaders who cultivate stakeholder feelings of ownership in sustainable plans promote knowledge of water issues and the benefits of stakeholder participation in prospective environmental management solutions. Freshwater programs and environmental flows define environmental management as a process where the green line infers a self-sustaining community approach (Conallin et al., 2018). Effective conservation programs at the broadest governmental levels need system-wide visions that involve all stakeholders and include positive, measurable endpoints. In their examination of local stakeholder participation in a landscape conservation program, Doyle-Capitman, Decker, and Jacobson (2018) confirmed that involving local stakeholders in decision-making processes helps to effectively implement landscape conservation programs.

I conducted this study to explore water project administrators' understandings of the influence of citizen water use behaviors toward stakeholder engagement in water conservation initiatives. The concept of stakeholder theory as the basic theory underlying this study and the concepts of water use behavior, water conservation, and stakeholder participation connect with stakeholder management and engagement as an appropriate framework for this study. Figure 2 shows how this framework applied to the concepts in this study.

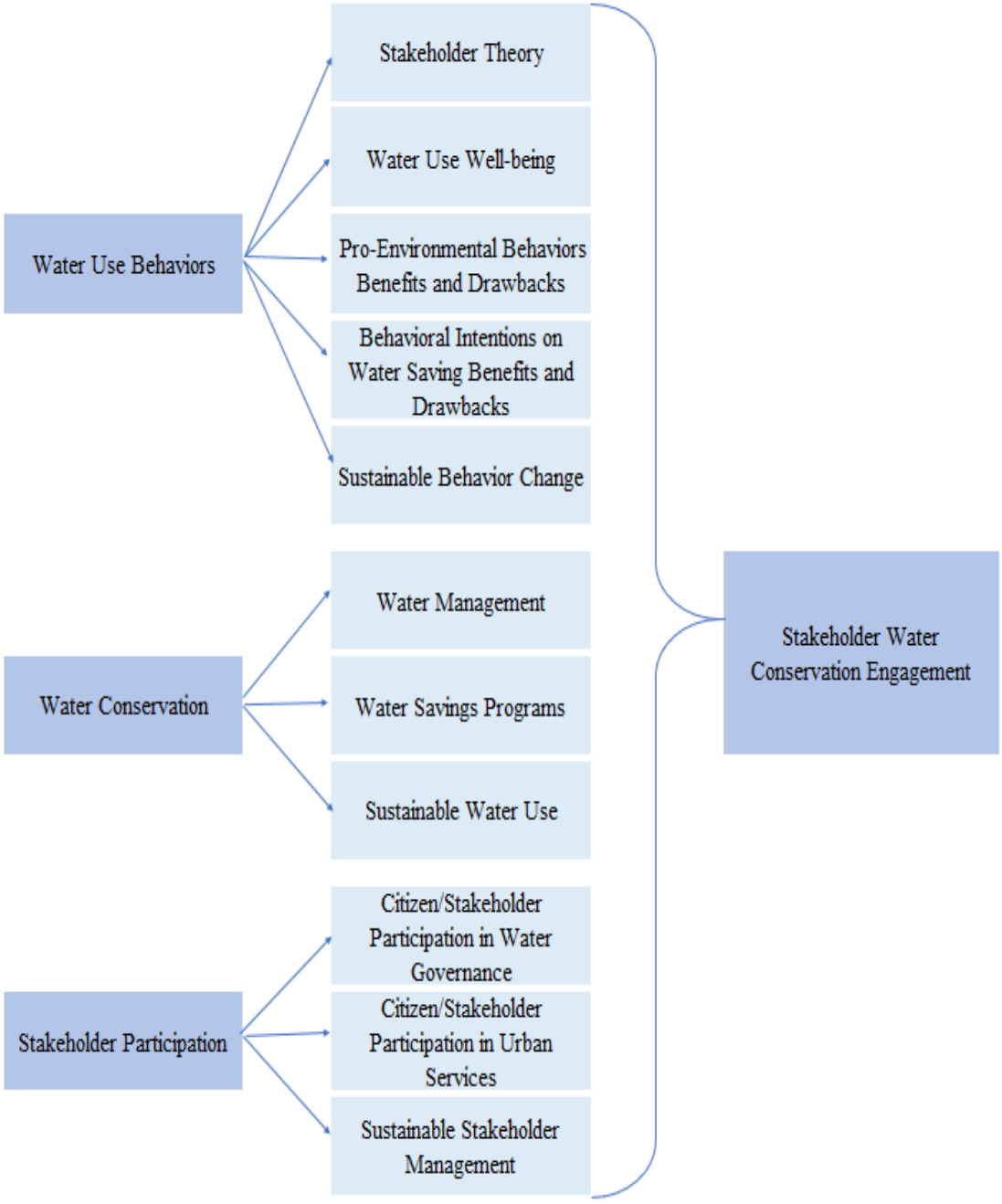


*Figure 2.* Conceptual framework.

## Literature Review

The concepts of water use behaviors, water conservation, and stakeholder participation were this study's fundamental constructs. When examining the three constructs, I found that all stakeholders have different views of the balance between water consumption and the social problem of protecting water resources. Organizational leaders allocate financial resources in sustainable projects by expecting profitable returns and community well-being, which creates a balance between living conditions and proenvironmental benefits in a community (Balunde, Perlaviciute, & Steg, 2019; Sako, 2018). The right balance of a relationship of community leaders and their residents' requisites opens discussions for making environmental decisions.

Environmental values in citizens and transparency in business management portray integrity and a formal style of corporate governance. Environmental ethics in corporate governance are often underrepresented in organizational practices (Schuler, Rasche, Etzion, & Newton, 2017). Organizations need environmental managers to address environmental practices and values. With an understanding of the right balance, environmental managers and leaders can influence changes in stakeholder water use behaviors by engaging in sustainable practices and adopting sustainability standards.

Although researchers have explored the role of sustainable practices, more knowledge of psychological well-being as a correlate of water use behaviors in a community is critical for understanding how proenvironmental behaviors of water conservation link to stakeholder participation. Water use efficiency and benefits (Jia,

Long, Wang, Yan, & Kang, 2016) embody the extent of a community's economic growth when the quantity of water use decreases.

**Water Use Behaviors**

The present study's primary focus was water use behaviors, which refer to water use attitudes, either positive or negative, based on individual needs. The intentions to act in certain ways are subjective to personal norms or beliefs and are influenced by perceived social pressure. Addo, Thoms, and Parson (2018) conducted a meta-analysis on household water use and conservation behaviors. The study authors stated that understanding the psychological and social factors that influence water use behavior is crucial for applying water conservation strategies and realizing environmental benefits. Addo et al. used three criteria in the behavior change model in their study: opportunity, capability, and motivation.

Egerer, Lin, and Philpott (2018) studied water use behavior using an analysis focused on adapting to future change in gardens or irrigation system in urban areas. The study authors explored urban agriculture and the underlying situations involved in agricultural and social environments. The benefits for cities were considered as well as the rural bias in agricultural research. Gaps in the understanding of how water administrators handle urban system management regarding agricultural issues and the sustainability balance created the need for Egerer et al.'s study. Egerer et al. stated that gardeners in urban areas pose a significant role in urban sustainability vegetation management. Ecological expectations involve a high level of concern about water usage and conditions. Focusing on water conservation and daily environmental practices by

taking into consideration sustainable water use behaviors promote environmental wellbeing.

In the present study, two criteria were used to study water use behavior in Florida in the context of stakeholder theory: water usage in landscape activities in urban areas and common recreational environments, and water usage in household activities. While collecting information from prior studies, I found the construct of water use behavior commonly used in analysis. Water quantity and supply for Florida residents who use water irrigation systems in their home landscapes was part of a study on domestic water supply issues and requirements in agriculture, tourism, and industry conducted by Warner, Martin, Lamm, Rumble, and Cantrell (2016). The study authors described the paradigm of protecting and enhancing water quantity, quality, and supply as the major sustainability initiative for increasing water conservation.

Analysis of current water conservation behavior metrics showed that local water restrictions did not reduce landscape irrigation because the smart irrigation controls were ignored as well as the rain barrel program and drip irrigation (Warner et al., 2016). Engaging in water-related programs that included adjusting times and calibrating sprinklers were practices followed by 60% of the users surveyed. The results showed a high level of confidence in water availability; however, the same results showed low participation in Florida-friendly landscaping programs (Warner et al., 2016). Similar results were reported in a study conducted in Florida's Orange County where residential irrigation water use was 82% lower after irrigation controllers were implemented (Morera, Monaghan, & Dukes, 2018).

**Stakeholder Theory Applied to Water Use Behavior Management**

I used stakeholder theory as the baseline to define the concepts and their interrelations in this study's conceptual framework. A multicriteria decision-making approach for evaluating the role of citizen water use behaviors as an influencer on stakeholder engagement was well posed. The application of stakeholder theory was appropriate for analyzing and determining the interchanging criteria for analyzing water use well-being. Yu, Kuo, and Ma (2020) applied the accountability aspect in exploring the constructs of corporate water disclosure. They also used stakeholder theory and legitimacy theory to prepare an independent sample for assessing potential drivers of corporate water disclosure. In this international study, Yu et al. investigated the environmental issues in water-related disasters in which company owners faced water management risks and opportunities. In the study findings, the investigators explained how water-related issues directly impact business profitability. Yu et al. applied the stakeholder core of the construct of trust and communication in their study and noted that communicating water stewardship practices among stakeholders seems like a corporate contribution. Likewise, water-related information as the measure of a firm's reliability and legitimacy portrays the core of trust (Yu et al., 2020).

Cui, Jo, and Na (2018) used stakeholder theory to develop two positions for corporate disclosure. One was ethical or normative, and the other was managerial oriented to solve water-related issues. Stakeholder theory is the basic norm in the activities of any organization that focus on the benefits for all stakeholders (Cui et al., 2018). Cui et al. held that when managers and leaders enhance the boundaries of

stakeholder theory, they increase the understanding of stakeholder needs. The researchers also recommended that community leaders consider the concerns of all stakeholders when developing new policies or strategies.

The environment should be considered as a primary stakeholder and nongovernmental organizations as secondary stakeholders (Benlemlih & Bitar, 2018). Primary stakeholders are those who directly participate in organizational activities; secondary stakeholders are the individuals who indirectly receive the impact of the organization's activities (Labanauskis & Ginevicius, 2017). Similarly, Sokolow, Godwin, and Cole (2016) employed stakeholder management as a core of stakeholder theory to explore the impacts of urban water conservation strategies on energy, greenhouse gas emissions, and health in Southern California.

Sokolow et al. (2016) used case study methodology to evaluate the 2014 health assessment of California's urban water program. Two initiatives were investigated: One proposal limited landscape irrigation; the other explored alternative water sources. Study findings showed the use of recycled water as a water conservation strategy. Sokolow et al. then analyzed recycling as a potential tool for water conservation with a positive impact on the public's health. The stakeholder theory formed the conceptual framework for assessing energy demand. Philosophical assumptions of the effects of California's water use on its economy and human health depicted the underlying assumptions of energy hidden costs. In this way, Sokolow et al. based their assessment on the costs associated with energy demand, such as utility bills and health care.

Miao and Fry (2018) used stakeholder theory to study the water quality gap and how to close it by improving safe drinking water programs as an essential service. This study was conducted for the Centers for Disease Control and Prevention's environmental health services branch. Miao and Fry researched environmental health programs, trends, issues, and resources related to active living, alcohol control, healthy housing, and water quality. An independent entity revised the water project and policies and the established partnership in safe drinking water programs.

The study purpose was to establish an effective policy for safe drinking water conservation. The problem statement developed by Mao and Fry (2018) stated that closing the water quality gap needed a controlled effort and plans to improve drinking water conservation in federally unregulated drinking water systems. Miao and Fry assessed drinking water safety in the public water system by evaluating the community public water system and the noncommunity public water system. Two outcomes were measured and analyzed: transient and nontransient. Data analysis resulted in several proposals for further action. For examples, case stories were proposed as a tool for supporting policy compliance through conducting educational and outreach programs with nontraditional and traditional stakeholders. Miao and Fry stated that their study could be replicated in any other field requiring policy implementation to driller water conservation certification to ensure proper system construction.

**Water use well-being.** Water is a vital natural resource to sustain life on Earth. Gallup's Well-Being Index is a metric used to consider the physical and emotional health of people in all 50 U.S. states. Six quality of life categories are used in its calculation: life

evaluation, emotional, health, work environment, healthy behaviors, physical health, and basic access (Godman, 2015). Huang and Lamm (2017) found that personal experiences related to educational programming were an effective approach to engage the community in water conservation practices and that different experiences of U.S residents related to water issues and their intentions were related to engagement in water conservation activities.

Huang and Lamm (2017) used an online survey to collect responses about water use behaviors. They then used descriptive and correlational methodology to measure the correlation between water use behaviors, water conservation practices, and behavioral intentions. Understanding water consumption issues such as leaving the water running during cleaning activities and providing education on how to mitigate water issues were found as factors that positively correlated with community well-being (Huang & Lamm, 2017).

Pirson (2019) stated that a humanistic perspective employed by organizational leaders and managers promotes well-being and protects dignity. When water administrators use their understanding of the benefits of aligning public interest with social welfare, they may create well-being with humanistic options (Pirson, 2019). The Well-Being Profile (WB-Pro) is a theory-based multidimensional measure of well-being that can be used to advance theory and develop policies and strategies (Marsh, Huppeert, Donald, Horwood, & Sahda, 2019). Marsh et al. (2019) developed the WB-Pro by integrating it with different items and factors in order to measure correlations between psychological variables selected in a subjective well-being measure.

Well-being, as a component of the conceptual framework, whereby stakeholders posed a unique theoretical rationale for a well-being measure balancing water conservation and its benefits (Marsh et al., 2019). Indeed, well-being can be equal to ephemeral emotions (Di Fabio & Kenny, 2016). Gains in well-being can reinforce individual emotional intelligence. Individual happiness, in the long term, enhances quality of life. Multisectoral approaches relate water governance with the ecosystem conservation (SIWI, 2017). Water for the population's well-being involves nutritional factors and stakeholder accountability in different water usage.

According to Di Fusco, Lenci, Liserra, Ciriello, and Di Federico (2018), sustainability of urban water use from building to urban scale can be monitored with GST4Water Project. Green Smart Tools for Water is a software installed in a hardware device that allows measuring conscious use of fresh and recycled water. Di Fusco et al.'s research was conducted in Europe as part of the GSTW water project to explore people's bad water use habits in the domestic environment. The rainwater project as green technology was the tool used as a water sustainability calculator element to encourage social change. The strategy tool for increasing awareness of water use and waste was the cost of water for the water for consumers.

Di Fusco et al. (2018) developed a methodology flow chart using a regulation module, a benchmark module, and measured water consumption as inputs to achieve the water module. Salient outputs were water/energy performance indicators, economic indicators, and environmental indicators. Di Fusco et al.'s underlying assumptions were

reflected in the model, and the research questionnaires provided the information for the registration module.

The modifiers, green smart technology for water converters, GSTW, accounted for bad habits to portray the reality through results for a water sustainability calculator (Di Fusco et al., 2018). A score indicator performance measured water flow and focused on users' behaviors and highly efficient appliances. A comparison between water use for toilet, shower, general bathroom, dishwasher, and washing machine created performance water indicators of water usage (Di Fusco et al., 2018).

Di Fusco et al. (2018) was relevant to the present study for its exploration of the different types of water used to satisfy water demand, energy, and chemicals used in appliances that impact urban development. Water administrators can use this present study to investigate new factors that impact human behaviors and the potential demand for recycled water. The common understanding of all these factors by water management leaders may provide an advance in the analysis of the role of citizen water use behaviors and stakeholder engagement.

In analyzing the study findings of this present study, I was positioning the positivist theory of well-being in the framework of a tested relationship that incorporated positive mental ideas of well-being. The results of this positioning showed the incorporation of satisfactory activities into daily routine, known as eudemonic motivation (Di Fabio & Kenny, 2016). The goal in water use well-being is recognizing harmony in life, perceived as an intrinsic motivation for water conservation (Passmore, Gbur, Lindenmeier, & Passmore, 2018). In contrast, Barbera and Gurnari (2018) postulated that

water scarcity is caused by industrial and not by individuals' water consumption and that the industrial sector needs regulation to improve its operational efficiency.

**Proenvironmental behavior benefits and drawbacks.** Disseminating information on the environment to the public can help to develop positive connections in relationships between place attachment and proenvironmental behavior. Positive inputs influenced by social media can promote proenvironmental behavior. Many researchers have studied factors that influence proenvironmental behaviors. Xu and Han (2019) described a theoretical framework for proenvironmental behaviors using four criteria: the baseline of the reasoned action theory, the planned behavior theory, the normal mode, and the value–belief theory. The authors of the study believed that external normative factors influence internal personal values, demonstrating that place attachment does not modify personal proenvironmental behaviors.

Gamma, Mai, and Loock (2020) researched the benefits of promoting ethical and proenvironmental behaviors. The researchers postulated that past experiences impact the likelihood of individuals' performance toward desired actions, which was reflected in their developing a theory that reflected two opposing heuristic processes: the eco-citizenship effect and the resistance-to-habit-change effect. This study explored the ethical nudges of an effective promotion to alter habits and elevate customer engagement. Effective advertising through different communication channels was found a significant tool for water managers. Therefore, water managers paired the effective development of advocate programs with positive feedback from customers to set goals such as reducing water and energy consumption.

The benefits of practical implications for proenvironmental behaviors were applied in a project to reduce plastic bags in the United Kingdom. Muralidharan and Sheehan (2018) explored differences in response by gender regarding messaging on using plastic bags. This segmentation strategy considered only marketing specialists and advertisers. Adding ownership to the advertisements' messages was the campaign designers' purpose. The marketing was directed to credit card shoppers in expectation of determining behaviors, such as personal savings, by using reusable bags. This campaign intended to change a custom by encouraging proenvironmental behavior and attitudes.

Organizational leaders and managers handling water conservation projects use the professional services of marketing specialists and advertisers to promote directed solutions. Meanwhile, proenvironmental leaders who were searching for engagement to their smart initiative were pairing the situation between personal savings and positive reactions. In so doing, advertisers initiated a corresponding mechanism allowing consumers of services or products to mitigate drawbacks to a situation. As a result, the final consumers engaged proenvironmental behaviors thorough understanding of the situation and its benefits (Gamma et al., 2020).

The drawbacks of proenvironmental behaviors in consumers were investigated in a study by Abusafieh and Razem (2017). Promoting proenvironmental behaviors by harnessing psychological, social, and physical influences in building a sustainable environment was the study's key focus. Abusafieh and Razem found that technological advancements to reduce nonrenewable resources consumption created healthy environments but that sustainable technology did not spontaneously lead to

environmental behaviors. This study can be used as an example of how a specific framework design of strategies and policies can harness the development of proenvironmental human behavior.

**The effects of behavioral intentions on water saving benefits and drawbacks.** Few researchers have investigated behavioral intentions toward sustainable change. Behavioral intention refers to a person's likelihood or subjective desire to engage in a specific action. Moura, Souki, Veiga, Cunha, and Fontes (2017) assessed attitudes, beliefs, rules, subjective, and perceived control about water savings behavior in a study using the theory of planned behavior to measure behavioral intentions of saving water. This study was set in Brazil. The study authors conducted 26 interviews using a questionnaire related to components of the theory of planned behavior. Data analysis indicated that attitudes about saving water related to economic advances—specifically, lower water bills. Lower water consumption, equaling more water availability for human use, was an indirect consequence.

The benefits of behavioral intentions are possible positive responses or the likelihood to pursue a change in current situations. Understanding change habits in the members of a community is an essential requirement for organizational leaders and water administrators seeking a change in people's water use behaviors. A governmental campaign and individual attitudes, among other factors, can hinder the promotion of water conservation programs. The effects of experience quality on behavioral intentions for visiting water parks in Iran were presented in a proposed model developed by Ghorbanzade, Mehrani, and Rahehagh (2019). The research location was five themed

water parks. The researchers believed that a fantasy atmosphere is important for a selected segment of tourists as participants, who associated a fun experience with customer satisfaction and the desire to continue the experience. Water park experiences comprised services with hedonic and utilitarian characteristics. Ghorbanzade et al. (2019) defined behavioral intention as the tourists' intentions to revisit the water park in a year, along with the desire to travel to the destination.

By increasing the understanding the critical concept of behavioral intentions in water savings projects, water organizational leaders can explain to citizens the human satisfaction of contributing to environmental conditions. The benefit for the community is improving well-being by reducing water consumption and increasing a perceived value toward the conservation of water as a natural resource. Ahn, Fox, Dale, and Avant (2015) found that framing virtual experiences promoted environmental behavior, with a response efficacy associated with the relationship between environmental behavior intentions and framing.

Identified drawbacks related to behavioral intentions regarding water savings focused on fresh water for human consumption is a critical issue. Water demand management is an identified drawback (Martinez & Lewis, 2017). Martinez and Lewis (2017) identified implications for public communication campaigns through surveying adults in the general U.S. population. How behavioral theory can guide the design and evaluation of health campaigns was evaluated in a regression model. Martinez and Lewis (2017) presented conclusions evidencing a significant positive attitude and intention

toward behavior associated with behavioral intention based on the evaluation of communication campaigns.

**Sustainable behavior change.** Shifting consumer behaviors to more sustainable approaches is a challenge for sustainability managers and organizational leaders. For encouraging sustainable consumer behavior change, social influence, habit formation, individual self, feelings and cognition, and tangibility (SHIFT) represented a framework developed by White, Habib, and Hardisty (2019). Consumers were motivated to engage in proenvironmental behaviors when the context of the message influenced the psychological factors of habit formation, social influence, feelings, habit formation, cognition, the individual self, and tangibility. The authors also outlined how practitioners encourage sustainable consumer behaviors using this framework.

Mapping sustainable behaviors based on consumer perceptions can facilitate transitioning to a green economy according to Zralek and Burgiel (2020). A sustainable behavior perception matrix was used in this study to investigate the likelihood of consumption reductions. The study results confirmed Zralek and Burgiel's hypothesis that perceived consumer effectiveness and perceived difficulty could be used as criteria for classifying sustainable behavior to create a sustainable behavior perception matrix. Knowing how consumers contribute to developing green businesses facilitates reducing individual consumption.

Howell and Fielding (2019) studied freshwater production and waste management and how to motivate sustainable behavior on the Caribbean island of Saint Barthélemy. Because of its nature, this study poses replicability in Florida Interviews with residents on

environmental issues provided the themes motivating or discouraging sustainable behaviors. The aspects of civic duty, rapid implementation, communication, socioeconomic stability, and simplicity of environmental regulations served as environmental motivators for sustainable decision-making. Howell and Fielding stated that government priorities and past habits were the drawbacks of sustainable behaviors in the members of a community.

Encouraging engagement in water conservation through trust in public and private environmental regulations to create change is the goal of the creators of environmental initiatives. Extension educators McKee, Lamm, and Bunch (2017) explored the perspectives of farmers and the public to develop support for water conservation programs; specifically, they explored possible ways to develop behavior change in rural areas by engaging agricultural educators in the programs. Agriculture demands water as a critical element to increase production, the cost of which is directly affected by water programs. By pairing social relations and agricultural resources, McKee et al. supported the relationship between the concept of social relationships and soil conservation.

The underlying assumptions of the citizens' perceptions of water conservation policies and the influence of social capital on these perceptions showed that low social capital perception was associated with high water prices (McKee et al., 2017). The study results confirmed a positive correlation between the farmers' level of trust in water conservation programs with payments for water supply. These findings support extension educators' and consumers' desires to pay for social relations efforts toward conservation practices to promote sustainable behavior changes.

**Water Conservation**

Water conservation is a relevant construct of water management and engagement (Warner et al., 2018). The concept of water conservation, as part of the present study's conceptual framework, expanded the rationale for developing a better understanding of sustainable water consumption practices. Warner et al. (2018) researched how a connection between urban audiences with nature could be fostered and identified the landscape practices of urban residents. They concluded that a need to engage more partners in extension irrigation programs for urban residents is consistent with the best practices for landscape management tasks and home landscape management decisions, inferring a safe environment with health benefits. For a better understanding of water availability, see Figure 3, which illustrates a water cycle and freshwater supply whereby usable water represents 0.01% of the Earth's water.

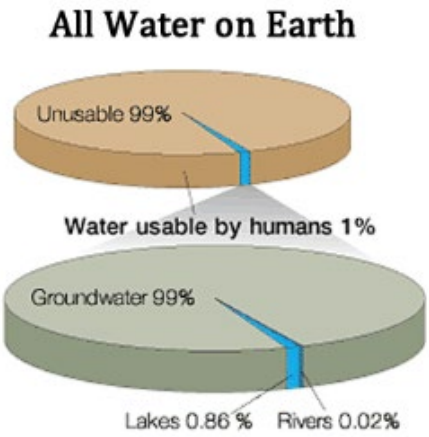


*Figure 3.* Water usable by humans and sources of usable water. Adapted from "Water Cycle and Fresh Water Supply," by M. R. Fisher, 2020, MPC Environmental Science (online text).

According to Bolson, Sukop, Arabi, Pivo, and Lanier (2018), water availability in Florida posed unique aspects for integrating stakeholder and researcher participation in efforts to create sustainability. Urbanization and population growth were identified as two factors impacting urban systems. Bolson et al. found a disconnect between urban residents and conservation of water resources and recognized the need for more research to examine the lack of engagement among residents of urban areas in landscaping water conservation practices.

Other researchers have identified water conservation as a series of optimal irrigation water planning and planting structures. Ren and Zhang (2019) evaluated the probabilities of violations of water savings irrigation in different circumstances or scenarios of water savings. Understanding how citizens comprehend their role in water conservation programs can help organizational leaders and managers develop policies according to specific conditions. Modeling projects for sustainable water resources management in urban areas involve implementing correct management, fertilizing, and irrigation practices (Cardoso de Salis et al., 2019). Crucial considerations for potential groundwater contamination and water conservation refer to developing and controlling water resources through water management encompassing good public water quality with water supply.

**Water management.** Finding a solution to sustainability problems using water management as a concept was the purpose of developing a decision-making framework to enhance understanding of a water, sustainability, and climate project in South Florida (Lanier et al., 2018). Climate change and its threat of rising sea levels need an

optimization model for water resources. Lanier et al. (2018) discussed the benefits of developing sustainable solutions through interactions and coordination with interdisciplinary team members. Remote meetings were held in technology usage allowed flexible interactions between team members. This communication approach opened the path to multiple communication venues in the present study. For instance, I used an online questionnaire as an offsite mechanism to collect information on citizen water use behaviors as an influencer on stakeholder engagement. In another study (McMartin et al., 2018), the paradigm discussed was adaptive practices and infrastructure development. Communities are vulnerable to potential flood and drought, and water-related infrastructure management decisions in the context of climate change are assumed as long-term investments for communities, agricultural producers, and governments.

Kharel, Joshi, Miller, and Zou (2018) studied the water management perceptions of Oklahoma's state government and described a shared approach for watershed sustainable management involving diverse stakeholder engagement. The researchers used an integrated strengths, weaknesses, opportunities, and threats analytic hierarchical process to analyze differences in perceptions about watershed management issues and to evaluate internal factors (strengths and weaknesses) and external factors (opportunities and threats). An identified weakness in the government group perceptions was the inability to track water use and the lack of a common platform to share scientific data (Kharel et al., 2018). Guo, Kong, Yao, Wang, and Wang (2019) evaluated the West Liaohe river's water source conservation capacity using an investing model to yield a tradeoff model and an integrated valuation ecosystem services model. Guo et al. found

that water resources were impacted by grassland farming activities and that these activities resulted in uneven regional distribution. The researchers concluded that organizational water management leaders and managers need to relate ecosystem environments to sensitive water source conservation capacities.

**Water savings programs.** A field study conducted in a hotel by Joo, Lee, and Park (2018) measured the effects of nonprice interventions between water conservation and customer satisfaction. The study population was hotel guests, and the data were collected through surveys. Joo et al. noted that hotel guests have no financial incentive to conserve water and that they might be suspicious of hotels that state the social goal of water conservation. The field study consisted of implementing of water conservation behavioral interventions to address these concerns. Study findings showed how behavioral interventions can influence people's water consumption behaviors and encourage resource conservation in hotel guests. Water scarcity due to climate change and the ineffective management of water resources combined with the excess of water use are water issues that can encourage the adoption of water savings programs.

Exploring the perception of the cost of water conservation for outdoor irrigation using the effect of personal norms was the focus of a study by Ali, Ramey, and Warner (2018), who investigated these perceptions in U.S. urban residents using the theory of planned behavior. Water conservation intentions included the perceived cost of the water and personal norms, which impact behavioral intentions to conserve water. The sample size was 1,809 urban residents, and their intentions were surveyed using questionnaires. Findings showed that social norms had a stronger impact on the residents' intentions to

engage in water conservation. In the context of the results, my study identified emergent themes or the common understandings of the role of citizen water use behaviors by organizational leaders. Then, decision makers may use the commonalities to realign their strategies to increase stakeholder participation.

Water leakage management is a nonrelated behavioral intention of water conservation (Ozdemir, 2018). Water loss management consists of real effects such as recognizing water loss and locating the leakage, repairing it, and maintaining it. Safeguard methods are needed in water resources operations in which water administrators understand the role of residents' water use behaviors. Proper water management motivates consumer participation, which is not considered in service connection failures. Koop et al. (2019) examined empirical studies on influencing tactics related to enhancing water conservation behavior; specifically, the relevance of increasing consumer awareness of water use to diminish the trend of water resource depletion. They found that residents assumed that enhancing domestic water conservation behaviors was their direct responsibility.

**Sustainable water use.** Researchers have used a sustainable water use concept to interpret behavioral intentions to conserve water. Cairns (2018) studied the impact of water and sanitation development using water metering as an instrument to analyze the pressures of conservation, health impact, sustainability, and equity in water use. Using a mixed-method approach, Cairns surveyed metering regimes designed by nongovernmental organizations to assure water system sustainability, equal access, and safety with community members. Using meters as technological tools helps to calculate

water costs based on consumption. Stakeholders are pressured to reduce the amount of water consumed due to its cost. This scenario, in which water usage was delimited by its cost, generated counteractive actions (Cairns, 2018). As a result, water consumption is reduced, diminishing the perception of nonequal access to water due to resident income.

Similarly, Zhuang, Lapinski, and Peng (2018) conducted an experiment to illustrate how crafting messages to promote water conservation can influence perceptions of drinking water shortage. Zhuang et al. found that organizational leaders and managers who used time-framed messages obtained positive attitudes toward water conservation. Estimating water pollution can signal the importance of sustainable water use to ensure sustainable water environment development by providing a decision-making basis for all governmental agents (Li, Huang, & Qu, 2017).

Water distribution network rehabilitation costs can reflect the monetary effect of water losses (Güngör, Yarar, & Firat, 2017). The study centered on examining the effects of material management to rehabilitate physical water losses. Inefficient use of water resources resulted in increased probabilities of failure and repair programs. Güngör et al. found that minimizing leakage and renewing piping material significantly contributed to water loss management. Indeed, water sustainability uses the stakeholders' awareness of water leakage and how to avoid water waste to succeed.

Water shortages can increase awareness levels and represent another aspect with a significant role in the sustainable use of the water (Malik, Abiodullah, & Chaudhry, 2018). Human behavior regarding water usage is influenced by perceptions, awareness, and habits (Malik et al., 2018). Organizational leaders' awareness levels of water scarcity

issues and sustainable water use can help them develop solutions to existing water-related problems (Malik et al., 2018).

**Stakeholder Participation**

The concept of the stakeholder participation concept is broad because it comprises various aspects of how stakeholders define their contributions to solving problems and the strategies that will be implemented (Miles, 2017). In Basco-Carrera, Warren, Van Beek, Jonoski, and Giardino (2017), practitioners, researchers, and local stakeholders examined an interactive modeling approach to develop a stakeholder involvement structure in water management. The researchers found that stakeholders worked together when they interacted over 2 years or more. Stakeholder participation requires time, trust, and cooperation (Freeman et al., 2017). Developing stakeholder engagement maturity in water governance required a level of readiness in the organizations to cooperate in a trusted environment.

Stakeholder participation is not a straightforward process. It is achieved by collaborating on sustainable goals toward environmental and social responsibilities (MacDonald, Clarke, & Huang, 2019). According to Geerts et al. (2019), the participation of different stakeholder groups in a specific problem helps to build stakeholder engagement. To encompass the needs of various targets and/or stakeholders, engagement approaches should be flexible and individualized, which will add value to outcomes and allow the consideration of diverse opinions in outcome measurements (Geerts et al., 2019).

Blume, Busari, Van Weert, and Delnoij (2019) conducted a focus group study on the benefits of stakeholders working together to find potential solutions to reducing problems hospitals encounter in managing various norms and guidelines. They found that collaboration between stakeholders helped to establish a positive relationship between norms compliance and regulations.

Developing and establishing purposeful and sustainable solutions requires cohesive and coherent actions among water users. To be effective in the long term, water conservation measures need stakeholder participation. Tu, Xie, Yu, Li, and Nie (2018) investigated the benefits of stakeholder participation in conservation efforts in southern China. The investigators demonstrated how soil and water conservation measures over time are appropriate methods for evaluating the effectiveness of implemented environmental programs. The authors identified a lack of comprehensive assessment of water erosion dynamics despite the ecological significance of implementing soil and water conservation programs. They identified the adoption of environmental conservation programs when stakeholders perceived profitability as a crucial aspect in the success of these programs.

The stakeholder participation concept is also reflected in other constructs such as stakeholder participation in water governance and urban services. Guidolini, Giarolla, Toledo, Valera, and Ometto (2018) stated that sustainability analysis methods need decision-making, monitoring activities, and the development of water governance policies. Integrating environmental concerns with socioeconomic variables in a participatory system can help water administrators comprehend the environment and

human interrelationships and better evaluate the water sustainability conditions. Guidolini et al. suggested creating a flexible barometer of sustainability to keep control of the level of balance between human and environmental well-being in water systems. This study presented an excellent sustainability instrument for water administrators to measure the acceptance of sustainability conditions or water use behaviors, which may help to improve community environments and foster greater stakeholder engagement.

**Citizen/stakeholder participation in water governance.** Conallin, Wilson, and Campbell (2018) applied the construct of stakeholder participation in their study on implementing environmental flows for intermittent river systems. The environmental flows program focused on stakeholder involvement and called for participatory decision-making and simple monitoring as elements in a management approach based on adaptivity. Conallin et al. concluded that to manage water programs, stakeholders need adaptive frameworks to deal with the shortcomings of social–ecological systems.


*Figure 4.* Principles of water governance. Adapted from "Water Governance in Cities: Current Trends and Future Challenges," by O. Romano and A. Akhmouch, 2019, *Water*, *11*, 500. Copyright 2020 by MDPI.

Stakeholder engagement in sectoral policies helps to build water governance and obtain economic cooperation and development as part of the urban water governance (Romano & Akhmouch, 2019). Romano and Akhmouch (2019) identified three key components: efficiency, effectiveness, and trust, and engagement. Current water services should not rely on actual infrastructure. New procedures and protocols will maintain sustainable levels of water supply. Stakeholders in Romano and Akhmouch (2019) pondered two questions: what to do and who does what, and at which level of government. In fact, A better understanding of the viewpoints on water governance from

private, public, and nonprofit stakeholders will provide new meaningful mechanisms across water consumption policy guidance and ensure inclusiveness for all stakeholders.

In Brown (2017), common themes for stakeholders included developing partnerships, improving water quality, reinstalling seasonal flows, and providing water for vegetation. Brown noted that building trust and ownership that reflect transparency and inclusiveness are essential aspects in influencing stakeholder participation in water conservation programs. Water management strategies to raise water awareness could be combined with technological strategies for water conservation policies (Brown, 2017).

The concept of stakeholder participation in government was essential in the development of the present study's conceptual framework. Exploring the role of citizen behaviors in water conservation requires internal governance by stakeholders. Water administrators will revise the feasibility to establish partnerships between homeowners and government agencies. Boulware and Lyn (2019) identified using social media to improve stakeholder communications as a way to start bridging this gap. In this study, Boulware and Lyn demonstrated the advantage of using data-driven and evidence-based technology for improving public health and noted that their model could be replicated by water administrators to communicate their water programs effectively. In an article on the human right to water, Codilean (2017) stated that knowing the different uses of water may help government representatives balance water usage and the human right to its access, ensuring drinking water for all.

**Citizen/stakeholder participation in urban services.** Stakeholder roles are identified through their participation in urban services. Stakeholder participation is a

concept used by environmentalists, organizational leaders, and managers. Wibowo and Grandhi (2017) studied the context of sustainability and urban development in stakeholder participation in decision-making processes related to utility services. The researchers assessed sustainability performance in urban water services by evaluating the involvement of various decision makers. They then used this framework to evaluate the performance of urban water services in six categories: environment, social, economic, governance, infrastructure, and organizational assets. According to Wibowo and Grandhi, governance in the context of urban water services refers to transparency, accountability, transportation, measurability, and steadiness and the alignment of policies and goals whereby the cooperation of all stakeholders such as citizens, private organizations, and and public organizations, improve the performance of urban water services.

Predicting the quality and quantity of tap water used by households in a city in the Democratic Republic of the Congo was the focus of a 2019 study by Jeandron, Cumming, Kapepula, and Cousens. Jeandron et al. gathered information on drinking water supply was collected to verify its the bacterial qualities. They found that more than 80% of the households studies were likely to store contaminated water, especially houses nearest to rivers. While this study focused on a setting with limited water supply access, its findings were relevant to this study as they reflect an example of quality in urban water services. Laitinen, Kallio, Katko, Hukka, and Juuti (2020) also discussed concerns related to issues involved in urban water services. They found resilience reflected in maintaining good service levels and recovery from failures following natural disasters. The researchers

concluded that good water quality and technology did not directly correlate with resilient water service.

**Sustainable stakeholder management.** The present study's conceptual framework included sustainable stakeholder management, which has been described as a crucial element for improving the success of multifarious infrastructure projects. Zarewa (2019) discussed failures in understanding stakeholder expectations and constrained attitudes. The study author believed that the lack of knowledge of stakeholder management, stakeholder engagement, and misunderstanding of their roles are barriers to effective stakeholder management and caused deficiencies in their service delivery.

Common perceptions about water demand and its increases are associated with a need for closely managed water (Cockerill, Groothuis, McDaniel, & Cooper, 2016). A better understanding of how people perceive the supply of water and the associated cost with water conservation is critical. How water users influenced attitudes to correlate with actions of water management and conservation were the independent variables used in this present study. Cockerill et al. (2016) found a positive correlation between water consumption and consumers' attitudes about water conservation and management. The results reflected how water managers faced resistance to conservation policies due to users' ideas of water as a common and abundant resource.

At this point, I considered awareness of water as a limited natural resource among stakeholders a key problem identified in most of the studies I reviewed. In a study of university students and their water conservation practices, Ellyson and Hanafiah (2019) confirmed the low rate of engagement in energy and water consumption programs. In

fact, more research is needed to identify the rooted causes of low engagement in water conservation practices, even in educated people.

## Summary and Conclusion

The literature review of the three central constructs—water use behaviors, water conservation, and stakeholder participation with their benefits and drawbacks—allowed me to identify a gap in the literature of the role of water use behaviors toward continual stakeholder participation. Several researchers in peer-reviewed articles and related books explored the factors that positive influence water use behaviors. However, few researchers had explored how water managers by understanding the crucial role of water use behaviors can foster continual water conservation engagement. Few pieces of research have been conducted in Florida to investigate behavioral water conservation intentions using the knowledge of water managers directing water savings programs. Therefore, I used studies developed in other locations about the same topic.

To portray the absence of literature explaining the connection of stakeholders' water use behaviors with water governance focus on a balanced engagement in water savings initiatives was one of my goal in this study. Therefore, I summarized the arguments of the academic articles. Water conservation and constructive water use behaviors positively draw a parallel role in the well-being of a community. By understanding the role of behavioral water conservation intentions, I gained perspective to analyze how a person's likelihood or subjective desire may influence the adoption of a specific action.

In Chapter 3, I describe this study's methodology, its design, and the rationale for selecting the study methodology to explore the role of citizen water use behaviors toward water conservation to foster stakeholder engagement. I also discuss my role as the researcher, the participant selection process, recruitment, and data collection. Lastly, I discuss the premises of trustworthiness considered in data collection, data analysis, and the study itself.

# Chapter 3: Research Method

## Introduction

I identified a gap in the literature on the role of citizen water use behaviors in influencing stakeholder water conservation engagement. The purpose of this qualitative exploratory multiple case study was to gain an understanding of how citizen water use behaviors may influence stakeholder water conservation engagement in Florida municipalities. In addition, through this study, I wanted to gain a deeper understanding of how this influence on stakeholder engagement may help water administrators lead water savings programs.

In this chapter, I describe the qualitative research methodology used to address this study's research question and the gap in related literature on citizen water use behaviors toward water conservation that may influence stakeholder water conservation engagement. An explanation of the research design and study rationale is also provided. I discuss all steps and procedures, my role as the researcher, the sample size and the sampling technique used to select the study participants, data collection, and the data analysis plan. A detailed explanation of the strategies for enhancing study trustworthiness is also provided. Lastly, I describe steps taken to uphold all significant ethical standards as required by Walden University's institutional review board (IRB).

## Research Design and Rationale

A researcher is accountable for identifying a research question or set of questions and conducting a study that will collect sufficient data to answer this question or questions. The central research question in the present study focused on the role of water

use behaviors in stakeholder engagement. The question guided data collection and data analysis and provided ample context to reach the point of data saturation (see Kross & Giust, 2019). The central question for this study was: What are the common understandings on how citizen water use behaviors may influence stakeholder water conservation engagement in Florida municipalities? Study participants' responses related to the identified gap in the literature on the relationship between citizen water use behaviors and stakeholder engagement.

I used exploratory qualitative multiple case study methodology to investigate citizen water use behaviors and stakeholder engagement. A qualitative exploratory case study is primarily used to gain a common understanding between the participants through an analytic contextual analysis of a situation or occurrence (Mallette & Saldaña, 2019). A qualitative approach was the appropriate method for this study because it allowed me to obtain a broader understanding of an existing problem (see Kross & Giust, 2019). In an exploratory qualitative multiple case study, a researcher gathers, decodes, and analyzes common themes that emerge from participant responses using contrasts and similitudes in the different cases (Yin, 2018).

Quantitative methodology is appropriate for a study where the researcher uses numerical data and hypotheses, which are confirmed through measuring the relationship between dependent and independent groups of variables. The numerical data are collected using structured research mechanisms such as surveys, large sample sizes, and close-ended questions. The strength of the relationship or correlation between the variables is measured by exercising a level of statistical significance with a percentage of error

(Rutberg & Bouikidis, 2018). Several researchers have conducted quantitative studies on citizen water use behaviors. However, the present study's purpose was not to confirm the role of citizen water use behaviors toward water conservation but instead to explore the participants' experiences on how citizen water use behaviors influence stakeholder water conservation engagement. Therefore, the set of questions to each participant focused on gaining the participants' knowledge to enhance data scalability and comparison with other participants. I did not select a quantitative method for this study because measuring hypotheses or using numerical data, surveys, and close-ended questions were out of this study's scope.

Mixed methods methodology is appropriate for a study that combines quantitative and qualitative methodologies. Mixed methods researchers combine large random samples employed in quantitative research and small nonrandom samples from qualitative research to make significant statistical and analytic generalizations about a situation (Grootel et al., 2017). I did not select this approach because I did not make statistical generalizations or confirm hypotheses, and I selected a small group of participants for the study.

Grounded theory, narrative, and case study were the three qualitative designs I considered for this study. Grounded theory is appropriate for a study on specific social processes or actions to provide a set of evidence to create or enhance existing theory (Barello et al., 2015). I did not select this research design because I did not intend to develop a new theory about the role of citizen water use behaviors and stakeholder engagement. Narrative research is appropriate for a study based on participant

experiences and in-depth exploration of the meaning in their stories (Pandey & Gupta, 2019). I evaluated and rejected this research design because the participants' opinions were not their personal stories.

Qualitative researchers conduct case studies to gain a common understanding in the participants' responses through a contextual analysis about a situation or occurrence (Yin, 2018). For example, shared understandings have helped develop common definitions of nurses' responsibilities (McCrae & Purssell, 2018). Case study research is a functional strategy for studying organizational practices and for exploratory studies (Yin, 2018). Researchers conduct single case studies to investigate a single subject or situation to get a deeper understanding without the possibility of redefining a theory. However, a multiple case study design facilitates developing a common understanding of a social situation through analyzing similarities and differences between cases with the possibility of providing literature to enhance theory.

Multiple case study methodology was appropriate for this study because I explored a unique situation to establish analytic generalizations. For this multiple case study, each organization was considered as a case. By using five case studies or groups with three participants per case, I explored the common understandings of the role of citizen water use behaviors in influencing stakeholder engagement. Data saturation for qualitative research is assured through data collection and inferences drawn during data analysis (Saunders et al., 2018). Different approaches from several embedded units or participants allowed me to determine data saturation in this study. I particularly focused this study on experiences or occurrences of the situation of stakeholder water use

behaviors oriented to engagement in water savings initiatives to achieve thematic saturation.

## Role of the Researcher

The researcher's role is to collect data and apply analysis to define relationships between participants' thoughts and feelings, which are translated into findings or results (Kross & Giust, 2019). In this study, my role as the researcher was as a gatherer and interpreter of the participants' responses. As a qualitative researcher, I wanted to capture the patterns or themes in the answers to the questions asked of study participants. My role as a gatherer of qualitative data involved designing the research question and the questions to ask the study participants, collecting the responses from the online questionnaire, and organizing the participants' responses. I executed this role in part through exchanging invitation emails with potential participants and by collecting data via an online questionnaire. To ensure transparency in the email exchanges, I used Walden University's approved questionnaire protocol and invitation email as a guideline. I used semistructured questionnaires with open-ended questions to collect data from the study participants.

My role as a qualitative interpreter was defining categories during data analysis to comprehend and learn about the research topic. Transparency in thematic data analysis helps to explore the links between data and evidence (Mallette & Saldaña, 2019). Through thematic data analysis, during which I coded and categorized the data to generate themes, I provided insights into how citizen water use behaviors may engage stakeholder water conservation. Since I have a working relationship with a Florida

municipality, I did not consider any official organization in the sampling. According to Hawkins (2018), a researcher's power dynamics are built through a trusted relationship between the researcher and the participants.

My potential bias was rooted in my relationship with a public entity, which is the water supplier and developer of water savings projects for several municipalities or cities with dense populations. Using open-ended research questions in an online questionnaire, as I did in this study, is a strategy to diminish personal assumptions and interpretive biases in participants' answers (Rutberg & Bouikidis, 2018). Concerns about human bias, validity, and accuracy in data documentation contributed to my efforts to minimize bias in this study. Using triangulation as a cross-checking strategy, discussed further in the section on trustworthiness, helped me mitigate interpretive errors while adding validation to data analysis.

The ethical issue embedded in this study was trust and transparency between the participants and myself during the data collection. Research ethics and compliance must be followed in observations and interviews to avoid any potential ethical issues (Rutberg & Bouikidis, 2018). A transparent interview protocol implied confidentiality through participant anonymity. Likewise, a comprehensible explanation of the study purpose allowed the participants to trust in the transparency of this research. Protecting participant identities through the consent release form gave the administrators of the water savings programs the confidence to share in-depth opinions about the role of citizen water use behaviors as an influence on stakeholder engagement. Thus, trust and transparency and consideration of ethical issues were factors in the data collection process. The sense of

participant vulnerability was considered as stated in the invitation email and online questionnaire. Walden University's IRB revision process ensured the consideration of all ethical procedures, including protecting participant identity and integrity.

## Methodology

### Participant Selection Logic

The population considered for this study was administrators who plan, develop, direct, implement, or supervise water savings programs or projects in private or nonprofit organizations. The justification for the selected sample was the need of including experienced professionals in the water industry in this study. A self-selecting strategy was appropriate because it allowed me to get the approapriate participants. In this way, the study included water administrators who experienced the hindrances of citizen water use behaviors. The participants' knowledge provided different viewpoints from which to draw the foundation for understanding the situation. Participant credibility was portrayed through the water administrators' knowledge when they described their experiences of the influence of citizen water use behaviors toward water conservation on stakeholder engagement as well as the outcomes of their experiences and through their contributing valid responses to the open-ended questions in the questionnaire (see Kross & Giust, 2019).

Sample adequacy in qualitative research relates to the suitability of the sample composition and size and helps to establish study quality and trustworthiness (Yin, 2018). I recruited participants from private or nonprofit organizations who manage or supervise water savings programs as their daily professional duties. The participants held different

hierarchical positions, which allowed me to ensure distinct opinions related to the event and provided adequate opportunities for variety in their responses.

Heterogeneity and research objectives are reached using a sample size of 12 to 20 participants in an exploratory multiple case study to ensure data saturation (Guest, Bunce, & Johnson, 2006). The sample goal was 15 participants. I used purposive sampling to recruit study participants. Three water administrators from each of five organizations were purposely selected for this study. The 15 water administrators were individuals who supervise, monitor, or manage water savings programs in their daily professional duties. Since a research study usually refers to a specific situation and location (Yin, 2018), I selected Florida as the sample area to explore the situation of citizen water use behaviors. The study participants were selected from companies established in various Florida counties. I considered all U.S. companies managing, operating, or providing services related to water programs in Florida.

The purpose of using purposive sampling was to ensure the appropriateness of the sample size and composition. The eligibility criteria used in participant selection were appropriate for yielding a sample of individuals with the requisite knowledge to provide data for in-depth analysis in a multiple case study. This strategy called for considering a sample size of 15 participants with knowledge of citizen water use behaviors and reviewing published corporate reports containing water conservation and consumption data. Studies with a broader scope use heterogeneous samples and a larger participant size to achieve saturation (Vasileiou, Barnett, Thorpe, & Young, 2018). Conversely, focused research uses homogeneous samples for thematic saturation. Smaller sample

sizes in qualitative research, typically varying from 10 to 20 or 30 participants, facilitates appraisal of data adequacy and saturation.

The margin of error in my sampling strategy was reduced by considering the requirements to participate, the study, and the confidentiality of the collected data. I also reviewed public statistics on water consumption and water savings program reports. These reports included variances in water volume consumed per capita or in total by determined population in a specific site or area. Both data sources included private and nonprofit organizations.

**Instrumentation**

The primary data collection instrument was a semistructured questionnaire containing open-ended questions that was administered via online questionnaire using emails to contact the participants (Bowden & Galindo-Gonzalez, 2015). Implementing subjective analysis includes four themes: reflexibility, criticality, collaboration, and rigor (Moon, Brewer, Januchowski-Hartley, Adams, & Blackman, 2016). Therefore, online questionnaires, online surveys, and online interviews are appropriate data collection techniques for producing in-depth content and addressing core understandings.

A standard questionnaire format allowed the participants to respond to the research questions in a defined setting. This questionnaire is included in this study as Appendix. By using this instrument, I allowed the participants the opportunity to share their knowledge about citizen water use behaviors. According to Kross and Giust (2019), semistructured interviews with open-ended questions construct help to construct a trusted, inclusive environment for participants. Kross and Giust further explained how

semistructured interviews include a list of questions considering main areas relevant to the situation to gain a common understanding of the research question. By using open-ended questions, I obtained the water administrators' knowledge, which allowed me to identify the common understanding of citizen water use behaviors and stakeholder engagement.

To develop the research questions included in the online questionnaire I considered the suggestions of professionals and experts involved in water savings projects whom I met when I attended Water Expo 2019. The event was held in Miami, Florida, the city where I resided. The questionnaire protocol (see Appendix) outlined the study purpose. In the text of the questionnaire protocol and invitation email, I summarized the research participation process, the estimated time to respond to the questionnaire, and the security safeguards to protect participant identity.

While developing the questions, I considered the conceptual framework and the stakeholder theory (Freeman et al., 2017). The questions were grounded in the constructs and theories of citizen water use behaviors, water conservation, and stakeholder engagement. The questions asked were formulated to reveal trends in opinions and thoughts by limiting participant bias. Study validity is obtained through consistency and stability when the same interview design allows repetition to different participants (Noble & Smith, 2015). I avoided questions that invited participants to develop polemic in their answers. I considered response time when developing the questionnaire. I estimated that completing it would take an average of 30 min, which I mentioned in the invitation email.

This estimation was based on the anticipated length and depth of the knowledge that the participants wanted to share.

The nature of the questionnaire permitted the participants a higher control over their responses because they can be revised and edited before sending their answers. The level of participation or engagement was higher because questionnaires were not subject to time constraints (Hawkins, 2018). Conversely, this control in the level of participation provided a trustworthiness advantage not present in transcribed face-to-face interviews.

The secondary data source was public statistics from private and non-private organizations classified as public records, including reports of statistics of water consumption, water savings projects, outreach, and communication programs. I obtained the secondary data used in this study by searching the official websites of the organizations where their public statistics records are published.

**Procedures for Recruitment, Participation, and Data Collection**

As previously noted, the primary data source was online questionnaires answered by water administrators of U.S.-based private and nonprofit organizations. For the recruitment of the participants, I sent invitation emails to potential participants, including a link to the online questionnaire. The invitation email asked the contact person in the companies to resend the email to any individual that they considered to meet the selection criteria. The selected participants were administrators who supervise and manage the implementation and control of water savings programs and related activities.

The selection of the participants implied the consideration of administrators holding different hierarchical positions and working roles such as managers, supervisors,

and lead workers. A consent agreement statement and form were included in the invitation email. In this way, I met the ethical standards by adhering acknowledgment of the purpose of the study to the sampling organizations. The privacy of the identity of the participants allowed me to get their confidence to freely response the answers in the questionnaire.

The data collection involved a frequency of events during an elapsed time of 15 days. I started data collection after receiving approval to conduct this study from Walden University's IRB. To recruit participants, I first sent invitation emails including a link to the online questionnaire to a contact person in each company and asked them to resend the email to any individual they thought would meet the selection criteria. The invitation email described the purpose of the research and the intention to gain access to participants in the organization to research a questionnaire. The email also included a consent statement and a questionnaire protocol that guided the data collection from participants. The consent to participate in the research was implicit when the questionnaire was answered, and in the answers submitted.

I was the only one who downloaded the data from the online questionnaire, which helped to ensure study trustworthiness as no third party had this role. I collected data over a 2-week period. I daily revised the online questionnaire site to verify the received responses. I kept a record of the participants by site, and if no response was received after 7 days, I sent a follow-up invitation email to the contact person in the selected organizations. The referral action of the participant who received the invitation email and the responses to the questionnaire involved a waiting period of 15 days lag between when

the contact person sent the email to other and when I received responses. As a result, the associated risk of frequency in the questionnaire's response was the delayed time elapsed until the reception of the participant's responses.

I recorded the data after downloading the responses from the Microsoft Form questionnaire site. I classified them by participant prior to sending them back to the participants via encrypted email for verification. In this way, the participants' information was secured during the email process. Using questionnaires eliminated the need for transcribing the data and allowed me to immediately upload the information to NVivo for data analysis. I registered the participants' emails to encrypt the content of the messages. In this way, the participants' information was secured during the exchange email process. Moreover, I followed Walden's ethical standards to comply with the university and U.S. federal regulations. Therefore, I secured an encrypted digital copy of the questionnaire's responses file and the files used in the data analysis for 5 years, at that time, I will destroy the responses.

**Data Analysis Plan**

In a qualitative exploratory case study, the identification and operationalization of key professional dispositions are relevant. For understanding the two main mechanisms of qualitative interviews, Yin (2018) explained that scholars using qualitative research applies a line of inquiry whereby unbiased research questions support the purpose of the study. Therefore, the collected data needed to provide enough evidence of the participants' knowledge about citizens' water use behaviors and stakeholder engagement eluded theoretical deliberations.

**Connection of data to a specific research question.** Aligning the study purpose with the research question allowed me to present the analysis of water program administrators' common understandings of citizen water use behaviors and their influence on stakeholder engagement. I defined parameters for gathering data from the questionnaires to formulate answers to the research question on how citizen water use behavior is related to stakeholder engagement. Consensus in the data, among other aspects, emerged from the responses of the questionnaires. For that, I considered questions that specifically explored citizen water use behavior toward stakeholder engagement for this study

**Type of and procedure for coding.** Exploratory methods use holistic coding, provisional coding, and hypothesis coding. Mallette and Saldaña (2019) explained the selection of the appropriate coding method in a qualitative inquiry that comprises connections through phrases or sentences and unit of data or categories to understand what flashes of insights mean as answers to the research questions in studies. In this study, I used NVivo and holistic coding or macrolevel coding to preset codes for data analysis. I categorized basic themes using common patterns for detailed coding. Emergent themes were identified by the NVivo text search query using preset codes to identify patterns among the responses. See Figure 5 in Chapter 4 for a visual representation of this process. Applying holistic coding to the data allowed identifying themes with special characteristics or codes and facilitated precise analysis. For the identification of the preset codes or themes used in the NVivo, a thematic analysis was required using advanced critical thinking in the examination of the qualitative responses.

Data coding was based on the nature of the interview questions in the questionnaire protocol. There were two cycles with two coding methods, following guidance from Mallette and Saldaña (2019). In the first coding cycle, I reviewed the data using holistic coding as an exploratory method. The first cycle is descriptive in how data are subcoded and immediately coding based on a topic or pattern. The coded data are closely explored and compared to identify similarities and differences in order to assemble the data segments into summaries. The second cycle helps to synthesize codes or pattern coding into a more combined common understanding between the questionnaire responses. Matching patterns is a suitable technique for exploring emerging themes and subthemes in the data analysis process (Mallette & Saldaña, 2019).

The process of coding from the first cycle into the second cycle was performed for presetting codes aligned to a pattern in the responses. I used the identified codes to create codes in NVivo and run a text search query. I then downloaded the query results into an Excel document. The results showed the number of occurrences of the codes in the participants' responses on each question. For an in-depth analysis of the qualitative data, I conducted a cross-comparison of the themes and concepts identified in the primary data coding process.

**Software used for analysis.** Robins and Eisen (2017) explained that coding data using data analysis software allows qualitative researchers to structure and analyze smaller or larger data in a faster and complex way. As previously noted, I used NVivo for data analysis. NVivo software is an effective digital tool to conduct an in-depth analysis to uncover deeper insights from the responses of the participants. Qualitative data

analysis using NVivo is a suitable approach for studies related to social sciences data sets (Swygart-Hobaugh, 2019). By using NVivo, I summarized the data and created tree diagram analyses that facilitated the interpretation of the collected information. The tree diagrams followed the sequence order, where emergent themes came from preset codes and patterns.

Kross and Giust (2019) noted the value of human coding in the context of the data analysis. Therefore, I assessed hand coding as an alternative exploratory coding method, but I rejected it due to the interpretive view needed during data grouping to develop themes. Using NVivo to interpret the data allowed me to get unit cohesion through the nodes in the analytic data process. Using this software also allowed me to increase the reliability of the findings based on the digital identification of the relationships and patterns in the dataset (Robins & Eisen, 2017).

**Manner of treatment of discrepant cases.** Generating, scrutinizing, and vetting data are part of the data analysis process for developing themes (Mallette & Saldaña, 2019). Any participant responses that were off topic as outlier data were not included in data analysis. No further steps to address discrepant cases were necessary.

## Issues of Trustworthiness

Trustworthiness in qualitative research involves the rationalistic paradigm of rigor under the criteria of reliability, internal and external validity, and objectivity (Amankwaa, 2016). The research findings, in this study, complied with consistent research questions, data collection, and data analysis appropriate with methodology. The findings showed applicability in other settings and consistently to be repeated (Moon et al., 2016). In this

way, the findings of this study presented the participants' responses and did not represent my personal interests or bias as a researcher.

In quantitative research, the instruments used in the data collection influence the research results by affecting the reliability and internal validity of the analysis of the study (Renz, Carrington, & Badger, 2018). In qualitative research, the researcher has a participant role in the data collection process that can raise concerns of potential personal biases. provides potential personal biases. NVivo data qualitative software, and the collected knowledge through the experiences examined in prior studies in the body of knowledge of citizens' behavior, were the elements that assisted my interpretation of the findings.

Reaching quality criteria in research requires reflexibility because it aims to achieve transparency by reflecting the nature of the qualitative research process. Therefore, I assumed full responsibility for the quality of the study using NVivo for data analysis. Likewise, I was accountable in my roles as the data collector and interpreter of the results of the data analysis and the research findings. Indeed, using NVivo enhanced the trustworthiness of the study.

Korstjens and Moser (2018) explored trustworthiness in qualitative research. The authors mentioned that trustworthiness involves four components: credibility, transferability, dependability, and confirmability. I discuss each next.

**Credibility**

Credibility is defined as the research findings' confidence by presenting reliable information from participants' opinions (Yin, 2018). Credibility as a quality dimension of

trustworthiness helped me to confirm the truthfulness of the research findings (see Moutinho, Lima Oliveira, Azevedo, & Kuramoto Gonzalez, 2018). The strategy I used in this study to ensure credibility to the readers was proving data triangulation to confirm the validity of the collected data. Furthermore, I included a peer debriefing technique for confirming the interpretation of the data as honest, worthy, and trustworthy.

Triangulation and data saturation allowed me to gain a better understanding of the role of citizen water use behavior to influence stakeholder engagement. Triangulation is a powerful technique that confirms the credibility of the collected data through cross verification by identifying differences within two or more sources of data in a case study about the same topic (Renz, Carrington, & Badger, 2018). The role of triangulation in research is to provide a better understanding of the data and reduce bias, thereby increasing certainty and neutrality (Honorene, 2017). Using more than one data ensured triangulation in data comparison and was an effective technique to analyze the shifts in citizen water use behaviors and stakeholder engagement (Honorene, 2017

To confirm triangulation in this study, I used as primary data the responses from questionnaires; secondary data were public statistics. For the validity of the data, I conducted member checking as a validation technique of the responses. Questionnaires using open-ended questions avoided the participants' deviation from the research question, but vague responses were a possibility. Member checking is a validation technique used in an in-depth data analysis stage of qualitative research (Birt, Scott, Cavers, Campbell, & Walter, 2016). I used member checking in the data triangulation

process to explore the credibility of the results. For this, a follow-up email to study participants allowed me to confirm the participant's answers to the research questions.

Continuing with the triangulation process, I checked the credibility of the results by seeking in-depth member checking of the differences between the participants' answers using secondary data in the form of public statistics reports and report of water savings projects. Likewise, I examined the secondary data comprising public statistics on water consumption and water savings projects against the collected data from the questionnaires using preset codes. Triangulation helped me to examine the consistency of the data sources, increasing the credibility and validity of the information and data sets used in the study. The collected qualitative data from five cases facilitated my exploring different dimensions of the same situation of water use behaviors.

The goal of coding is to achieve data saturation, and that occurs when no more new information emerges throughout the analysis of the difference during the coding process (Mallette & Saldaña, 2019). For this study, data saturation was achieved through pattern matching employed in the merging codes process of the data analysis. Saturation was achieved when the possibility of new themes was exhausted in analysis of the participant responses.

**Transferability**

Transferability refers to the degree to which qualitative research results can be generalized or transferred to other setting or contexts (Yin, 2018). Transferability judgment requires "thick description" of the behaviors, experiences, and context to portray meaningful findings. Since the findings were involve with knowledge about the

research problem in specific settings, the results of this study can be applied to other studies (Korstjens & Mosser, 2018). The central research question influences the strategy of ensuring transferability. Then the findings of the study about citizen water use behaviors influencing stakeholder engagement may provide contexts to be shared in other fields. Since each case study was unique, it was also a model within a broader group that provided transferability in the analysis phase from case to another.

Amankwaa (2016) explained that transferability in qualitative research is present through a good description of the study findings. The conclusions extend the content of the results to produce transferable findings applicable to different situations, settings, and people. Consumers of research may evaluate the research results using details such as the participants' interactions and selected research location, among others. A well-designed qualitative study along with its execution may generate findings that provide insights into the development of policies that focus on the stakeholders' engagement in water savings initiatives

**Dependability**

A transparent description of the research process during the beginning phases, project development, and reporting of the findings enables other researchers to replicate research procedures (Yin, 2018). An audit trail is a strategy to ensure that a research path is followed in the research process and analysis of the findings. Dependability suggests the stability of the results over time and occurs as a result of accuracy in data interpretation. According to Amankwaa (2016), dependability activities in qualitative

research ensure that the research findings are conclusions or findings based on the examination of the collected data.

I used a research protocol to ensure that each study step was followed and documented. I detailed the data sources as support of the research findings. In so doing, scholars can audit, follow, and elaborate comments regarding the research process (see Korstjens & Mosser, 2018). The research design and its different components were integrated in a reasonable way to analysis the research topic (Moon et al., 2016). The increase of dependability in this qualitative study portrayed transparency and reduction of bias in the research execution.

**Confirmability**

Confirmability is also known as external reliability in qualitative research and refers to the level of confidence in the findings being based on information provided by the participants rather than reflecting the researcher's bias (Kross & Giust, 2019). The potential and risk to establish interpretations of the findings using the researcher's imagination instead of the gathered data implies distorted data. It occurs when the participants' answers are disconnected from the line of inquiry (Yin, 2018). Providing findings that do not reflect the researcher's underlying motivations, perspectives, biases, and interests helps to affirm research confirmability (Moon et al., 2016). In this study, I presented the findings through a detailed description of the methodology and method to enable the consumer of research to verify confirmability.

To increase neutrality and certainty levels, I collected data from water administrators via an online questionnaire and from public statistics reports on water

consumption metrics. By using open-ended questions to collect the participants' responses about citizens' water use behaviors, I minimized any potential personal bias. Underlying issues represented a risk of interviewer bias. My potential bias was avoided by using data triangulation as a data validation method. Likewise, by eliminating possible influences, I reinforced dependability and confirmability in the research findings. According to Amankwaa (2016), confirmability involves neutrality in the research to ensure not research experience or bias will affect the data analysis and findings. I presented the dependability in this study through was the consistency in the data analysis process by following methodology standards in the research design.

**Ethical Procedures**

The main ethical consideration in this study was protecting the confidentiality of the participants' answers and the comprehensive descriptions of their experiences about citizens' water use behaviors. Following Walden University's IRB approval process, I kept the anonymity of the research participants. Cybersecurity phishing email safeguards were used to protect email exchanges between the participants and myself during the data collection process. Phishing is carried out by a suspicious email that attempts to acquire sensitive information by using a trustworthy sender (Jensen, Dinger, Wright, & Thatcher, 2017).

Since the study used a questionnaire with questions that were filled by human subjects, I obtained Walden IRB consent before beginning of study. My sampling plan was oriented to participants from private and nonprofit organizations in managing, supervising, and leadership positions in water industry organizations. Participation in this

study was voluntary, and participants were advised that they could end their participation at any time.

Five invitations were sent via email to each selected organization following Walden University's IRB requirements for selecting participants. In selecting sampling organizations, I excluded all public municipalities as research sites to avoid potential personal bias due to my work relationship with a local municipality. The invitation email included a Walden University-approved consent form and a link to the online questionnaire. A consent agreement statement and form were included in the invitation email. By following the IRB process, I complied with Walden University's institutional ethical standards.

The encrypted emails containing the answers to the interview questions sent to the participants were confidential. The participants' identities related to personal name, title, and organization were covered and coded in the data analysis. The privacy of the information was presented using encrypted emails and following all ethical procedures recommended by Walden University's IRB. Walden's ethical standards were highly considered because protecting the privacy of the identity of the participants allowed me to get their confidence to freely response the answers in the questionnaire.

The data collected from the questionnaires and the information generated during data analysis were compiled and stored in a Google Drive cloud file. Google Drive is a free storage service that is largely used to store sensitive information (Abdullah, 2019). All data and other relevant information collected or developed during the source of this study were stored in a locked file on my laptop computer that only I have access to. I

secured an encrypted digital copy of the questionnaire responses and all documentation used in the data analysis in a file that I will maintain for 5 years. After this period, I will destroy all collected data following Walden and U.S. federal regulations.

Walden's IRB suggested using questionnaires instead of email interview, which was my initial approach considered for this study. Then I used an online questionnaire to collect the data for the study, whereby an invitation email included a link to the questionnaire. Hawkins (2018) explained that email interviews follow a similar process of a face-to-face interview when the collected data need an additional explanation for clarification purposes. To enhance the credibility of the collected data, I emailed the responses to the participants asking confirmation or clarification about the answers included in the questionnaire.

## Summary

In Chapter 3, I explained in detail the research methodology used in this study. The research design served as a guide for the interview questions about the role of citizen water use behaviors in influencing stakeholder engagement. I explained the development of the questionnaire and described steps taken to verify the emerging themes and to increase confirmability and dependability. In other sections, I discussed strategies to ensure trustworthiness by considering credibility, confirmability, transferability, and dependability. In the following chapter, I summarized the results and sketched the interrelations n the constructs. I also delineated the implementation of the research plan to add trustworthiness to the research findings by exposing the replicability aspects of this study for further research. In Chapter 4, I present the data analysis results.

# Chapter 4: Results

## Introduction

The purpose of this qualitative exploratory multiple case study was to understand how citizen water use behaviors may influence stakeholder water conservation engagement in Florida municipalities. Thematic evaluation applying pattern code data analysis was used in this research with NVivo software to answer the central question: What are the common understandings on how the citizens' water use behaviors will influence the stakeholders' water conservation engagement in Florida municipalities? Data were collected from online questionnaires containing six questions and public statistics. Purposeful sampling was used to recruit water administrators from five U.S. organizations as study participants. A total of 15 participants, three per company, explained their understanding about the influence of the water use behaviors of the citizens on water savings programs. Themes emerged from the primary data or answers to the questionnaires. Trustworthiness of the themes was established through analysis of secondary data obtained from local water consumption statistics for 2019.

In Chapter 4, I discuss the results and describe the research settings, the company demographics and the participants. I detail data collection and data analysis steps. I also explain the data's trustworthiness aspects, and I itemize the emergent themes. The chapter concludes with a summary of the themes identified through NVivo's nodes and codes during data analysis.

## Research Settings

Five U.S. companies in the fields of water infrastructure, water treatment, water pollution, water reuse, drinking water, and stormwater projects, among others, were selected for this study. Participants' roles in these companies were as supervisors, managers, lead workers, project administrators, and superintendents. An online questionnaire comprising six questions was the primary source of qualitative data collection. Once I obtained Walden IRB approval, I sent an invitation email to a contact person in each company. The contact person acted as a liaison with the research participants. I emailed the research invitation with a link to the online questionnaire. The invitation email also contained the participant consent form. The participants completed the questionnaire in an average of 13 days. A reminder email was sent 7 days after the first contact.

At the time of this study, an external disturbance influenced the participants' experiences, and consequently, the study results. A global pandemic, COVID-19, surged at the beginning of 2020, resulting in a worldwide public health crisis. Water administrators played a crucial role in developing strategies to secure water resources during this public health crisis. Thus, some of their answers linked health concerns with water use behaviors and water savings programs. However, the influenced data were provided for in this study's framework due to the nature of the open-ended question included in the questionnaire. As such, I included them in the interpretation of the results. For instance, sustainable handwashing and noncontact drinking water facilities were the adopted water solutions to protect public health. I decided to add the answers related to

COVID-19 in this study and not consider them as biased answers because the pandemic will continue to be a steady external factor for water consumption for an unknown time after this study. Further, the concept of water use well-being was considered in this study's conceptual framework. Since the well-being of the community is a concept linked to water use behaviors and stakeholder engagement, it was appropriate to include the influenced answers in data analysis and interpretation of the results.

## Participant Demographics

Data were collected using a questionnaire containing six open-ended questions. Fifteen participants working in water programs completed the questionnaire and submitted their responses. The participants were recruited from five selected companies. All were involved in the administration of the water programs at their respective companies. The contact person in each organization forwarded the email to their colleagues at the organization.

The eligibility criteria were personal managing, administering, selling, and developing sustainable water initiatives. Deliberate selection of the participants provided in-depth knowledge based on their experience with the study topic (Gentles, Charles, Nicholas, Ploeg, & McKibbon, 2015). The questionnaire's semistructured format allowed each participant to provide in-depth and fully informed information on the research questions and topics. I collected demographic data on all participants. Although these data were not used for the thematic analysis or for drawing conclusions, I counted the number of participants by gender as a reference for further studies (see Table 2).

Table 2

*Overview of Organizations by Participant Gender (*N = *15)*

| Organization | Male | Female |
|---|---|---|
| Site 1 | 2 | 1 |
| Site 2 | 2 | 1 |
| Site 3 | 1 | 2 |
| Site 4 | 1 | 2 |
| Site 5 | 1 | 2 |
| Total | 7 | 8 |

## Data Collection

The data collection process began after receiving approval from Walden University's IRB (approval # 07-13-20-0726529). The targeted sample for this qualitative multiple case study was 15 participants. Purposeful sampling provided variation in the sampling because participants came from different site locations (see Vasileiou et al., 2018). The goal of using selective sampling was to ensure that I recruited the most appropriate participants to describe their experiences of water use behavior and stakeholder engagement.

The selected sites were five U.S. companies leading, managing, developing, and selling water infrastructure and services, all having business relations with Florida. The participants were recruited through a forwarded invitation email sent by the contact person in each organization. After I received IRB approval, I emailed an invitation to the contact person at each company and asked them to forward the email to colleagues they knew were related to the research topic. Some participants copied me when they forwarded the invitation email to their colleagues. I received no emails asking

clarification to the questions or concerns regarding the questionnaire from the participants. To validate participant responses, I sent encrypted emails to them that included their responses to the questions, allowing them to confirm their responses.

The invitation email explained the research participation process, the participants' rights, the estimated time to complete the questionnaire, and the expected elapse time for receiving their responses. The purpose of the study and its implications were described in the invitation email and introduction to the questionnaire. I explained the study scope as well as the identified risks and benefits. I mentioned the right of the participants to terminate their participation at any time. Each participant, through the consent form, acknowledged the ethical procedures taken to secure the confidentiality and privacy of their identity and responses.

The questionnaire consisted of semistructured open-ended questions that could be answered in 30 min or less. The participants' knowledge and understanding of water conservation practices were depicted throughout their responses. The average completion time was just over 16 min. I reviewed the questionnaire completion status five times during the week to count the responses. The 15 questionnaires were completed in 13 days; nine (60%) in 6 days, the other six (40%) were received from 8 to 13 days. Responses were downloaded and classified by participant. I then sent encrypted emails to each participant to confirm their answers. None indicated any changes in their responses. The collected data were encrypted in a digital file, which I will maintain for 5 years and then destroy.

After verifying the accuracy of the 15 questionnaires, I organized the data by participant and questions. This process permitted an exploratory review of the central question to identify the emergent themes, known as common understandings among the different sites or locations. The emergent themes were created as codes in NVivo.

As previously noted, I also included a secondary data source in addition to the primary data. The secondary source was Florida water consumption/water savings initiatives statistics and reports. While I waited to receive responses to the questionnaire, I collected published statistics recorded as public records. Water consumption reports and installed water savings facilities statistics for 2019 provided data on trends in water consumption in various cities in the state of Florida. I listed details from these reports such as the cost of a gallon of treated water, water infrastructure, efficient water stations, and smart water faucets, among other terms, to create codes for data analysis.

## Data Analysis

I conducted pattern data analysis using NVivo. Among the several types of coding in NVivo, I selected theme nodes for data analysis. These nodes are codes that represent the themes identified in the data (Robins & Eisen, 2017). Exploratory review of the central research question as reflected in the collected data allowed me to identify emergent themes visualized as patterns. For the data analysis process, I selected a *text search* to run a query using the *created codes,* including *identified patterns* by selecting *grouping* functionality. The emergent themes or findings were presented, the data collection was described, and data analysis explained, to conclude with the results of the study.

**Organizing the Data**

Organizing the collected data included correcting grammar on the responses and hand coding the participant names and sites. During the organization of the responses and data review, I used deductive coding or preset coding that reflected this study's conceptual framework to identify 12 emerging themes or codes. Applying the deductive approach in NVivo software, I created a list of 12 codes to be used as created codes for NVivo query results:

- Code 1: Water use behaviors
- Code 2: Educational programs
- Code 3: Water technology
- Code 4: Cost of water infrastructure
- Code 5: Trust and cooperation in the public system
- Code 6: Economic incentives
- Code 7: Price of a gallon of treated water
- Code 8: Water conservation management
- Code 9: Stakeholder engagement
- Code 10: COVID-19
- Code 11: Health concern
- Code 12: Smart water facilities

**Thematic Analysis**

Co-occurring codes among the responses of the six questions helped me to build node hierarchies. A node is the relationship of codes about a specific theme (Robins &

Eisen, 2017). Using NVivo, I created nodes or emergent themes to run text search query results to analyze the content of the responses based on the text frequency of the preset codes (see Figure 5). I used a test search query to find all occurrences of the phrase or preset codes such as water savings facilities and water conservation awareness. The 12 coding categories identified in the data were related to the central research question and grounded in the conceptual framework (see Figure 2 in Chapter 2). The preset codes or emergent themes searched the concepts of water use behaviors, water conservation, and stakeholder participation entangled in the conceptual framework of this study.

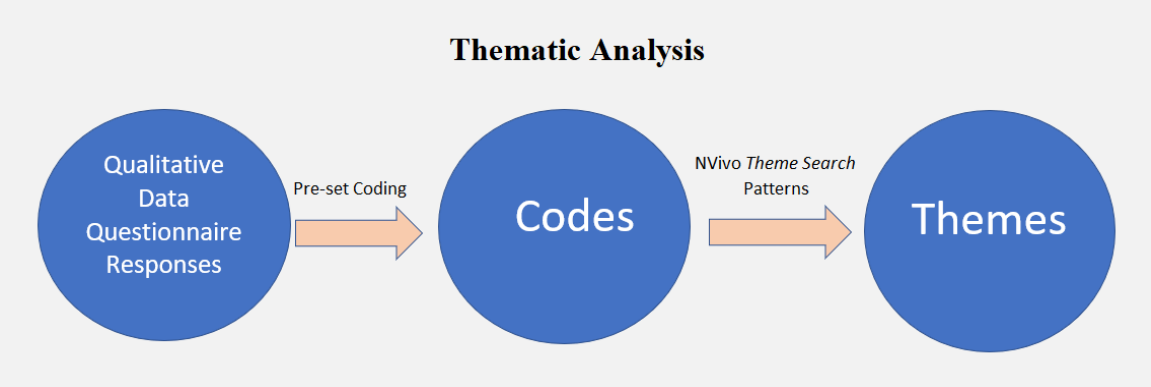


*Figure 5.* Thematic analysis.

## Evidence of Trustworthiness

### Credibility

According to Patton (2016), when qualitative research is completed, the factors of reliability, validity, and quality must be examined. Patton suggested that unconscious researcher bias, experiences, and culture may affect the credibility of qualitative research. The credibility strategies used in the present study, such as purposive sampling,

triangulation, and member checking, ensured trustworthiness and structural coherence in the research. The invitation email played a crucial role in building and establishing credibility with the organizations and participants in this study. Walden University's IRB guided the data collection process by revising the data collection instruments to ensure confidentiality and protection of participant identity. As a result, the participants freely expressed their opinions due to the transparency of the data collection process. Thus, following Walden IRB guidance step by step facilitated the process of securing the participants' answers. To ensure the credibility of the responses, I employed member checking by emailing the responses to the participants for revision and confirmation. Triangulation was employed by using secondary data to confirm water consumption trends and installation of water savings facilities. Triangulation and member checking (Merriam & Grenier, 2019) reinforced the data verification process, prevented influenced or biased responses, and confirmed credibility and the rationale behind the given answers. Chapter 5 includes recommendations on how the trustworthiness elements can be included in existing initiatives to foster water conservation.

**Transferability**

To achieve external validity or transferability in the study findings, I used purposeful sampling to identify 15 water administrators for an in-depth study. The participants held different hierarchical positions as well as varying levels of knowledge of water use behaviors linked to water conservation engagement. By adding a closed question to the questionnaire, I confirmed that all 15 participants met this study's inclusion criteria. Data saturation was reached when I used NVivo to identify all possible

clusters. To ensure the highest level of transferability, I provided a detailed description of the study, which readers may use to determine if the findings include all developed patterns, themes, and common understandings (see Saldaña, 2016). Patterns were first identified in the responses. Preset codes were created to find nodes or emergent themes. Recommendations based on data analysis conducted for this study could be employed in other industries related to green resources. How other researchers can use the study results in further research is described in Chapter 5 as potential strategies to mitigate the impact of water use behaviors on water conservation engagement.

**Dependability**

Dependability is grounded on the trail of determinations researchers make to explain contextual data and justify methodology (Yin, 2018). In this way, other researchers may undertake a similar case study using the same sampling technique. By comparing the results using an audit trail, researchers may validate the data collection and data analysis processes and establish study dependability.

Dependability is achieved when the stability of the findings is presented in a way that, over time, other researchers can replicate the research procedures described in a study (Yin, 2018). To ensure dependability, as stated in Chapter 3, I thoroughly examined every step along the coding process to ensure alignment between the preset codes, the conceptual framework, and frequency of the codes in the collected data. Dependability was achieved when thematic stability applied to the results allowed them to obtain reliable information (see Yin, 2018). By using an audit trail through the constant themes,

I found the point of intersection of the content codes or the common understandings among the 15 participants.

### Confirmability

Confirmability in qualitative research is known as external reliability, where the level of confirmation is made by other researchers (Patton, 2016). Participants' responses can be distracted from the line of inquiry (Yin, 2018). Therefore, there is the potential of researchers being unconsciously influenced by participant responses. I established a high confirmability level in this study. After I received the questionnaires from the participants, I emailed the responses to each participant to confirm their answers. This checking procedure allowed me to establish trustworthiness (see Kornbluh, 2015). As the researcher, I exerted my abilities to understand the research topic, pay attention to the data, and use ethical procedures. I had no relationships with any of the study participants, which minimized any bias I might have had regarding the participants' answers, their points of view, or their perceptions of the research topic.

## Study Results

This exploratory multiple case study involved online questionnaires. The data came from five sites represented by U.S. companies in the water industry field, whereby 15 water administrators, three per site, answered six open-ended questions contained in a semistructured online questionnaire. In this section, I discuss the common understandings among the five organizations that emerged from analyzing the participants' responses. For accuracy of the responses, each participant received and confirmed their responses via encrypted email. Preset codes were created to help identify the themes based on the

patterns that emerged from the NVivo theme search query. The pattern of the common understandings aligned with the conceptual framework and is presented by order of relevance based on frequencies and percentages of occurrences in participant responses. Further, I include the recurrent themes that emerged from the trends shown in published statistics recorded as public records, which were used to established triangulation.

The central question for this qualitative multiple case study was: What are the common understandings on how citizen water use behaviors will influence stakeholder water conservation engagement in Florida municipalities? The following major themes were identified to address this research question (see Table 3).

Table 3

*Summary of Emergent Themes*

| Theme | Emergent theme | Conceptual framework or concept |
|---|---|---|
| 1 | The need for a water use behavior change among stakeholders | Educational programs, water conservation management, water use behaviors |
| 2 | Health risks for COVID-19 using water technology | COVID-19, water technology, price of a gallon of treated water |
| 3 | Trust and cooperation in the public system | Trust and cooperation, economic incentives, stakeholder engagement |
| 4 | Water infrastructure aims to reduce water consumption | Health concern, price of a gallon of treated water, cost of water infrastructure |
| 5 | Engagement in water savings programs | Stakeholder engagement, water conservation management, economic incentives |
| 6 | Water use behavior change linked to smart water facilities | Health concern, smart water facilities, price of a gallon of treated water |

### Emergent Theme 1: Need for Water Use Behavior Change Among Stakeholders

The first theme that emerged from NVivo data analysis reflected three patterns: educational programs with a higher percentage of occurrence, water conservation

management, and water use behaviors (see Table 4). All participants answered Question 1, which focused on their perspectives on how changing water use behaviors can impact stakeholder engagement.

Table 4

*Questionnaire Question 1 Data*

| Theme | Pattern among the five sites | Total # of occurrences | % of occurrences |
|---|---|---|---|
| Educational programs | Water conservation can be developed at schools and workplaces with educational programs | 10 | 66 |
| Water conservation management | Smart water faucets and drinking water stations installed local and nationwide indirectly enforce water conservation | 9 | 6 |
| Water use behaviors | Water use behaviors in the community begin at homes and schools | 7 | 46 |

Participant 1 explained the role of stakeholders:

> A water-wiser use at home will go a long way in impacting water conservation. In the United States of America, the current average water use is very high that puts a lot of pressure on our water sources. By minimizing water wasting, we can sustain our water sources and maintain infrastructure as a capital investment at reasonable levels.

Participant 9 discussed water program management: "Water use behaviors in the community begin at home in daily activities. People can engage in water conservation through educational programs to maintain their health." Participant 12 stated, "My company developed several programs to educate water consumers to reduce the wrong water usage when they wash the dishes and their hands at home."

Participant 15 described the role of educational programs to motivate change by stating the following: “Changes in water use behaviors can start during the pandemic with the use of smart water faucets and drinking water stations. And local and nationwide programs that promote water conservation.” This answer was relevant to the study’s conceptual framework because this participant linked the stakeholder role to the need for water management to implement smart water initiatives.

**Emergent Theme 2: Water Technology Can Develop Healthy Environments**

The second emergent theme reflected the influence of the COVID-19 pandemic (see Table 5). The participants responded to the open-ended question, “What are the factors that inhibit the adoption of water savings programs within your organization? Please explain the leading causes of the difficulties.” The participants’ responses were framed to reflect the health situation at the time of this study.

Table 5

*Questionnaire Question 2 Data*

| Theme | Pattern among the five sites | Total # of occurrences | % of occurrences |
|---|---|---|---|
| COVID-19 | Washing hands is seen as a primary activity to be healthy | 12 | 80 |
| Water technology | Cost of installation of efficient/smart water facilities, e.g., contactless faucets | 8 | 53 |
| Price of a gallon of treated water | The government keeps the water cost lower, and citizens misuse it | 6 | 40 |

Twelve participants (80%) related their answers to COVID-19 health concerns as the major factor impacting the adoption of water savings programs. Participant 11 stated, "The biggest factor is health to prevent COVID-19 and other sicknesses people need to use more water for cleaning activities." Participant 10 addressed water technology: "Smart water technology is expensive to be installed in old infrastructures; meanwhile, water is cheaper. Washing hands is seen as a primary activity to be healthy." Participant 15 explained the price of a gallon of water and technology related to health issues raised by COVID-19:

> The principal factor is the lack of knowledge in the people of the new technology and the low cost of the potable water. The health concern is a strong factor. Washing hands is a priority, and cleaning activities require water.

**Emergent Theme 3: Trust and Cooperation in the Public System**

The third emergent theme surfaced reflected patterns of trust and cooperation, economic incentives, and stakeholder engagement (see Table 6). In analyzing this theme, I also selected the NVivo grouping option "with generalization" for matching. This

functionality opened the text or phrases further and allowed me to search among the responses to the themes in the answers. The question, "How much influence does trust and cooperation in the public system have on the engagement in water conservation initiatives?" reflected further elaboration; specifically, the notion to investigate if trust and cooperation influence the engagement in water conservation. The responses to this question were relevant to stakeholder theory, the present study's conceptual framework.

Table 6

*Questionnaire Question 3 Data*

| Theme | Pattern among the five sites | Total # of occurrences | % of occurrences |
|---|---|---|---|
| Trust and cooperation | Trust and cooperation in the public economic incentives help to sell water savings devices | 15 | 100 |
| Economic incentives | Governmental water initiatives include incentives for the customers | 10 | 66 |
| Stakeholder engagement | Florida community is trusting in local leaders' cooperation to implement water safety initiatives at schools | 8 | 53 |

The 15 participants confirmed that trust and cooperation are needed to adopt water savings initiatives. While all of the participants expressed that trust in governmental water programs fosters the adoption of water savings practices, only 10 mentioned economic incentives. Participant 5 explained the relationship between the identified themes:

> Trust and cooperation promote water conservation programs. In a building with 400 apartments that I installed efficient water facilities; the renters agreed to pay

the installation cost if the company get a full rebate of the equipment cost from the local government.

Participant 4 expressed a positive experience working with government funds in stating, “In my 30 years in the water field developing water conservation projects in the U.S., the trust and cooperation in government have played a crucial role.” Participant 9’s perspective about government cooperation and stakeholder engagement was as follows: “Current health concern increases the cooperation of the local government. COVID-19 requires significant changes in water use behaviors. Trust in local leaders is essential for the success of water conservation programs.”

**Emergent Theme 4: Water Infrastructure Aim to Reduce Water Consumption**

The fourth emergent theme reflected the responses to the question, “What are your challenges when trying to convince water consumers to change their water use behaviors? Could you please give an example, and how did you manage it?” (see Table 7). The COVID-19 pandemic was reflected in the participants’ responses, all of which considered health concerns. Ten participants mentioned the pandemic as a challenge to reducing water usage. Nine participants indicated lowering the price of a gallon of treated water was the predominant challenge to reduce water consumption.

Table 7

*Questionnaire Question 4 Data*

| Theme | Pattern among the five sites | Total # of occurrences | % of occurrences |
|---|---|---|---|
| Health concern | Health issues are associated with cleaning activities and water use | 10 | 66 |
| Price of a gallon of treated water | The lower cost of the potable water | 9 | 60 |
| Cost of water infrastructure | Water facilities are not profitable investments | 6 | 40 |

Participant 2 stated, "The major challenge is the lower cost of the potable water. Consumers did not see the water facilities as a profitable investment because their water bill is not significant in their budget." Participant 4 explained an experience to convince a customer of the importance of water conservation:

> The cost of water is the challenge. Potable water is inexpensive. In an incident with a customer, the best allegation was appealing to his greener desire for a better world. Then I explained how they could change his habit of watering his plants in the morning and afternoon.

Participant 2 also identified the theme of the cost of water infrastructure, "The challenge is to convince companies to invest money in water devices without a significant reduction in their water bill. To address this paradigm, I always explain to my customers the advantage of the rebate involves in the project."

**Emergent Theme 5: Engagement in Water Saving Programs**

The fifth theme emerged from data analysis of the responses to the open-ended question, "What are your perspectives on the need for economic incentives to increase the

engagement of stakeholders (individuals, communities, and local government) in water savings programs?" (see Table 8). This question generated responses whereby participants described common understanding on the level of influence of economic incentives on stakeholders' decisions to adopt water savings technology. Twelve participants (80%) aligned their answers to the pattern related to installing smart water facilities and promoting these facilities.

Table 8

*Questionnaire Question 5 Data*

| Theme | Pattern among the five sites | Total # of occurrences | % of occurrences |
|---|---|---|---|
| Stakeholder Engagement | Installing smart water facilities and promoting the advantages of water savings programs | 12 | 80 |
| Water conservation management | Awareness of water limitations in Florida's water reserves | 9 | 60 |
| Economic incentives | Incentives including penalties for higher water consumption | 8 | 53 |

Participant 2 stated, "Economic incentives are needed to motivate companies in the water facilities investments." Participant 1 identified persuasive approaches: "Technical literature lists several proven economic incentives that may help water conservation. These incentives, including penalties for overuse or water usage abuse, can help." Participant 3 used a professional experience to explain a clear position on economic incentives and stakeholder engagement: "My company always presents the economic incentives as well as the ROI [return on investment] to convince the investors in the acquisition of efficient water equipment."

In contrast, Participant 6 stated, “The promotion of the benefits of water conservation is more important than economic benefits. This statement was the answer to several customers.” Similarly, Participant 11 answered, “Economic incentives are not relevant when health concern is more serious.” Participant 14 concurred: “Current health situations minimize monetary incentives. However, governmental incentives are required to increase the adoption of water conservation ideas.”

**Emergent Theme 6: Water Use Behavior Change Linked to Smart Water Facilities**

The sixth theme emerged by matching the preset themes and patterns using NVivo (see Table 9). Participants presented their common understandings on how to achieve permanent water use behavior changes. The question created to collect responses was: What do you consider are the primary motivators that will promote a permanent change in water use behaviors and engagement in water conservation programs?

Table 9

*Questionnaire Question 6 Data*

| Theme | Pattern among the five sites | Total # of occurrences | % of occurrences |
|---|---|---|---|
| Health concerns | Health issues motivate water conservation | 14 | 93 |
| Smart water facilities | Contactless faucets and facilities with new technology | 13 | 86 |
| Price of a gallon of treated water | Price of a gallon of water based on its usage | 9 | 60 |

Fourteen participants (93%) mentioned health concerns, smart water facilities, and the price of a gallon of treated water as motivators to foster water use behavior changes. Participant 14 stated, “The health factor is the primary motivator to change

water waste behaviors. New water installations with new technology will promote a permanent reduction of the water used at home and workplaces." Participant 15 was more specific and mentioned COVID-19: "The health concern of COVID-19 is a big motivator. People know that the solution requires big changes in water use behaviors. Installations of modern water faucets to prevent contamination and safe water stations are the actual motivators."

Participant 1 addressed the price of a gallon of treated water as the primary motivator: "To me, the primary motivator to promote a permanent change in water use behaviors is appropriate and fair treated water prices." Participant 2 confirmed Participant 1's statement: "Water subsidies disproportionately benefit higher income households. The primary motivator will be a revision of the drinking water cost."

## Summary

In this chapter, I presented the data analysis of responses to an online questionnaire provided by 15 participants from five different locations. The five sites created five cases. The diverse responses among the participants provided in-depth responses to water conservation and its drawbacks. NVivo analysis resulted in six themes that reflected common patterns of perspectives among the participants' responses. These themes reflected this study's conceptual framework of stakeholder participation and helped to answer this study's overarching research question: What are the common understandings of how the citizen water use behaviors may influence stakeholder water conservation engagement in Florida municipalities? In Chapter 5, I present a detailed

interpretation of the results or emergent themes, limitations of the study, recommendations, and implications for social change.

# Chapter 5: Discussion, Conclusions, and Recommendations

## Introduction

The general problem in this study was that administrators working on water conservation programs have difficulty fostering stakeholder engagement in advocating water use behavioral changes (Akhmouch & Clavreul, 2016). The specific problem for Florida municipalities is that local administrators of water savings projects do not have a real understanding of the role of citizen water use behaviors in water conservation. My review of the literature exposed a gap in qualitative research on the role of citizen water use behaviors and stakeholder engagement in water conservation, specifically on how citizen water use behaviors influence stakeholder water conservation engagement.

The purpose of this qualitative exploratory multiple case study was to gain a common understanding of how citizen water use behaviors influence stakeholder water conservation engagement in Florida municipalities. Study participants were 15 water administrators from five U.S. organizations with offices in the state of Florida. Data collection included research questions conducted via online questionnaires with six semistructured and open-ended questions. I also reviewed public records on water consumption and implemented water programs, which helped to achieve methodological triangulation.

The data analysis process included identifying patterns in the participants' responses, which then led to developing themes such as the price of a gallon of treated water, installed water facilities, and others. Using NVivo's text search query, I completed data analysis using preset codes to develop patterns and themes. In this chapter, I present

the interpretation of findings and discuss the study limitations. I also present recommendations, implications for positive social change, and conclusions.

## Interpretation of Findings

I conducted this study to obtain common understandings and emergent themes related to how citizen water use behaviors may influence stakeholder water conservation engagement in Florida municipalities. Qualitative research provides narrative from experiences rather than just variables regarding a problem of interest (Patton, 2016). I collected narratives from water administrators using six open-ended questions related to this study's overarching research question: What are the common understandings of how the citizens' water use behaviors will influence the stakeholders' water conservation engagement in Florida municipalities? Data provided in the responses were coded using patterns or nodes to find emergent themes or common understandings among the 15 participants. The emergent themes were presented in Chapter 4. In this chapter, I present a detailed analysis of the findings.

### Emergent Theme 1: Need for a Water Use Behaviors Change Among Stakeholders

This theme emerged from analysis of responses to the question "What are your perspectives on how changing water use behaviors of citizens will impact the engagement of stakeholders (individuals, communities, and local government) in water conservation initiatives in Florida?" Ten participants (66%) related their responses to educational programs by stating that water conservation can be developed at schools and workplaces with educational programs. Nine participants (60%) explained how to address water conservation management in stating that smart water faucets and drinking water stations

installed in local and nationwide indirectly engage the community in water conservation. Additionally, seven participants (46%) addressed water use behaviors in stating that water use behaviors in the community begin at home and schools.

The three emerged themes—educational programs, water conservation management, and water use behaviors—aligned with this study's conceptual framework. The conceptual framework's primary concept was water use behaviors, which refer to personal norms or beliefs and influences by perceived social pressure. According to Addo, Thoms, and Parsons (2018), the applicability of water conservation strategies depends on the understanding of the role of water use behavior change and environmental benefits. Based on the participants' responses, the concept of water use behavior was consistent with water management and governance as a multistakeholder framework for sustainable water use.

**Emergent Theme 2: Health Risks for COVID-19 Using Water Technology**

The second theme emerged from analysis of responses to the question "What are the factors that inhibit the adoption of water savings programs within your organization? Please explain the leading causes of the difficulties." Twelve (80%) participants responded that COVID-19 has negatively influenced water conservation. Handwashing has been recommended as the most effective action to prevent the spread of COVID-19 infection. This pattern was consistent in the participants' responses and linked to water technology and the water use well-being concept. Other participants focused their answers on the cost of installing efficient water facilities such as contactless faucets. The

price of a gallon of water was cited by six (40%) participants, who remarked that the government keeps water costs lower, and citizens misuse it.

The two themes, water technology and the price of a gallon of treated water, were entangled in the emergent theme 2 related to this study's conceptual framework. Proenvironmental actions require recycle activities that demand time and efforts from stakeholders. The drawbacks of proenvironmental behaviors in water consumers can be reduced with technological advancements to create healthy environments (Abusafieh & Razem, 2017). COVID-19 and its health risks could be analyzed as a biased theme that emerged from the responses. However, the COVID-19 theme was integrated as part of proenvironmental strategies. The concept of water use well-being and proenvironmental strategies includes community health concerns. For instance, Martinez and Lewis (2017) stated that health campaigns aligned with well-being in the community influence behavioral intentions for reducing water consumption.

**Emergent Theme 3: Trust and Cooperation in the Public System**

The third theme emerged from analysis of responses to the question "How much influence does trust and cooperation in the public system have on the engagement in water conservation initiatives?" All 15 participants answered that trust and cooperation in public economic incentives help to sell water savings devices. This commonality among the five sites confirmed the stakeholder theory construct of trust and cooperation. Indeed, local governments and private companies are demanding guidelines for fostering water efficiency and resilient communities (U.S. Environmental Protection Agency, 2020; South Florida Water Management District, 2020). Economic incentives as a theme were

also identified in 10 (66%) participant responses that reflected the pattern that governmental water initiatives should include customer incentives. The theme of stakeholder engagement was identified by eight (53%) of the participants. The identified pattern aligned with this study's conceptual framework, as reflected in Participant 12's comment that "Florida community is trusting in local leaders' cooperation to implement water safety initiatives at schools."

In Chapter 2, I reviewed literature for the development of this study's conceptual framework that discussed trust and cooperation in the government and stakeholder engagement as elements enmeshed in the stakeholder theory. For example, Ellyson and Hanafiah (2019) cited the existence of a low level of awareness of water as a limited natural resource among stakeholders. Wibowo and Grandhi (2017) spoke to using private and public organizational leaders to promote sustainable behaviors by exerting sustainable stakeholder management as part of the role of stakeholders as participants in urban services. Based on the present study's results, the participants confirmed that trust and cooperation in public systems might foster stakeholder water conservation engagement and, consequently, may enhance stakeholders' roles as participants in urban services.

**Emergent Theme 4: Water Infrastructure Aim to Reduce Water Consumption**

The fourth emergent theme related to water infrastructure, health concerns, and the price of a gallon of treated water. Ten (66%) of the participants noted health issues associated with cleaning activities and water use. The lower cost of the portable water was a recurrent answer among nine (60%) of the participants. Six (40%) participants

mentioned that water facilities are not profitable investments due to the cost of water infrastructures.

These responses aligned with the conceptual framework discussed in Chapter 2. For instance, urban water services that linked good water quality with technology were explored by Laitinen et al. (2020). Cooperation of governmental stakeholders for balancing economic incentives, governance, and infrastructure aligns with the stakeholder management concept. Indeed, urban water development occurs by installing water facilities for public access. Including stakeholders in the development of sectoral policies helps to build water governance and establish economic cooperation and development as part of urban water governance (Romano & Akhmouch, 2019). The study participants' responses reflected the need for more government cooperation to implement water technology on a large scale. Based on the responses, the water administrators envisaged the use of water technology as a long-term solution for changing water use behaviors in the community.

**Emergent Theme 5: Engagement in Water Savings Programs**

The fifth emergent theme emerged from analysis of responses to the question "What are your perspectives on the need for economic incentives to increase the engagement of stakeholders (individuals, communities, and local government) in water savings programs?" Twelve (80%) of the participants identified stakeholder engagement as a key factor in promoting water savings programs. The pattern among the answers suggested that installing smart water facilities helps to promote the advantages of water savings programs. Water conservation management was the second theme involved in

this question, reflected in nine (60%) of the participants' responses. Awareness of the water limitations in Florida's waters reserves and incentives and penalties were the factors associated with stakeholder engagement.

Responses to the fifth question helped to confirm findings related to Question 3, as the responses were similar among participants from different sites. Stakeholder water conservation engagement is a salient point of the conceptual framework developed to conduct this study. A multistakeholder framework for sustainable water use needs good water consumption practices to support the utilitarian benefits of ecological projects (Han et al., 2018). Finding a solution to diminish sustainability problems using water management as a concept was the purpose of developing a decision-making framework to enhance understanding of a water, sustainability, and climate project in South Florida (Lanier et al., 2018). The commonality of the participants' responses aligned with the stakeholder theory constructs of the need for water management and governance in water savings programs.

**Emergent Theme 6: Water Use Behavior Change Linked to Smart Water Facilities**

The sixth emergent theme emerged from responses to the question "What do you consider are the primary motivators that will promote a permanent change in water use behaviors and engagement in water conservation programs?" The answers presented common understandings on how to accomplish permanent water use behavior change. Fourteen (93%) participants provided answers that aligned with the pattern of health issues linked to water conservation. All participants mentioned implementing smart technologies, such as contactless faucets and smart water facilities, as one potential

solution for permanently changing community water use behaviors. The price of a gallon of treated water was also a strong theme, mentioned by nine (60%) of the participants.

I conducted a cross analysis of responses to Question 6 with Question 1 and found that the presence of COVID-19 influenced a permanent water use behavior change. However, the health risks that have developed because of the pandemic also reinforce the need for adopting smart technology and, consequently, water conservation. Supposing that water administrators do not act at the time when they perceive an increase in water demand, water plant capacities decrease, resulting in severe drought conditions due to insufficient water supply (Kwon & Bailey, 2019). Indeed, organizational leaders allocate financial resources in sustainable projects focused on community well-being (Sako, 2018). The right balance of a relationship of community leaders and residents' requisites to achieve environmental decisions opens discussions on the emergent themes identified in this study. The participants' answers presented the need for water use behavior changes aligned with governmental incentives to implement water technology. The presence of a pandemic and the associated health risks influence the need for water use behavior changes supported by water savings programs, including access to smart water facilities.

## Limitations of the Study

The scope of this exploratory multiple case study encompassed common understandings on how citizen water use behaviors may influence stakeholder water conservation engagement in Florida municipalities. My intention in this study was to achieve a common understanding among all five sites and participants about how water

use behaviors influence stakeholder engagement in water conservation. The diverse knowledge and experience among the study participants provided in-depth data for gaining common understandings between the five sites.

There were various limitations or boundaries in this study. In Chapter 1, I described limitations or study boundaries as procedural weaknesses and identified some possible limitations. The first limitation was the different sizes of the organizations or site participants in the study because each posed different experience levels, which could have affected the administrators' views of the same situation. The data collection process included administering semistructured questionnaires and gathering public statistics. The responses submitted in the online questionnaires were based on professional experiences of water administrators who lead water savings programs. This limitation was overcome because the water administrators gave their responses based on their experiences and challenges oriented to the goal of the study. There was no evidence of unethical answers; however, influenced responses may have been submitted due to health concerns of the COVID-19 pandemic. For data validity, I emailed the participants' responses via encrypted emails to confirm their accuracy. The reassurance of anonymity of the participants' identities and confidentiality of the answers allowed me to collect reliable data. Administering the questionnaires via emails overcame a possible limitation of logistics costs and possible underlying bias due to my physical presence if in-person interviews were conducted with the participants.

My challenge as a researcher was to obtain responses to the questionnaire. A possible related limitation, reflecting feasibility of collecting reliable data, was

diminished by emailing reminder emails to contact persons in the organizations. At the time of data collection, adopting safe and efficient water facilities was being discussed in the water field industry, which suggested that responses to the questionnaires would be prompt. Indeed, water administrators wanted to contribute with solutions by sharing in-depth responses to the questions. To ensure evidence of trustworthiness, I used methodological triangulation as a cross-checking strategy. This included using public statistics and member checking for eliminating bias and interpretative data errors. These steps also added validity to data analysis. Likewise, aligning the research question and the questions asked of study participants with the conceptual framework enhanced transferability among all data in this study.

## Recommendations

Future researchers may wish to consider the following recommendations in other studies on the role of water use behaviors to influence stakeholder engagement toward water conservation. I used a qualitative exploratory multiple case study approach to obtain in-depth responses from the study participants. I used a semistructured questionnaire with open-ended questions to obtain these responses. I used the conceptual framework of the study, rooted in the constructs of the stakeholder theory concept, to construct the questions asked of study participants. The reviewed literature on water management and stakeholder theory presented opportunities for addressing a gap in the research on the role of water use behaviors in water savings initiatives. This study provides opportunities for replication using qualitative, quantitative, or mixed methods validation in future research.

**Recommendation 1: Qualitative Methodology**

This qualitative study can be replicated using different samples such as individuals or members of a community from specific or different locations. The conceptual framework of stakeholder theory may allow the research to be replicated in a macro environment. As stated in Chapter 2, this conceptual framework helped me gain common understandings of the two constructs of the stakeholder theory: first, trust and cooperation among all stakeholders, individuals, and organizations; second, theory-based stakeholder management linked to stakeholder engagement. These two constructs allowed me to obtain in-depth responses about water use behaviors, stakeholder engagement, and water conservation management and its commonalities.

Although the study findings did not provide conclusive evidence about the role of water use behaviors toward water conservation, the findings did generate common understandings or unities on how organizational leaders may foster stakeholder engagement in water savings programs. Research on the role of water use behavior and stakeholder engagement can be extended to different settings. Organizational leaders involved in water programs may refer this study's findings for evidence of the factors that influence stakeholder engagement focused on water conservation. The following recommendations are based on the emergent themes that reflect the perceptions or standpoints of the research participants, the literature review, and the conceptual framework of this study.

**Recommendation 2: Research Topics**

The results of this study may lead to a better understanding of the role of water use behavior change. The challenges depicted in the participant responses on adopting good water use behaviors included more use of smart water facilities such as contactless faucets, efficient toilet tanks, and safe drinking water stations, among others. Adaptive practices and infrastructure development are long-term investments for communities, industries, and governments (McMartin et al., 2018). Further, researchers may conduct future studies on the experiences of water users by analyzing different standards and approaches on water supply management and water efficiency at a proper level. Another topic that may be investigated is the influence of community educational programs that promote standard best practices linked to measurable outcomes.

**Recommendation 3: Quantitative Methodology**

This study was limited to water use behavior and its influence on stakeholder engagement focused on water conservation. The emergent theme from this study about COVID-19 and its influence on water consumption is doable to be measure. Further quantitative studies to measure the impact of COVID-19 on water consumption may provide knowledge of future water consumption practices and water demand. Baleta et al. (2019) stated that sustainable development includes operational efficiencies and environmental systems to address water consumption. The participants' answers portrayed solutions to water use and community well-being through adopting water technology and fostering behavioral intentions. Based on the responses, improving water

use behaviors toward water conservation is possible by using water technology and installing water infrastructure.

## Implications

The implications of this study for positive social change and contributions to theory and practice are grounded in the common understandings that emerged as themes or results from the participants' responses. The implication of this study regarding a solution for a specific problem among Florida municipalities was that local administrators of water savings projects do not have a real understanding of the role of citizen water use behaviors in water conservation. This study's findings and its interpretations provided new insights for private and public organizational leaders to define policies and strategies to increase water conservation awareness. Likewise, the study results included information useful to stakeholders and future scholars to foster engagement in water savings initiatives and urban system projects.

### Implications for Social Change

The implications for positive social change in this study included new insights or commonalities on how stakeholder engagement may foster with community water use behavior changes. In Chapter 1, the implication for social change was that social change toward water conservation starts when multiple sources of knowledge converge in an egalitarian atmosphere with proenvironmental intentions and actions (Kwon & Bailey, 2019). As the present study unfolded, it became clearer that permanent water use behavior changes require developing policies and educational programs and installing smart water technology oriented to community well-being. This study may serve as

inductive research to add knowledge for promoting water use behavior change and how to foster engagement in water savings initiatives among all stakeholders. Further, the findings are generalizable across all organizations in the water industry to develop sustainable neighbors and have a positive impact on cities or municipalities.

**Implications for Theory**

This study's findings provided greater understanding of the factors that influence stakeholder engagement in water savings initiatives in Florida and other U.S. states. Possible contributions from this study's findings encompass advancements in water management, creating theory or guidance to water administrators to include in policies and strategies. Environmental responsiveness in stakeholders was one of the study findings. The existent theory about water conservation management may include direct and constructive collective actions among public and private entities and communities toward water conservation and water waste (Taylor & Lamm, 2017). The major contribution to theory is rooted in the guidance provided in the study results to develop literature about water use behaviors change and adopting smart water technology to help create healthy and sustainable cities. Developers of educational water programs for ensuring water for future generations in Florida may use this study's findings to prepare more effective promotional campaigns.

**Implications for Practice**

This study's results provided new insights on water conservation management as a significant component of sustainable living in Florida and other U.S. states. Exploring the knowledge and experience of water project administrators provided a practical

assessment of the role of citizen water use behaviors toward water sustainability initiatives. The knowledge and expertise of water administrators leading water conservation efforts reflected utilitarian values in society (Han et al., 2018). The common understandings or emergent themes on the role of citizen water savings behaviors toward water conservation provided new insights that may help policymakers and organizational leaders in their considerations regarding sustainable water consumption; specifically, the importance of considering citizens' perspectives on water use behaviors as a requisite in water conservation policy.

## Conclusions

The purpose of this qualitative exploratory multiple case study was to gain a common understanding of how citizen water use behaviors may influence stakeholder water conservation engagement in Florida municipalities. For establishing analytical generalizations, I purposely sampled 15 water administrators from five organizations related to the water industry. To achieve a qualitative multiple case study perspective, I analyzed the participants' questionnaire responses and published water statistics to determine common understandings related to the central research question.

The study findings confirmed that changing community water use behaviors needs actions from multiple stakeholders to generate awareness of the benefits of smart water technology and government cooperation for its implementation. Conducting this study also helped to frame the understanding of water consumption practices in a more impactful way due to the COVID-19 pandemic. The implications for social change include new insights for administrators of water savings programs and policymakers to

define policies and strategies to foster water conservation. Study findings revealed somewhat of a causal relationship between water management and trust and cooperation from public systems. Implications for future research include pursuing knowledge of other experiences and more information on water metrics to provide additional insights for reducing water consumption and saving water for future generations.

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# Appendix: Questionnaire Protocol

Date of Submission of questionnaire: _____

Date of Reception of responses: _____

Location of Interview: _____

Participant No. Identifier: _____

Occupation in Company: _____

Your work is related to Water Sustainability Programs: _____

The interview questions were designed considering 30 minutes as the approximated time to complete them. The list of questions will be asking your perspectives on how the citizens' water use behaviors will influence the stakeholders' water conservation engagement in Florida municipalities. If you have questions or need clarifications, you can send a reply email before answering the questions. I will also send you an acknowledged email after receiving your responses. You have the right to stop the completion of the questionnaire at any time as stated on the signed consent agreement, an email canceling your participation will be appreciated.

## Research Questions

1. What are your perspectives on how changing water use behaviors of citizens will impact the engagement of stakeholders (individuals, communities, and local government) in water conservation initiatives in Florida?
2. What are the factors that inhibit the adoption of water savings programs within your organization? Please explain the leading causes of the difficulties.

3. How much influence does trust and cooperation in the public system have on the engagement in water conservation initiatives?
4. What are your challenges when trying to convince water consumers to change their water use behaviors? Could you please give an example, and how did you manage it?
5. What are your perspectives on the need for economic incentives to increase the engagement of stakeholders (individuals, communities, and local government) in water savings programs?
6. What do you consider are the primary motivators that will promote a permanent change in water use behaviors and engagement in water conservation programs?