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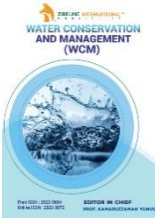

RESEARCH ARTICLE

EXAMINING THE FACTORS INFLUENCING WATER CONSERVATION INTENTIONS AMONGST PERI-URBAN COMMUNITIES OF ETHEKWINI MUNICIPALITY, SOUTH AFRICA

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ABSTRACT

Using the Theory of Planned Bahaviour (TPB), this study aim to identify the factors that influence water conservation intention in peri-urban communities in South Africa. This study used a descriptive cross-sectional research design, and a quantitative research approach, which followed a positivist paradigm. Water users residing within the Waterloo low-costing housing area were selected by random sampling design (n=305). Data was collected through an anonymised research questionnaire. Structural equation model (SEM) was performed to establish the factors that predict water conservation intention. The findings showed that the path between the subjective norms and intentions (P=0.014) as well as attitude and intentions-(P=0.002) were significant. However, no relationship was found between water conservation practices and water conservation intention (P>0.05). This study conclusively suggests that water conservation intention among residences of peri-urban communities can be conceptualized as a function of their attitudes and subjective norms.

KEYWORDS

water conservation behaviour, Theory of Planned Behaviour, low-income areas, water conservation intention

1. INTRODUCTION

It is asserted that the value of water is only realised in times of scarcity when consumers' needs are not fully met (Browne et al., 2019). Additionally, it was emphasized that when this resource is readily available in large quantities, individuals are more prone to use it as if it were limitless (Gude, 2016). Both of the aforementioned research reached the same conclusion: water scarcity is a widespread problem in emerging and undeveloped countries because of inadequate water management and conservation measures. Given that South Africa is still a developing nation, significant action is needed to create long-term water policies that will require effective use of water, especially in regions where demand exceeds supply. Practical water-saving practices, such as collecting rainfall, recycling and reusing waste water, doing laundry efficiently, and flushing toilets with raw water, among others, may significantly reduce excessive water consumption in homes (Kumar et al., 2017). However, due to the rapid growth in the global population, water consumption has tremendously increased whilst at the same time, the amount of available water has substantially decreased worldwide (Kumar et al., 2017; Schultz et al., 2016).

Rainfall is necessary for South Africa to replenish its dams and reservoirs. However, it is located in a semi-arid region, and when the rains don't come, drought comes in, which brings with it the challenge of inadequate water supply (Rodina, 2016). As a result, many government municipalities that are responsible for providing water services to communities are straining to meet the increased demand during periods of drought. For instance, municipalities within Rustenberg, Majakaneng in Brits, Malamulele in Limpopo, and eThekwini in Kwazulu-Natal, amongst others, have been trying to mitigate the inadequacy of the current water supply and demand system (Aliyu et al., 2018). In addition, the recent water shortages that unfolded in the Western Cape Province in 2018 as a direct result of the drought demonstrated that there was a need for immediate action in reviewing the viability of the present water management system to sustain water supply and demand (Cassim, 2018). Equally important is the fact that South Africa is one of the driest nations in the world, which means that a lack of available water inevitably poses a substantial and immediate risk to the economy as well as the social stability of the country's population (Turton, 2016).

Various water conservation measures have been presented in the literature, such as measuring and mapping water shortage regions, codifying water practices for monitoring water usage in the life cycle, and water pricing (Brauman et al., 2016; Boulay et al., 2015; Mamitimin et al., 2015). However, it has been argued that whilst the focus of these measures are on the benefits of water conservation practices, it falls short on addressing the issue of understanding the science of people 's behaviour towards conservation. This is reasonable as it has been observed that in order for conservation methods to be successful, there has to be fundamental and widespread behavioural shifts on the part of humans (Reddy et al., 2017). This is in line with the findings of a study by who concluded that in order to develop successful water demand management

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strategies, it is necessary to have an understanding of how people use water and the connection between behavioural and psychological aspects of water usage Timm and Deal, 2018).

The study takes into consideration the recommendations of the aforementioned authors by using the Theory of Planned Behaviour (TPB), which considers human behavior to be the consequence of rational thought (Marandu et al., 2010). TPB is widely regarded as one of the most consequential ways of modeling and explaining human behavior (Haggar, 2019). Hence, it is important to learn about people's behaviour at home with regard to water use so that they can be empowered to become more conscientious water consumers. This article, therefore, aims to develop and test the applicability of water conservation practices grounded in the TBA and as such address the attitudes-behaviour from the perspectives of residents residing in a low-cost housing setting in KwaZulu-Natal. In South Africa, there has been relatively little study done on domestic water consumption attitudes and household water conservation intention. This is despite the fact that water conservation practices are critically important (Jacobs-Mata et al., 2018). Therefore, the aim of the research was to determine the factors of water conservation intention by low-income households, comprising beliefs, attitudes, and subjective social norms. The hypothesis tested was that attitude and subjective norms predict water conservation intention.

Research on household water conservation is limited, especially in dry and semi-arid regions of the world's developing countries (Yazdanpanah et al., 2015; Mango et al., 2017). Moreover, the limited availability of portable water is a significant problem that hinders the social and economic development of countries in sub-Saharan Africa and elsewhere throughout the world (Shackleton et al., 2015). In addition, gaining insight into people's water-saving behaviors at home can aid in the development of intervention strategies for encouraging more sustainable water use (Martos et al., 2016). While water conservation is not a novel issue in environmental literature, little attention has been paid to the importance of TPB in this area, especially in the context of low-income housing, in forecasting people's intentions to conserve water.

2. Theoretical Framework

One of the most significant models for forecasting pro-environmental intentions/behaviours is the Theory of Planned Behavior (TPB) (Zhang and Dong, 2020). The TPB paradigm has been widely used to investigate a variety of intentions/behaviours whose success is contingent on the availability of necessary resources (such as time, money, and skills) and/or opportunities. TPB is formed by beliefs, attitudes, subjective norms, perceived control and behavioural intentions in relation to a specific behaviour (Moura et al., 2017). This theory was developed in 1975 by two well-known academics, Martin Fishbein and Icek Ajzen, and it is based on the earlier work of the Theory of Reasoned Action (TRA). TRA has been widely used across a wide range of behaviors, settings, and people, making it one of the most prominent methods for anticipating and comprehending intentional behaviour (Haggar, 2019).

According to TPB, an individual's behavioural intentions have an effect on the individual's actual behaviour. As a result, the likelihood that an individual's behaviour will be realised increases if the individual has a strong intention to conduct the behaviour. It is argued that a very limited number of constructs may adequately represent the mechanism underlying all human social behavior (Haggar, 2019). Also, it has been theorised that one may predict peoples behaviour by looking at their intentions (Fishbein and Ajzen, 2011). Furthermore, it is also suggested that human behaviour is best predicted by a person's intentions (Fishbein and Ajzen, 2011). According to the aforementioned research, the individual's attitude toward the behaviour, their perception of the social norms surrounding the behaviour, and their sense of agency over the behaviour all play a role in shaping these intentions. The TPB is useful for this research because it can help researchers isolate the influences of individual beliefs and attitudes as well as societal pressures and a sense of perceived control on people's decisions to reduce their water consumption.

The TPB postulates that individuals act rationally because they have thought things through (Marandu et al., 2010). The field of social psychology, which sought to clarify, among other things, why and how attitudes impact behaviour, is where the concept first emerged. It has previously been mentioned that the theory's central construct is the motivating concept of intention, which is seen to be the single most important element in influencing behaviour (Haggar, 2019). According to a researchers, intention is viewed as a result of two belief-based variables, attitudes and subjective norms (Haggar, 2019). Subjective norms indicate the perceived social responsibility to engage in a certain behaviour or not, whereas attitude shows whether or not a person views a certain action as "*favourably or unfavourably*" (Montano and Kasprzyk, 2015).

In this study attitudes toward water conservation and subjective norms are hypothesized as antecedents of water conservation intention. Although Fishbein and Ajzen's seminal study characterized norms as entirely subjective, this particular concept of norms has since been abandoned (Gold, 2011). More recently, norms are now conceptualised in two ways which are: Injunctive norms (inferring what important others want us to do), and descriptive norms (perceptions of the observed or what others are actually doing) (Gold, 2011, Ajzen, 2012). Studies show that using the TPB's behavior, attitude, and subjective norms components, it is possible to accurately predict a range of behaviors, such as domestic water conservation, sustainability initiatives, and traffic transgressions (Untaru et al., 2016; Paul et al., 2016; Tahir et al., 2017).

2.1 The Role of Subjective Norms on Perceived Water Conservation Intention

Subjective norms may be seen as the degree to which individuals within a certain social setting have an impact on a person's intentions towards their behaviour (Kumar Chaudhary et al., 2017). In this context, it couls refer to friends, relatives, members of the community, or professional colleagues (Chang, 2013). Subjective norms are those that are determined by the individual's own reaction to the external social pressure that is placed on a certain behaviour. According to this theory, individuals who have favourable subjective norms for a specific behaviour are more prone to have positive intentions regarding that behaviour (Han et al., 2010). This indicates a positive link between subjective norms and intentions (Khare, 2015). For instance, people are more willing to recycle if they think their significant others support them in doing so. In this study, respondents were asked to consider the likelihood that various stakeholders (including but not limited to relatives, acquaintances, and the local government) would endorse or reject their behaviour towards water conservation practices in order to gauge their level of compliance with subjective norms.

H1: *There is a positive influence of subjective norms on perceived water conservation intention*

2.2 The Role of Attitude on Perceived Water Conservation Intention

Charles Darwin was one of the first scientists in 1872 to explore how attitudes affect behaviour (Ye et al., 2017). Darwin argued that an individual's " *directive or dynamic influence on individual response to all objects and situations* " was manifested in their *attitude*, which he defined as the outward manifestation of an emotion (Marandu et al., 2010). Darwin pointed out that such actions might involve both verbal and nonverbal communication channels, such as words and body language. The *cognitive, emotional, and conative* components are referred to as the tri-component model. They all work together to favourably impact behaviour and attitude (Lee et al., 2019). This concurs with the research by Ahn and Back, who contended that the *cognitive* component indicates that in order to form an opinion on any subject or product, one needs to possess knowledge about it (Ahn and Back, 2018).

According to the aforementioned author, the affective component is the consumer's evaluation of their *knowledge or beliefs* regarding a product. Furthermore, it is about emotional experiences related to a product; it is the measurement toward which they evaluate the item as "*favourable*" or "*unfavourable*," or "*good*" or "*bad*." The individual's propensity to carry out a certain activity or behave in a particular manner in connection to the product in question is what is meant by the *conative* component. In terms of commerce, it refers to the possibility that a customer would buy a product or act in a particular manner after being presented with a particular offer. This research takes into account the widely held belief that a person's attitude and their behavior are intricately linked to one another. The two theoretical components (attitudes and norms) were statistically meaningful predictors of water conservation in a research that evaluated the TPB's ability to explain household water conservation in Botswana (Marandu et al., 2010). Secondly, the the results corroborate earlier research showing that attitude plays a bigger role towards understanding water saving behaviour.

H2: *There is a positive influence of attitude on perceived water conservation intention*

2.2 The Role of Water Conservation Activities on Perceived Water Conservation Intention

Examples of water conservation behaviour include having an awareness of water conservation methods, having an understanding of the motivations behind water consumption, possessing a personal motivation for correct use and consumption, embracing water conservation habits into everyday routines, and taking personal control of one's water consumption practices (Untaru et al., 2016). Turning off the water while brushing your teeth, closing the faucet while washing vegetables, closing the shower while soaping up, starting the dishwasher only when it is fully loaded, and fixing leaks or notifying landlords of any leaks that are noticed are the behaviour habits associated with conserving water (Marandu et al., 2010). Following a review of the literature, it appears that conservation behaviours such as water conservation which are commonly practised may become habitual (Untaru et al., 2016). It is believed that these green regular behaviours are one of the most important factors in predicting water conservation intents. As a result of this review of the literature, the current study proposes the following hypothesis:

H3: *There is a positive influence of water conservation activities on perceived water conservation intention*

The above-hypothesized relationships can be depicted in the conceptual model illustrated in Figure 1. The conceptual model is a representation of the main constructs of this study and their relationships with one another. In this conceptual model, perceived water conservation attitude, subjective norms, and perceived water conservation activities are the predictor variables while the perceived water conservation intention is the sole outcome variable.

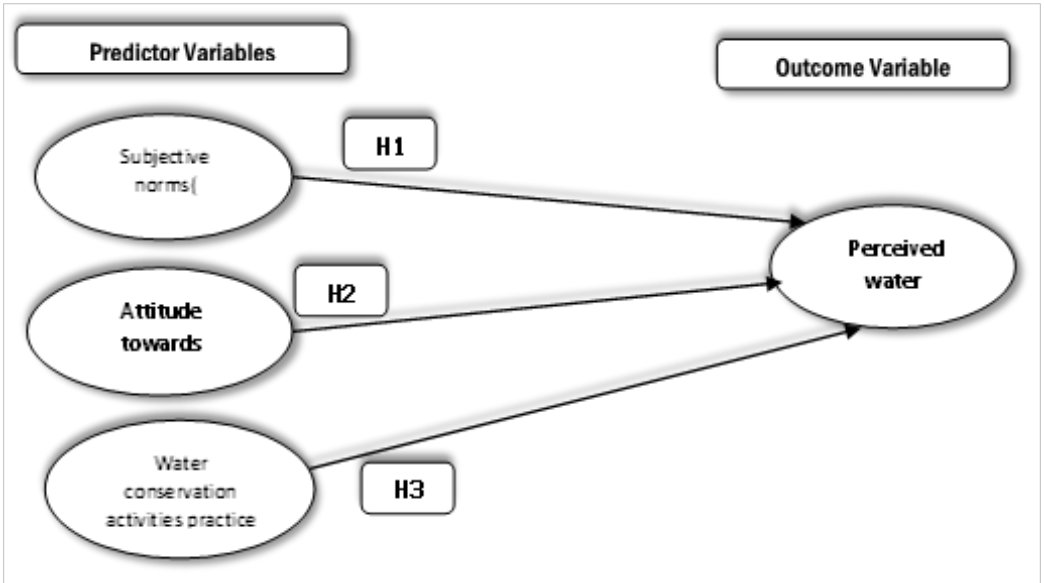

Figure 1: Proposed conceptualized research model

3. Research Design

3.1 Study Setting

Several studies demonstrate a correlation between water conservation attitudes and intention (Bragagnolo et al., 2016; Fielding et al., 2012; Wells et al., 2016). This study asserts that consumer behavioural patterns such as attitude, perception and willingness to pay for service delivery impact the management, both supply and infrastructural, of this resource in low-cost housing areas which form part of the peri-urban communities in South Africa. The Waterloo Township which is a low-cost housing area was the focus area of study. Waterloo Township, in northern Durban, KwaZulu-Natal, was founded in 1996, after the first democratic processes, to systematically house poor families who had been disenfranchised by the system of apartheid. Approximately 10 kilometres from King Shaka International Airport and adjacent to the Umhlanga's business centre, it is one of the earliest RDP settlements in the province. To service the roughly 8,000 houses in the region, the eThekwini municipality provides a free monthly supply of 9 kilolitres of water to each household that participates in the Free Basic Water Provision (FBWP) policy. Water consumption in excess of the FBWP is regulated and priced to remind residents that water is a limited resource that must be conserved (Maphela, 2015).

3.2 Methodology

This study used a descriptive cross-sectional research design, and a quantitative research approach, which followed a positivist paradigm. The choice of a descriptive research design was based on the premise that the authors had preexisting knowledge of the phenomenon under investigation (Saunders et al., 2019). Respondents residing within the Waterloo low-costing housing area were randomly selected (n=305) by random probability sampling.

3.3 Study Instrument

A close-ended questionnaire was used as the study instrument to elicit responses from the participants about water conservation intentions. The questionnaire was divided into two sections. Section A focused on the demographic information. Section B solicited data on the respondent's attitudes, water conservation practices, subjective norms, and their perceived water conservation intentions toward water-saving techniques. The constructs were measured using a multi-item five-point Likert scale question ranging from '1 – strongly agree' to '5 – strongly disagree'. Attitude towards water conservation was measured, and subjective norms were each measured with 4 items adapted from (Marandu et al., 2010). Water conservation activities in the community were measured with 4 items adapted from water conservation intention was measured with 5 items adapted (Untaru et al., 2016; Timm and Deal, 2018).

3.4 Data Analysis

The data was analysed and presented using both descriptive and inferential methods. Cronbach's Alpha tests were used to evaluate the reliability of the survey instrument used in the study. Structural equation modelling (SEM) was used to test the proposed model. All the analyses were performed using statistical software (SPSS® - Version 27 Chicago, IL, USA).

3.5 Validity and Reliability

The questionnaire was pre-tested for validity and reliability. Construct validity ensures that the instrument used in the measurement of the variable should measure what it is intended to measure (Welman et al., 2005). The analysis is done using CFA to explore the measurement of the latent constructs as achieved using the measured variables. The questionnaire was adapted to ensure that relevant questions measuring factors contributing to water conservation were included. To test reliability, Cronbach's alpha tests were used for internal consistency and result of 0.74–0.93 showed good internal consistency.

3.6 Ethical Consideration

Before the collection of data, ethical approval was obtained from the institution's ethics committee (34/19FREC). GateKeeper permission was obtained from the provincial councillors in the area to conduct the

research. Data was collected through an anonymised research questionnaire. The questionnaire was distributed to the respondents and collected thereafter. Informed consent in the form of written approval was obtained from respondents which indicated their willingness to participate in the study.

4. RESULTS

4.1 Respondents' Socio-Demographic Profile

The demographical profile of the respondents in this study is described in Table 1. It can be seen that most of the respondents were females (52.5%), and young adults, aged between 30-39 years (30.5%). In terms of their race, the majority of the respondents were African (black) (63%), and hold a high school qualification (54.4%). Examining the respondents' housing status, the majority were renting (70.8%) and indicated to have lived in the present residence for more than 10 years (42.6%). Regarding the household income of the respondents, the data show that the majority (39.7%) earned between R5 000-R10000 a month.

4.2 Measurement Model: Scale Reliability and Construct Validity

Using AMOS 27 software, exploratory factor analysis (EFA) and confirmatory factor analysis (CFA) were conducted to assess the dimensionality, reliability and validity of the constructs. The scale reliability of the four constructs was tested using Cronbach's alpha and ranged from 0.911-0.968, reported in Table 2. This met the condition for internal consistency of the scale reliability supported by the work (Hair et al., 2010). The mean value measured for the items in each of the constructs was below 2. For instance, the mean value measured for perceived water conservation intention ranged from 1.70-1.89, subjective norms ranged from 1.26-1.27, attitude towards water conservation ranged from 1.06-1.08, and water conservation activities were all 1.01, which suggests that there was strong agreement in all the items in the constructs.

Table 1: Demographical Profile of Respondents

Profile	Frequency	Percent
Age:		
18-29	65	21.3
30-39	93	30.5
40-49	74	24.3
50-59	39	12.8
60 +	34	11.1
Total	305	100
Race:		
African	192	63
Indian	88	28.9
Coloured	22	7.2
White	3	1
Total	305	100
Gender:		
Male	145	47.5
Female	160	52.5
Total	304	100
Education:		
No schooling	40	13.1
Primary school	51	16.7
High school	166	54.4
College/Certificate	32	10.5
University	16	5.2
Total	305	100
Housing Status:		
Owner of property	89	29.2
Renting	216	70.8
Total	305	100
Years of residence:		
< 1 year	33	10.8
1-5 years	53	17.4
6-10 years	89	29.2
>10 years	130	42.6
Total	305	100
Household income:		
<R5000	98	32.1
R5000-R10000	121	39.7
R10000-R20000	82	26.9
>R20000	4	1.3
Total	305	100

Table 3 provides the data measured for the construct validity in the measurement model. This was assessed by estimating the measures of convergent and discriminant validity and includes all measurement items and latent variables, the items' loadings, composite reliability, average variance extracted (AVE), and maximum shared square variance (MSV). Convergent validity is attained when the AVE is greater than 0.5 whilst discriminant validity is attained when AVE is greater than the MSV (Mimouni-Chaabane and Volle, 2010). The data in Table 3 show that all the measured constructs have AVE values in the range of 0.691-0.873, which is above the threshold of 0.5 (Mimouni-Chaabane and Volle, 2010). This suggests that the measured constructs have an acceptable level of convergent validity. Equally, the value of the AVE for each construct is greater than MSV values, which suggests adequate discriminant validity. The composite reliability of all constructs is greater than the 0.70 thresholds, thus suggesting acceptable reliability (Alalwan et al., 2018).

4.3 Fitness of the Model

The overall fit of the model was assessed by multiple fit criteria. The normed chi-square (cmindf) is an absolute fit index that is obtained by dividing χ^2 by degrees of freedom (df), and a group researchers recommended that a cmindf a value greater than 1 but less than 5 Another fit index used is the Goodness of Fit Index (GFI) (Hair et al., 2010). It is that GFI value should be ≥ 0.9 (Chen and Tung, 2014). The third fitness index used is the Comparative Fit Index (CFI). The recommended acceptable value is ≥ 0.9 (Alalwan et al., 2018). The Tucker–Lewis index (TLI) was also used to assess the fitness of the model. The recommended cut off value for the TLI is ≥ 0.9 (Hair et al., 2010). The final fit index used is the Root Mean Square Error of Approximation (RMSEA). The RMSEA value is recommended to be between 0.05 and 0.08 (Mimouni-Chaabane and Volle, 2010). The model fit indices measured in Table 4 suggest that the measurement model is acceptable.

Table 2: Factor Loading Coefficient, Cronbach's Alpha, The Mean and Standard Deviation of the Constructs

CONSTRUCT	Measured Variables		Factor Loadings	Mean (SD)	Cronbach's Alpha
Water conservation Intention	I1	I am willing to conserve water by washing my vegetables in a bowl of water rather than under flowing tap water.	.889	1.70 (0.906)	0.912
	I2	I intend to water my house plants with used water	.931	1.78 (0.966)	
	I3	I intend to tightly close taps to avoid dripping	.886	1.71 (0.927)	
	I4	I intend to water my garden during the evenings when its cooler	.874	1.89 (1.096)	
	I5	I intend to flush my toilet sparingly; for example, after urinating one does not have to do the whole flush.	.688	1.70 (0.996)	
Subjective norms	S1	People whose opinions I value prefer me to save water	.950	1.26 (0.532)	0.968
	S2	People who are important to me think I should conserve water	.938	1.26 (0.527)	
	S3	People who are important to me want me to save water	.931	1.26 (0.527)	
	S4	The municipality wants me to save water	.927	1.27 (0.550)	
Attitude towards water conservation	A1	For me saving water is extremely important	.912	1.06 (0.236)	0.951
	A2	I harvest rainwater in order to conserve water	.874	1.08 (0.288)	
	A3	For me, knowing the amount of water consumed per day on my property is important	.951	1.07 (0.272)	
	A4	For me, the availability of water in my area is of concern	.937	1.07 (0.248)	
Water conservation activities practice	WCA1	At home, I tightly close taps to avoid dripping	.935	1.01 (0.140)	0.911
	WCA2	At home, I turn off the shower or tap while soaping	.836	1.01 (0.140)	
	WCA3	At home, I use water in a glass during brushing my teeth	.905	1.01 (0.151)	
	WCA4	At home, I immediately close off the water main when I detect a leak	.877	1.01 (0.128)	

Table 3: Composite Reliability, Average Variance Extracted, and Maximum Shared Square Values

	CR	AVE	MSV	MaxR (H)	Attitude	Water Conservation Activities	Subjective Norms	Water Conservation Intention
Attitude	0.952	0.833	0.118	0.985	**0.913**			
Water conservation activities	0.907	0.715	0.008	0.978	-0.022	**0.846**		
Subjective norms	0.965	0.873	0.118	0.981	0.344	-0.048	**0.934**	
Water conservation Intention	0.916	0.691	0.047	0.955	0.217	-0.088	0.185	**0.831**

Source: Primary data

4.4 Structural Equation Model (Hypotheses Testing)

The second stage of the data analysis involved converting the measurement model found in stage 1 into a path model that shows the relationships between the latent variables (Figure 3). This path model is then used to test the effect of the independent variables (IVs) on the dependent variables (DVs). An SEM was applied to test all the hypothesized relationships that exist among the latent variables. This was utilized given that SEM allows simultaneous evaluation of multiple related independent and dependent relationships and considers measurement estimates among the constructs (Hair et al., 2010). The resulting SEM with estimated standardized relationships is given in Figure 3. The goodness-of fitness indices are as follows: chi-square = 300.994; df = 108; cmindf=2.787; CFI = 0.969; GFI=0.909; TLI = 0.961; RMSEA =0.077, which suggests that the measurement model is acceptable.

The path between the IVs and DV in the proposed model is given in Table 5. The data show that the path between the subjective norms and intentions (P=0.014) as well as attitude and intentions- (P=0.002) were

significant. This implies that the subjective norms and attitudes towards water conservation influences water conservation intentions among the respondents, and thus are significant predictors of the water conservation intention. On the contrary, the path between the water conservation activities and the intention was not significant (P>0.05).

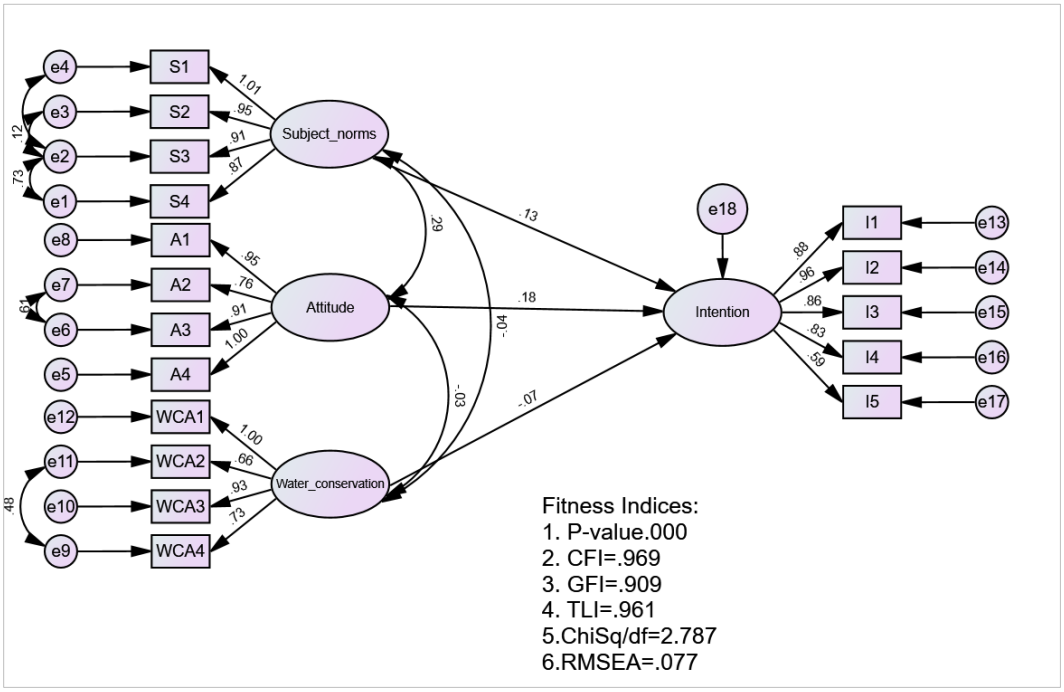

Figure 3: SEM model showing the relationship among the constructs in the proposed model

Table 4: Model Fitness Indices for the CFA Model

Fit Indices	Fit values	Criteria
χ^2 / df (p-value)	2.787 (<.001)	<5
CFI	0.969	>.9
GFI	0.909	>.95
RMSEA	0.077	<.08
TLI	0.961	>.9

5. Discussion

5.1 Implication and Theoretical Contribution

By methodically identifying behavioural hurdles to conservation and pinpointing the most effective means of overcoming them, the field of behavioural sciences can help to promote the conservation of natural resources (Reddy et al., 2017). In line with several other studies, TPB was adopted as the theoretical framework for this research (Marandu et al., 2010; Moura et al., 2017; Montano and Kasprzyk, 2015). Inadequate administrative and technical resources are a major cause of the widespread theft and vandalism of residential property water monitoring devices, according to previous studies, making it difficult for municipalities to manage the allocation of a free basic supply of water to selected communities, including low-income households (Maphela, 2015; Larsen et al., 2016). Given that this has both a direct economic cost in the form of unreasonably high bills and a substantial monetary loss for the municipality, it may have far-reaching repercussions on water sustainability (Mavundla, 2016).

Furthermore, the high water consumption in this study setting may also be a serious issue for water authorities. A number of studies have revealed that individuals' values and ideals have a significant effect in water conservation choices (Marandu et al., 2010; Untaru et al., 2016). The finding of this study indicates that attitude is the most significant construct which influences water conservation intentions in the Waterloo community setting (ß = 0.576, p < 0.01). The finding is in agreement with those reported by other studies, which thus suggests that an individual's positive attitude towards water conservation in the community is an important driver of their water conservation intentions (Han et al., 2010; Chen and Tung, 2014). From a practical context, the municipality can actively educate individuals residing in the community on the importance of water conservation through community campaigns using information tools designed in the local language. The information should include signs on the water scarcity situation in the country and encourage the residents to minimize their daily water consumption. More so, the municipality can also help in providing feedback on the individual's consumption, which could help the individuals monitor and effectively managed their water use (Abrahamse et al., 2005).

Furthermore, although the empirical results show that subjective norms were less powerful when compared to the attitude construct in explaining water conservation in the community, nonetheless, subjective norms were still a significant predictor of water conservation intention in the waterloo community (ß = 0.223, P = 0.014). The finding is consistent with previous studies (Untaru et al., 2016; Han et al., 2010; Chen and Tung, 2014). This suggests that individuals' subjective norms towards water conservation in the Waterloo community are critical drivers of their water conservation intentions in the community. It's possible that this stems from the idea of collectivism that develops in communities. This could be attributed to the fact that South Africans are more collectivist in behaviour and are mostly guided by the Ubuntu philosophy. Thus, one could assume that elder members of the family may influence others to act and behave in a certain way - including water conservation intention. This assertion agrees with who asserted that a family's water conservation efforts and behaviour were often set by its elders (Chang, 2013). The practical implication of the finding to the municipality is that they can tailor their water conservation information that increases subjective norms. This can be achieved through a form of mentee/mentor advocacy programmes in the community where prominent elders and or leaders who know water conservation practices can mentor or positively influence individuals who do not engage in water conservation behaviours.

While a previous study like found that water conservation activities in the individual's life were significant predictors of their water conservation intentions, this study, however, found no significant influence in the Waterloo community ((ß = - 0.627, P > 0.05) (Untaru et al., 2016). One possible explanation is that residents benefit from the municipality's Free Basic Water Provision, which provides each home with 9 kilolitres (kl) of water per month. This tends to alter the individual's everyday water activities- since much is provided for free. It is thus advisable that the municipality inform individuals residing within the community about the benefits and advantages of water conservation in their everyday life. Residents could be educated on the appropriate methods of saving water

using information posters, and stickers that are placed in their bathrooms and kitchens to encourage and stimulate water conservation best practices such as tightly closing taps to avoid dripping, turning off the shower or tap when soaping, using water in a glass during tooth brushing among others. Such common-sense behaviour could help individuals save a significant amount of money and water in their everyday life (Untaru et al., 2016).

In a nutshell, the findings of this study contribute to the growing research investigating water conservation intention and behaviour that is anchored on Azjen's TPB. This study, therefore, tested and conceptually extended TPB first proposed by Azjen, with respect to water conservation intention broadly, but, in the current study, with a specific context of a peri-urban area in KwaZulu-Natal, South Africa. Overall, the findings of this study suggest that the TPB model can be streamlined to study the attitude-behaviour gap of water conservation intention as it provides a robust explanation of actual water conservation intention in the peri-urban communities in a developing country such as South Africa regarded as water stress country.

5.2 Limitation and Future Direction of the Study

While the study provides a robust explanation and applicability of Azjen's TPB in the understanding of water conservation intention within the context of peri-urban communities in South Africa, however, the study was only limited to the Waterloo area which may affect its generalizability. Hence, further research must be carried out in our provinces in South Africa to gain a holistic view of water conservation practices and conservation intentions in South Africa. Also, it is well known in the literature that the elements that impact people's behaviour are intricate (Reddy et al., 2017). Waterloo inhabitants in South Africa are located in a peri-urban area, thus it is crucial that they have a firm grasp of the nuances involved in water management in order to effectively implement water conservation initiatives. In the future, researchers may investigate the feasibility of extending the community-based water behavior model to peri-urban settings. Potentially, this might provide a solid groundwork for the adoption of standardized demand-management techniques to water conservation in low-resource and water-stress nations.

Table 5: Path Regression Estimate of the Proposed Model

Dependent Variable (DV)		Independent Variables (IVs)	Estimate	S.E.	C.R.	P	Decision
Intentions	<---	Subject norms	.223	.091	2.448	.014	Supported
Intentions	<---	Attitude	.576	.190	3.039	.002	Supported
Intentions	<---	Water conservation practices	-.627	.484	-1.297	.195	Not supported

6. Conclusion

In conclusion, this article offers clear insight into what influences people's water saving intentions in a peri-urban housing community. The results indicated that both attitude and subjective norms, the two explanatory components, are critical determinants of water conservation intention. It can therefore be inferred that water conservation intention may best be understood in this particular setting as a result of both attitude and subjective norm. This will provide useful information for local governments as they work to create water conservation strategies for these areas. Additionally, it would be possible to adopt a more proactive approach to managing water consumption. via awareness of and participation in water conservation programs in high-consumption locations. This might be the first step in developing long-term intervention measures to reduce residential water use and the associated costs to both the householder and the local municipalities.

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