

Assessing the Determinants of Domestic Water Conservation Intention

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Received: 25 July 2023

Accepted: 15 September 2023

Date Published Online: 21 October 2023

Abstract: Malaysia has an enormous amount of water resources. Over the years, its development has served as the cornerstone of the nation's socioeconomic growth. However, recent years have seen an increase in the demand for water that exceeds the availability of water resources in the country. Malaysia's average daily water consumption is greater than the United Nation's benchmark for water usage of 165 litres per capita per day. Therefore, the aim of this study is to discover the drivers that lead to high domestic water consumption in Malaysia compared to the recommended daily water consumption as set by the United Nations. This study also aimed to determine which attitudinal predictors have a significant relationship with the water conservation intention by employing the theory of planned behaviour in order to determine Malaysians' consumption behaviour towards water usage. This study applied quantitative methodology and the data collected were analysed using SPSS software. The results indicate that water conservation attitude, subjective norms and perceived behavioural control had a significant and positive relationship with water conservation intention. The result of this study, thus, can contribute towards efforts by relevant authorities and parties to maintain the balance of water supply and demand.

Keywords: Domestic, Intention, Theory of planned behaviour, Sustainability, Water

Introduction

Sustainable development is defined as the development that fulfils current demands without endangering the ability of future generations to meet their own needs (Brundtland Report, 1987). The sustainable development paradigm places an emphasis on a positive transformation trajectory that is primarily based on environmental, social and economic aspects. The three primary concerns of sustainable development are environmental preservation, social equality and economic growth (Taylor, 2016). It aims to protect environments and natural resources while advancing a more fair and equitable community. This entails conserving resources, scaling back on waste and pollution, supporting clean technology and renewable energy sources and encouraging sustainable patterns of consumption and production. Hence, the Sustainable Development Goals (SDGs) of the United Nations are frequently linked to sustainable development.

Sustainable Development Goals (SDGs) are a unifying framework for peace and prosperity for humanity and the planet. SDG is provided by the 2030 Agenda for Sustainable Development which was endorsed by United Nations in 2015. The 17 Sustainable Development Goals (SDGs) and 169 goals that make up this framework are an urgent call to action for all developed and developing nations to work together in a global partnership. People, planet, prosperity, peace and partnerships are the five main themes of the 2030 Agenda which encompasses the 17 SDGs (Hylton, 2019; Guo, 2017;

Zhai & Chang, 2019). Goals 6, 12, 13, 14, and 15 of the SDG address the challenges that the planet is now facing. These goals are very important because they remind people to always protect the planet. The goals under the planet theme guide people on how to act towards climate crisis in the future. Therefore, goal six of the SDG which is clean water and sanitation is being selected for the focus of this study. The aim of SDG 6 is to ensure the availability and sustainable management of water and sanitation for all. However, achieving almost all SDGs will depend largely on water as it is so crucial to human growth and environmental demands (Vörösmarty et al., 2018).

According to Oki and Kanae (2006) and Rockstrom et al. (2009), water scarcity refers to a shortage of water resources and the inability to satisfy water demands for human subsistence, economic growth, or the preservation of the environment. Water scarcity has emerged as a significant global problem that could have detrimental effects on both the planet and humanity. For example, it could reduce the production of crops, cause drinking water shortage and worsen water quality which could obstruct local sustainable growth (Mekonnen & Hoekstra, 2016; Porkka et al., 2016). Climate change projections and a decline in river water flow are only a couple of the many reasons causing water shortage. Comparing the period from 2010 and 2030 to the latter, river water flow will decrease by 19% in the years 2030-2050 (Raja Ahmad et al., 2022). In addition, the United Nations stated that there are several factors that contribute to water scarcity, including possible supply shortages, climate change, a lack of data that prevents integrated management, and many more. Apostolaki et al. (2019) include changes in demographics, socioeconomic shifts, and trends connected to water as additional considerations that may add pressure to the water crisis.

The recommended daily amount of water per person was established by the United Nations at 165 litres. According to data from the National Water Services Commission (SPAN), Malaysians use an average of 201 litres of water daily which is the same as 134 bottles of a 1.5 litre volume. Malaysia's average daily water consumption is 27% greater than the United Nation's benchmark for water usage per capita per day. There are problems with Malaysia's water services that must be resolved right now if they are to be economically feasible and sustainable (Malek et al., 2013). If the proper steps are not taken right away, the issue of water shortage and the loss of clean water resources becomes unavoidable. Water supply is already much in demand due to the increase in population, growth of the economy and decline in the availability of fresh water. There is water scarcity in Malaysia due to ineffective water management and rising water demand (Saad & Harun, 2017). In order to preserve the sustainability and accessibility of the water, issues related to it must be resolved quickly. Therefore, the research objectives of this paper are to:

- discover the drivers that lead to high domestic water consumption in Malaysia as compared to the recommended daily water consumption set by the United Nations, and
- determine which attitudinal predictors have a significant relationship with the water conservation intention.

This study is significant as it offers new findings and methodology since there have not been many past studies examining the factors that affect water conservation intention in Malaysia. This research also gives a positive impact statement in quintuple helix such as society, academia, government, industry and environment. For society, this study contributes to raising awareness towards the citizens of Malaysia. Citizens will automatically be concerned about the current issues faced by Malaysia and will reduce daily water usage. Reducing the daily usage of water can increase the quality of society's life. From the academic perspective, this study can contribute in terms of literature in the social science field. Furthermore, it can assist the policymakers by suggesting strategies in order to overcome current problems faced by the government. Legislative bodies in Malaysia in charge of the water resource management can refer to this study as the indicators of their management towards water resource management. For the industry, this study will sketch out an appealing water scenario for the nation in 2025 and give an overview of the national water sector that Malaysians would like to see operational in 2025. It provides initiatives to make the vision a reality which is to establish resilient and sustainable water services. Finally, this paper will contribute towards the environment by

achieving the target towards the 2030 Agenda for Sustainable Development Goals as this is one of the Twelfth Malaysia Plan.

Literature Review

Theory of Planned Behaviour

The frequently implemented theoretical framework that takes into account and explains the unique characteristics crucial to behaviours is the theory of reasoned action, theory of planned behaviour (TPB), norm activation theory and value belief norm theories (Sia & Jose, 2019). Out of these ideas, the TPB is frequently employed in logical deduction-based evaluation to explain certain behaviours in various circumstances such as the behaviours associated with conservation. According to Ajzen (1991), an important socio-psychological paradigm to explain variation in intentional behaviour is the Theory of Planned Behaviour (TPB). The attitude towards the behaviour, the perceived acceptance of the behaviour by individuals (subjective norms) and the perceived control that individual feels they have over the execution of the behaviour (perceived behavioural control) are all the factors that influence intentions (Ajzen, 1991).

Water Conservation Intention

A socio-psychological paradigm, called the Theory of Planned Behaviour (TPB), examines how people's intentions become actualised behaviour. It aims to comprehend human behavioural intention. Intention may be operationalised as the likelihood to behave and convey a person's expectations regarding a certain conduct in a particular situation (Fishbein & Ajzen, 1975). The primary factor influencing conduct right away is intention (Ajzen, 2005). If intention is adequately measured, it will serve as the best predictor of conduct since intention leads to behaviour when there is an opportunity to act (Fishbein & Ajzen, 1975). A person's desire to act should be strong depending on the attitude, subjective norm and perceived behavioural control level (Davis et al., 2002). People tend to act as they want when given the chance to control their behaviours. Individuals' behaviour is dynamic and complicated. Hence, it changes depending on the circumstances (Sarkar et al., 2022). Saving behaviour is more strongly influenced by social-psychological variables (Shahangian et al., 2021). One of the most well-known social psychology theories is the theory of planned behaviour (TPB). TPB has been extensively utilised to explain people's saving intentions and behaviour, including water conservation behaviour. For instance, people would be motivated to engage in water conservation if they anticipated the possibility of water scarcity.

Water Conservation Attitude

By elaborating on the expectation value theory and incorporating sociocultural influence on behavioural intention, Ajzen and Fishbein's theory conceptualises the relationships among beliefs, attitudes, perceived social norms and behaviours (Hassell & Cary, 2007). One of the most accurate factors involved in predicting behavioural intentions is attitude, which is defined as a thorough evaluation of whether a behaviour is favourable or unfavourable (Ajzen, 1991; Armitage & Conner, 2001; Trumbo & O'Keefe, 2001). Understanding water usage attitudes is essential at the onset in order to build instructional urban water-saving methods (Corral-Verdugo et al., 2003). This takes into account objectives for saving water. Therefore, the importance of conserving water supplies is reflected in a person's attitudes, values, and beliefs about it. It shows a person's desire to step up and alter their behaviour in order to use less water and cause less waste.

According to Willis et al. (2011), people with positive attitudes towards the environment and water conservation used much less water. This is because water consumers who have a positive attitude towards environmental sustainability will typically use water more wisely compared to those who do not have concerns about the environment. It depends on the choice of water consumers to consume more than is needed. On the other hand, attitude is not an adequate foundation for determining peoples'

intentions to save or preserve water (Lam, 2006). Behaviour is a sort of moral behaviour as acting in a way that promotes conservation frequently entails choosing against one's own self-interest (Kaiser, 2006). However, the majority of past studies tell us that attitude can affect the water conservation intention. Thus, it is hypothesised as follows:

H1: There is a significant relationship between water conservation attitude and water conservation intention.

Subjective Norms

Subjective norms are the level of social influence that people feel when engaging in particular actions (Ajzen, 1991; Sánchez et al., 2018). In addition, subjective norms result from the behaviour and statements of certain significant people in a person's life (Gao et al., 2017). Subjective norms are classified into two categories. The first category is exemplary norms, which are derived from interpersonal relationships with family, friends and co-workers. The second category is injunctive norms which are obtained from the authorities implementing informal punitive measures to forbid certain behaviours to encourage others.

Yazdanpanah et al.'s (2012) study employed a modified version of the theory of planned behaviour. Researchers examined the intentions and actions of agricultural professionals with regard to water conservation. It indicates that intention and behaviour in relation to water conservation can potentially be explained by the modified theory of planned behaviour theory. Subjective norms substantially predict intentions that indicate the moral required to conserve water especially when it is an important component of people's commitment. Moreover, Gibson et al. (2021) studied utilising the theory of planned behaviour to forecast the intention to conserve freshwater resources. The findings showed that respondents' expressed intention to participate in water conservation behaviour was controlled by subjective norms. However, Yazdanpanah et al. (2016) examined how ethical norms and self-identity affect Iranian young adults' intentions to save water. Any felt societal pressure was not substantially correlated with intents of preserving water. The subjective norm appears to be an inconsequential coefficient to predict intention. We can see that most of the studies indicate that subjective norms can affect the water conservation intention. Thus, it is hypothesized as follows:

H2: There is a significant relationship between subjective norms and water conservation intention.

Perceived Behavioural Control

The perception of a person that they are capable of displaying particular behaviours is known as perceived behavioural control (Brouwer et al., 2009). The capacity to regulate one's behaviour and level of confidence in one's ability to perform or not perform is two concepts that may be used to describe perceived behavioural control (Francis et al., 2004). Furthermore, perceived behavioural control is a significant factor in determining behaviour since it affects a person's drive and effort to engage in a task. An individual is more inclined to engage in an activity when they believe they have strong control over it. On the other hand, if someone feels they have little control over a specific behaviour, they could be less inclined to engage in it or make less of an attempt to do so.

According to Shahangian et al. (2021), they studied how sociopsychological variables might affect Iranian residential water users' intentions and behaviours. The result showed a connection between perceived behavioural control and water-efficiency practices. This illustrated the significance of perceived behavioural control in people's desire to engage in certain behaviour when they only have partial volitional control over doing so (Gao et al., 2017). Next, a study by Nugroho et al. (2022) that analysed residents' attitudes and actions regarding West Java, Indonesia also shows that people's perceptions of behavioural control had the most impact on their intentions and actions towards water conservation. People are more eager to engage in and embrace such water conservation behaviours when they have higher levels of self-efficacy, perceived belief, and control over doing so in their community. Besides that, Marzouk and Mahrous (2020) discovered differences in perceived

behavioural control as a measure of the desire to save energy and water among urban and rural populations. The study suggests that other factors can affect water consumption rather than perceived behavioural control which are income level and family size. Based on the literature review of other available studies, perceived behavioural control can affect the water conservation intention. Thus, it is hypothesized as follows:

H3: There is a significant relationship between perceived behavioural control and water conservation intention.

Research Framework

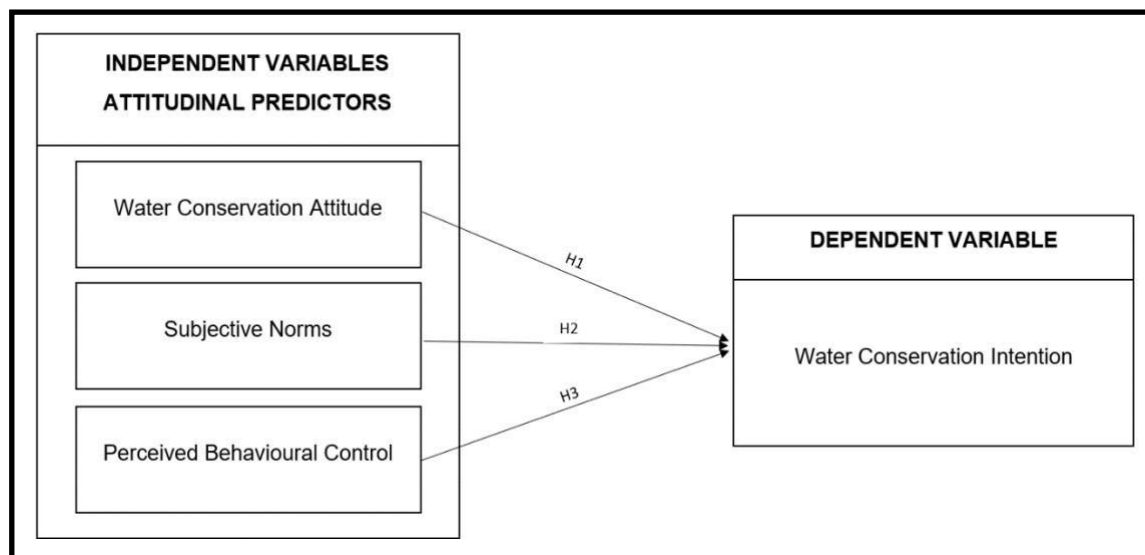


Fig. 1 Theoretical framework of this study

Methodology

To achieve the research objectives, a quantitative methodology was employed in this study. Evaluation and research hypotheses were tested using a questionnaire survey approach in this study. Therefore, the population involved in this study is Malaysian citizens. According to the Department of Statistics Malaysia (2022), the total population of Malaysia in 2022 was estimated at 32,700,000. Due to the large scale of the population and the difficulty to attempt each citizen in the whole country, this study employed a convenience sampling approach, which has been widely utilized in research. This method involves selecting participants based on the investigator's convenience, often opting for individuals who are available and accessible at the given time and location (Acharya, Prakash, Saxena, & Nigam, 2013). The advantages of this method include its common usage, cost-effectiveness, and the absence of a requirement for an exhaustive population list.

This study developed a structured questionnaire to describe the factors that determine water conservation intention in Malaysia. An online survey was created as the prospect that fewer individuals would be likely to fill out a paper-based one. The respondents were required to be at least 18 years old to answer this questionnaire. A total of 320 respondents participated in this study. According to the research done by Sandberg (2016), the study's poll was heavily biased since it was shown to involve more younger respondents than elderly respondents. For this study, Google Forms was used to disseminate the survey. As anticipated, participants who responded to the web-based survey demonstrated the highest level of knowledge. They were also more likely to be familiar with, read about, or have heard of water conservation-related practices. This aligns with Prokopy, Molloy,

Thompson, and Emmert's (2010) findings, which indicated that convenience survey respondents exhibited greater awareness of water quality compared to those participating in random surveys.

Measurement

The structured questionnaire was divided into two sections. The first part contained 13 items that were related to socio-demographic traits of gender, household and income level. The second part of the survey was designed to gauge the dimensions of water conservation attitude (Att), subjective norm (Sn), and perceived behavioural control (Pbc) concerning water conservation intention (Int) in the context of Malaysia. The theoretical foundations for these constructs draw upon the work of Taufique and Vaithianathan (2018) for Int and Sn, as well as Aydin and Kiraz (2017) for Att and Pbc and have been adapted accordingly.

All study variables were potential variables that were quantified using multiple-item scales (Ajzen, 1985). The majority of the sources were utilised or changed based on a comprehensive review of previous research and either slightly adjusted or produced to meet the current study's subject. A panel of specialists with extensive and authoritative expertise examined the validity of the study's instrument (questionnaire) in terms of necessity, relevance and item clarity as well as the questionnaire's thoroughness. With the intention of assisting Malaysians in understanding and responding, this study applied multiple-choice questions (MCQ) in the first part. Furthermore, the second part of the questionnaire was set to be measured with a four-point Likert response scale (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). According to Ajzen's (2002) suggestions, all study items had the same definition of the time factor. The time factor described in the present research it is related to the moment at which a certain behaviour is carried out (Ajzen, 2002).

Empirical Model

From the literature review section, it indicates that water conservation intention acts as the dependent variable for this study while water conservation attitude, subjective norms and perceived behavioural control are the independent variables. To test hypotheses 1, 2 and 3, the below equation is used:

$$Int_{i,t} = \alpha_i + \beta_1 Att_{i,t} + \beta_2 Sn_{i,t} + \beta_3 Pbc_{i,t} + \varepsilon_i \quad (1)$$

Where:

$Int_{i,t}$	=	intention of consuming water;
$Att_{i,t}$	=	attitude;
$Sn_{i,t}$	=	subjective norms;
$Pbc_{i,t}$	=	perceived behavioural control;
β	=	the estimated coefficient for each item;
α_i	=	the intercept; and
ε_j	=	the error terms.

The analysis of the data involved the utilisation of SPSS Statistics version 28. Descriptive statistics were computed to summarise and understand the basic characteristics of the data. To assess the reliability and consistency of the questionnaire constructs, a reliability analysis has been performed. This involves calculating Cronbach's alpha, which indicates the internal consistency of the items within each construct (Att, Sn, Pbc, and Int). A higher Cronbach's alpha value suggests greater reliability of the construct. Correlation analysis was performed to determine the strength and direction of relationships between each pair of variables. Regression analysis was then conducted to provide insights into which factors have a significant influence on individuals' intention to conserve water.

Findings and Discussion

Descriptive Analysis

According to Table 1 below, females (76.6%) outnumbered males (23.4%) among the 320 respondents. The overwhelming majority of those who responded had 5 to 7 people in the household (60.6%). This means that Malaysians would consume more water since there are many family members in a house. Furthermore, most of the respondents (30%) needed to pay their monthly water bill above RM80. The monthly water bill would rise as more water was consumed. Looking at the monthly family income, most respondents acquired RM2,000 per month to spend for their own living which represented 25.3% of the respondents.

In order to examine the water consumption pattern, the respondents needed to rank the most frequent activity that they did among 3 major indoor household activities - laundry, kitchen and shower. Next, the respondents also needed to rank the 3 major outdoor household activities being frequently conducted - vehicle washing, gardening and cleaning compounds. For rank 1 indoor activities, respondents tended to choose shower (52.5%). Meanwhile, rank 2 chosen for indoor activities was kitchen (45%) and rank 3 chosen for indoor activities was laundry (39.4%). Looking at outdoor activities, the respondents chose cleaning compounds (44.4%) for rank 1. The chosen rank 2 for outdoor activities was gardening (47.2%) and rank 3 for outdoor activity was vehicle washing (43.8%).

In order to identify the consumption level, respondents were asked about the type of house the lived in. 90% of the respondents lived in landed houses and the remaining lived in apartments and condominiums. Although the majority lived in landed houses, 33.8% of the respondents did not water the garden weekly. However, 38.8% of the respondents washed their clothes daily in a week.

Table 1. Descriptive Analysis

Statistic	Frequency	%
Gender (n = 320)		
Male	75	23.4
Female	245	76.6
Number of people (n = 320)		
2 - 4	94	29.4
5 - 7	194	60.6
8 - 10	25	7.8
>10	7	2.2
Water bill (n = 320)		
<RM20	29	9.1
RM21 - RM40	65	20.3
RM41 - RM60	71	22.2
RM61 - RM80	59	18.4
>RM80	96	30.0
Income (n = 320)		
<RM2,000	81	25.3
RM2,001 - RM3,999	73	22.8
RM4,000 - RM5,999	60	18.8
RM6,000 - RM8,999	42	13.1
>RM9,000	64	20.0
Indoor activity - Rank 1 (n = 320)		
Laundry	78	24.4
Kitchen	74	23.1
Shower	168	52.5

Indoor activity - Rank 2 (n = 320)		
Laundry	104	32.5
Kitchen	144	45.0
Shower	72	22.5
Indoor activity - Rank 3 (n = 320)		
Laundry	126	39.4
Kitchen	124	38.8
Shower	70	21.9
Outdoor activity - Rank 1 (n = 320)		
Vehicle	88	27.5
Gardening	90	28.1
Compounds	142	44.4
Outdoor activity - Rank 2 (n = 320)		
Vehicle	76	23.8
Gardening	151	47.2
Compounds	93	29.1
Outdoor activity - Rank 3 (n = 320)		
Vehicle	140	43.8
Gardening	110	34.4
Compounds	70	21.9
Housing type (n = 320)		
Landed	288	90.0
Apartment	26	8.1
Condominium	6	1.9
How many times per week water the garden (n = 320)		
daily	88	27.5
1 - 3	101	31.6
4 - 6	23	7.2
How often wash clothes in a week (n = 320)		
1 - 2	68	21.3
3 - 4	90	28.1
5 - 6	38	11.9
Daily	124	38.8

Reliability Test

According to Hair et al. (2019), the reliability of the measurements increases when Cronbach's Alpha approaches 1.00. Cronbach's Alpha has a commonly accepted lower limit of 0.70, while exploratory study may see it drop to 0.60. The different statements and dependability for gauging respondents' perspectives on pertinent topics have been recognised. The Cronbach's Alpha outcome for each variable's reliability test is displayed in Table 2. All of the Cronbach's Alpha scores for each selected variable were more than 0.70 which indicates that the Cronbach's Alpha score for water conservation intention (0.885), water conservation attitude (0.846), subjective norms (0.853) and perceived behavioural control (0.868). As a result, this shows that the instrument is reliable and suitable for measuring the targeted research.

Table 2. Cronbach Alpha Value of the Variables

Variable	No of Items	Cronbach's Alpha	>	Standard Cronbach's Alpha	Result
Water Conservation Intention	8	0.885	>	0.70	Reliable
Water Conservation Attitude	7	0.846	>	0.70	Reliable
Subjective Norms	6	0.853	>	0.70	Reliable
Perceived Behavioural Control	8	0.868	>	0.70	Reliable

Correlation Analysis

Correlation is used to examine the strength of a relationship among two or more variables. Correlation is a statistical technique that assesses the strength of the relationship between two variables. Correlation's value is between -1 and +1. According to Gupta and Kapoor (2014), correlation coefficient values closer to +1 or -1 indicate extremely strong positive or negative correlation, whereas values closer to zero indicate extremely low correlation.

Water conservation intention is positively correlated to water conservation attitude with a Pearson correlation coefficient of $r = .348$ and significance value is less than 0.001. This study gain confidence that there is a genuine relationship between water conservation attitude and water conservation intention. The result is aligned with the past study by Willis et al. (2011) that conclude there is positive relationship between water conservation attitude and water conservation intention.

Next, water conservation intention is positively correlated to subjective norms with a Pearson correlation coefficient of $r = .385$ and significance value is less than 0.001. This also indicates that this study obtains confidence that there is a relationship between subjective norms and water conservation intention. The result of the findings shows that there is a positive relationship between subjective norms and water conservation intention when compared to past researches by Yazdanpanah et al. (2012) and Gibson et al. (2021).

In addition, water conservation intention is positively correlated to perceived behavioural control with a Pearson correlation coefficient of $r = .415$ and significance value is less than 0.001. This study shows confidence that there is a relationship between perceived behavioural control and water conservation intention. The result for this variable is aligned with the past studies by Shahangiana et al. (2021) and Nugroho et al. (2022) which conclude there is positive relationship between perceived behavioural control and water conservation intention. Table 3 also indicates that multicollinearity is not a serious concern in this study as all the correlation values between the independent variables are below the critical limit 0.7 (Hair et al. 2006). Table 3 shows the correlations analysis of water conservation intention, water conservation attitude, subjective norms and perceived behavioural control.

Table 3. Correlation Analyses

	$Int_{i,t}$	$Att_{i,t}$	$Sn_{i,t}$	$Pbc_{i,t}$
$Int_{i,t}$	1			
$Att_{i,t}$	0.348**	1		
$Sn_{i,t}$	0.385**	0.281**	1	
$Pbc_{i,t}$	0.451**	0.158**	0.502**	1

Legend: $n = 320$. $Int_{i,t}$ = the determination of consuming water for good use or otherwise; $Att_{i,t}$ = the attitude of consumers whether low water consuming or high water consuming; $Sn_{i,t}$ = the belief that the majority of people are in favour or against of the behaviour; $Pbc_{i,t}$ = the people's perceptions of resources and barriers influence how much control they feel they have over their behaviour and how strongly they intend to engage in certain behaviours or otherwise; * significant at the 0.01 confidence level (two-tailed).

Multiple Regression Analysis

The regression result presented in Table 4 shows that all independent variables which are water conservation attitude, subjective norms and perceived behavioural control have a positive and significant effect towards the dependent variable which is water conservation intention. From the results, the value of adjusted R-squared is 0.267. This tells us that 26.7% of the water conservation intention can be explained by the independent variables which are water conservation attitude, subjective norms and perceived behavioural control. There could be other variables that can explain this variation, but this variation can explain approximately 27% of it.

Next, the F statistics is 39.695 and this number represents the positive and significant relationship at $p < .001$ (due to the value labelled Sig. being less than 0.001). This result indicates that there is less than 0.1% chance that an F-ratio this large can happen if the null hypothesis is true. This can be concluded that this study's regression model results in a significantly better prediction of water conservation intention than if this study employs the mean value of water conservation intention.

Looking at the result, water conservation attitude has a significant effect when the p-value is less than 0.05. It can be concluded that the relationship between water conservation attitude and water conservation intention is significant. Water conservation attitude encompasses an individual's cognitive and emotional evaluation of the importance of conserving water resources (Fatoki, 2021). When individuals possess a favourable attitude towards water conservation, it reflects that they recognise the significance of preserving this vital resource (Gibson et al., 2021). This recognition often arises from an understanding of the environmental, economic, and social implications of water scarcity and wastage. This positive attitude is crucial because it serves as a motivational factor. When people hold water conservation in high regard, they are more inclined to translate their beliefs into actions. This alignment between attitude and behaviour can lead to a positive water conservation intention. In other words, individuals who value water conservation are more likely to commit to water-saving behaviours in their daily lives.

Therefore, the result accepts H1 that a strong water conservation attitude indeed correlates with a positive intention to conserve water. This finding is similar to Willis et al. (2011) as they found that when it comes to voluntary end-use consumption, those who value the environment highly tend to use water more wisely than those who do not. In essence, the alignment between water conservation attitude and positive water conservation intention can be attributed to the cognitive and emotional drivers that influence human behaviour. When individuals genuinely value water conservation, they are more prone to internalise this belief and actively take steps to reduce water consumption.

Moreover, subjective norms also have a significant effect when p-value is less than 0.05 which is 0.004 and there is sufficient evidence at a 99% of confidence level. Therefore, H2 is accepted. Thus, this supports the second hypothesis that there is a significant relationship between subjective norms and water conservation intention. Subjective norms refer to the perceived social pressures and expectations from significant others and society at large. When an individual perceives that those around them value and engage in water conservation behaviours, it creates a sense of normative influence. This influence stems from the desire to conform to these perceived societal expectations, avoid potential criticism or disapproval, and maintain a positive social image (Chaudhary et al., 2017).

Hence, the result is consistent with Yazdanpanah et al. (2012) and Gibson et al. (2021) where it is found that subjective norms significantly projected intentions. It shows that people are more likely to engage in high-level water conservation activities which show that they believe conserving

water is ethically essential. They believe that this is a large part of their responsibility and commitment. Accordingly, the effect of subjective norms on positive water conservation intention can be attributed to the influence of perceived social pressures and the desire to conform to societal expectations.

Lastly, hypothesis H3 predicted a positive relationship between perceived behavioural control and water conservation intention. The result supports the hypothesis. We can see that the p-value is below 0.01 which means that it is 0.05. This indicates that there is sufficient evidence at a 99% confidence level. Therefore, H3 is accepted. Perceived behavioural control refers to an individual's perception of their ability to successfully perform a behaviour. It includes their assurance in their abilities, sources, and opportunities to carry out a specific action. People are more inclined to make plans and take action to carry them out when they feel that they have essential control over their activities (Gibson et al., 2021). The result of this finding will automatically show that there is a positive relationship between perceived behavioural control and water conservation intention. This is consistent with the past studies by Shahangiana et al. (2021) and Nugroho et al. (2022). If these prior studies also found that perceived behavioural control significantly influences intentions, it adds to the body of evidence that individual perceptions of their control over their actions play a pivotal role in driving intentions and behaviours. In other words, it shows that higher degrees of self-efficacy, perceived belief and authority over doing so in society lead people to be more motivated to get involved in water conservation activities.

Table 4 Regression Analysis

Full regression				
n	320			
F value	39.695			
Significant	<0.001			
Adjusted R ²	0.267			
Variables	Coefficient	Beta	t-value	Sig.
Constant	0.220		3.711	<0.001
$Att_{i,t}$	0.058	0.255	5.103	<0.001
$Sn_{i,t}$	0.050	0.167	2.920	0.004
$Pbc_{i,t}$	0.052	0.291	5.253	<0.001

Legend: Table 4 multiple regression equation is stated as: $Inti_{i,t} = \alpha_i + \beta_1 Att_{i,t} + \beta_2 Sn_{i,t} + \beta_3 Pbc_{i,t} + \epsilon_i$ Where: $Inti_{i,t}$ = the determination of consuming water for good use or otherwise; $Att_{i,t}$ = the attitude of consumers whether low water consuming or high water consuming; $Sn_{i,t}$ = the belief that the majority of people are in favour or against of the behaviour; $Pbc_{i,t}$ = the people's perceptions of resources and barriers influence how much control they feel they have over their behaviour and how strongly they intend to engage in certain behaviours or otherwise; β = the estimated coefficient for each item; α_i = the intercept; and ϵ_i = the error terms. *, ** significant at the 0.01 and 0.05 confidence levels respectively.

The aim of this study was to discover the drivers that lead to high domestic water consumption in Malaysia compared to the recommended daily water consumption set by the United Nations. The aim of this study is also to determine which attitudinal predictors have a significant relationship with the water conservation intention. By using the survey data collected from citizens of Malaysia, this study managed to obtain information and found the factors that can affect water conservation intention. Besides that, the selected variables under TPB which are water conservation attitude, subjective norms and perceived behavioural control directly and positively can predict the water conservation intention by looking at the reliability analysis. The result of findings from correlation analysis also shows that all the independent variables are positively correlated with the water conservation intention. Lastly, the multiple regression analysis also indicates that the hypothesis for all independent variables can be accepted with the support explanation from the selected past

studies. This is because the independent variables have a positive and significant relationship with the water conservation intention. Therefore, several limitations have been identified throughout this study. In order to further encourage local engagement in water conservation and support the sustainable use of water resources, valuable suggestions have been made for water management departments.

Even though this study came to some noteworthy results, several limitations can guide future research. Firstly, the variables that are being selected might not be enough to determine the factors that affect water conservation intention. People's decisions and principle are more complex and complicated compared to the selected variables at the theoretical framework. However, choosing less variables can be done when used in data modelling in order to increase the ability to understand. Therefore, this problem can be overcome by adding more variables such as moderating socio-demographic variables into the theoretical framework during conducting future research. By adding more variables, the result of the study will be more accurate and relevant. Finally, this study only applies to employing quantitative methodology. The respondents of the questionnaire might answer the questions asked without thinking as they are trying to complete the survey as soon as possible. Plus, the answer will be less detailed. Nevertheless, the quantitative approach's rapidity and effectiveness can fasten the process of analysing data even large sample size. Thus, future studies can add qualitative methodology in order to get better answers and explanations.

Based on the findings of this study, it can be concluded that this study came out with new findings and a new methodology to determine the water conservation intention in Malaysia. This study employs an innovative methodology to assess water conservation intention within the Malaysian context. By introducing fresh insights and a new analytical approach, it paves the way for future researchers to delve into additional variables beyond the three variables initially considered. This expansion of variables can provide a more comprehensive understanding of factors influencing water usage patterns, thereby enriching the field of water conservation research.

Suggestions for Future Research

This will automatically assist new researchers in exploring more variables that can affect water usage besides the three selected variables. Then, citizens in Malaysia can be aware and take note of what they need to do to reduce water consumption. This outcome holds practical implications for Malaysian citizens. The study's revelations offer valuable guidance, empowering individuals to adopt conscious water consumption practices. Armed with newfound knowledge, citizens can actively engage in behaviours that curtail water wastage, thus contributing to water resource preservation on a broader scale. Next, this study can suggest to Malaysia's legislative bodies management such as Suruhanjaya Perkhidmatan Air Negara (SPAN) and Ministry of Energy, Green Technology and Water Malaysia (KeTTHA) to come out with strategies to prevent the extreme usage of water. By highlighting the urgency of the issue and suggesting strategies, this research can drive the formulation of effective policies and regulations to mitigate excessive water usage. In turn, these measures can work towards ensuring sustainable water availability for current and future generations. This study also assists national water sectors by proposing initiatives to make the vision a reality which is to establish resilient and sustainable water services. Hence, the research's insights could be instrumental in shaping the sector's trajectory, fostering improved infrastructure, resource management, and operational strategies to create a more water-secure future. Finally, in a broader societal context, this paper could increase the well-being of Malaysia country as it encourages the citizens of Malaysia to take care of the environment. By nurturing a culture of environmental consciousness and responsible resource utilisation, the study encourages citizens to assume an active role in safeguarding their surroundings. This cultural shift, driven by heightened awareness, can have ripple effects on multiple dimensions of well-being, including ecological, economic, and social aspects.

Acknowledgement

The authors gratefully acknowledge the support and financial assistance received from the Ministry of Higher Education via the Fundamental Research Grant Scheme (FRGS) (FRGS/1/2022/SSO1/UiTM/02/40) and the significant contribution received from Universiti Teknologi MARA to ensure successful execution of this research endeavour.

Conflict of interests

There is no reported conflict of interest for the authors. There are also no financial conflicts of interest to disclose and all co-authors have reviewed and approved the article's contents. The authors verify that the contribution is original and is not currently being considered by another publisher.

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