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Article

The Role of Awareness of Consequences in Predicting the Local Tourist's Plastic Waste Reduction Behavioral Intention: The Extension of Planned Behavior Theory

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Abstract: This article's goal is to investigate the structural model that explains how awareness of consequences, subjective norms, attitude and behavior control variables influence plastic wastes behavioral intention in Jeddah's beaches, Saudi Arabia. A quantitative approach was employed. For data analysis, structural equation modeling was used. Based on the literature analysis, the study used a structured questionnaire. Multiple statistical analyses were used to examine the hypotheses. This study conducts a survey on a sample of 390 local tourists to investigate their intention to reduce plastic wastes. To increase the explaining power for behavioral intention, this study extended the TPB by adding awareness of consequences. The study's participants were selected randomly. 340 of them agreed and answered the questionnaire, yielding a percentage response rate 87%. This produced 271 valid questionnaires for data analysis after closely examining the survey. The results demonstrate a positive influence of subjective norms, perceived behavioral control, and consequences awareness on environmental behavioral intention. On the other hand, attitude does not significantly contribute to predict EBI. Governments, legislators, and researchers may use the work's findings to create and execute efficient waste management programs.

Keywords: attitude; subjective norm; awareness of consequences; behavioral intention

1. Introduction

Plastic has triumphed in a variety of fields during the previous century, making it pervasive in our daily lives. Plastic products such as plastic bottles and shopping bags have become indispensable in today's lifestyle despite their recent inventions (Nabirye, 2018). However, while plastic is prized for its toughness, its long lifespan poses a problem when it enters the ecosystem and remains as garbage for an extended period of time (Heidbreder et al., 2020). Plastic pollution has become a global concern in recent decades, and it is now well known to have negative consequences on both marine species and humans around the world as a result of rising consumerism, urbanization, and changing lifestyles (Nabirye, 2018). Plastic waste is one of the most well-known types of beach litter around the world (Derraik, 2002). Plastic pollution is becoming more of a problem at tourist destinations (Maione, 2019).

In a world where environmental deterioration is escalating, it is important to understand why people behave in environmentally friendly ways. Because the personal costs of the pro-environmental activity are typically far greater than the personal benefits (Vlek & Keren, 1992), a rational approach to human decision-making predicts that pro-environmental behavior will not be displayed voluntarily (Harland et al., 2007).

Tourism is one of the most significant sources of waste. Indeed, the effects of tourism on pollution are both obvious and well known (Nabirye, 2018). Tourism has been identified as a high-energy, high-water-resource-demanding activity that also produces considerable volumes of solid waste from hotels and recreational areas (Utopy and Practice, 2020). The tourism business has a negative impact on the environment, contributing 8% of total greenhouse gas emissions (Lenzen et al., 2018) and producing 35 million tons of solid trash yearly (UNEP & WTO, 2012), including in

environmentally sensitive areas (Dolnicar, 2020). According to the United Nations Environment Program (UNEP), the tourism industry produces 35 million tons of solid trash annually on a global basis. As the tourism industry grows, more garbage is generated from tourism activities and ends up in the ocean as a result of poor solid waste management after consumption (Maione, 2019).

Tourists can assist to mitigate this negative impact by planning environmentally friendly vacations and acting in environmentally friendly ways while on vacation (Juvan and Dolnicar, 2016). Several studies have been conducted on the impact of tourism on pollution, environmental deterioration, and natural resource depletion. For example, Saenz-de-Miera & Rosselló (2013) investigated the role of visitors in air pollution in Mallorca, using the number of tourists as an indicator to represent direct and induced environmental pressure (Nabirye, 2018). Greiner et al. (2001) studied tourist policy and pollution, concluding that in high-pollution conditions, tourism activities may be reduced in the hopes of allowing the ecosystem to recover.

The theory of planned behavior (TPB) are often used to explore the psychological characteristics of pro environmental behavior (Vina& Mayangsari, 2020). According to the theory, intentions must be formed before actions take place. These intentions can be predicted by three factors: subjective norms, which are expectations or influences from significant others, such as family and friends; attitudes toward the related behavior; and perceived behavioral control, which is the belief that one can control the related behavior (Fishbein & Ajzen, 1977).

There have been several studies that used TPB to investigate pro-environmental behavior or intention, but there are few specific researches that discuss TPB variables in relation to reducing plastic waste behavior in beaches, specifically in Jeddah City. It is intended that through understanding behavior and behavior determinants, the governmental bodies, pro-environmental organizations, businesses, and communities will be able to implement appropriate strategies to reduce the use of plastic in Saudi Arabia to protect marine lives. Very little research has been done on the relationship between behavioral intention and awareness of consequences in the post-consumption context of reducing plastic waste.

As a result, awareness is investigated in this work as an antecedent variable that affects behavioral intention. Aside from this condition, it makes perfect sense and reason for the authors to carry out further research on awareness of consequences regarding reducing plastic waste on marine beaches. This article's goal is to investigate the structural model that explains how awareness, subjective norms, attitude and behavior control variables influence intention

This paper is methodically structured to facilitate the reader's understanding; an introduction outlining the topic's interest is followed by a review of related literature, a discussion of the findings, research methods, and conclusions. We conclude this paper by summarizing the implications and limitations of the study.

2. Literature Review

2.1. Theoretical background

2.1.1. The theory of planned behaviour

The theory of planned behavior is an extension of the theory of reasoned action, necessitated by the original model's inability to deal with behaviors over which humans have only partial volitional control (Ajzen, 1991; Armitage and Christian, 2003). Ajzen added a third factor to the TRA to account for such restrictions, in addition to attitude and subjective norms (Linh et al., 2021). The theory of planned behavior model includes background elements (individual, societal, and information factors) as predictors of behavior in the reasoned action model, which is the most recent version of the reasoned action approach (Fishbein & Ajzen, 2010).

The TPB model has an advantage over the TRA model in that it can be used to investigate behaviors that are not under voluntary control (Poudel and Nyaupane, 2017). The theory of planned behavior (TPB) (Armitage & Conner, 2001) is a social psychology theory that focuses on human behavior research. It's been used to forecast a wide range of tourist behavior. It is a rational decision-

making model that predicts behavioral intentions using three important independent factors (Goh *et al.*, 2017). The Theory of Planned Behavior (TPB) postulates three conceptually independent determinants that determine whether a person plans to do something, according to Ajzen's (1991) theory. TPB claims that attitudes, subjective standards, and perceived behavioral control all influence behavioral intention (Ajzen, 2015; De Cannière *et al.*, 2009). This theory is used to predict a person's behavioral intentions and behaviors (Hasan *et al.*, 2020).

This social psychology framework proposed that volitional processes, which include the attitudinal dimension (i.e. outcome belief – attitude toward a specific behavior), the normative dimension (i.e. normative belief – subjective norm), and the cognitive dimension (i.e. cognitive belief – cognitive bias), are all interconnected (Ajzen, 2015). Rather than focusing solely on the volitional dimension, this socio-psychological theory took into account not only the volitional but also the non-volitional aspects of human decision-making and rational behavior (The theory of planned behavior) (Ajzen, 1991; De Cannière *et al.*, 2009). In other words, according to the theory of planned behavior, volitional variables cannot adequately account for one's complicated decisions and acts because such decisions and actions are not always under an individual's volitional control (Yadav & Pathak, 2017).

The non-volitional dimension (control belief – perceived behavioral control) influences a person's intention and conduct (Ajzen, 2002; Carrus *et al.*, 2009). The theory of planned behavior's core premise is that one's behavioral intention is the most direct and proximate driver of one's conduct (Ajzen, 1991). This behavioral intention is generated by the volitional dimension, which includes attitude toward the behavior and subjective norm, and the non-volitional dimension, which includes perceived behavioral control, according to this theory (Teng *et al.*, 2015). The tourism context provided empirical support for the theory's links between volitional and non-volitional factors and intention, as Lam and Hsu (2004) successfully verified that travelers' attitude, subjective norm, and perceived behavioral control significantly influenced their behavioral intention.

The TPB has a long history of studying the psychological factors that influence pro-environmental behavior (Ajzen *et al.*, 2015). If a person's desire to engage in pro-environmental behavior (PEB) grows sufficiently, they will be able to make more environmentally friendly decisions (De Leeuw *et al.*, 2015). In a variety of tourism scenarios, this theory has been found to be useful in explaining individuals' ecologically beneficial intentions/behaviors (Meng & Choi, 2016).

The direct application of the idea of planned behavior's sufficiency and effectiveness has been questioned numerous times. Environmental awareness, green image, and anticipated sensations are significant drivers of individuals' different pro-environmental intentions/behaviors, according to existing studies in environmental behavior and consumer behavior in particular (Wu *et al.*, 2019).

Carrus *et al.*, 2009; De Cannière *et al.*, 2009) have applied the notion of planned behavior to a wide range of human behaviors. However, because the theory primarily relies on self-identity/self-interest processes, its efficacy in predicting intention/behavior has been questioned (Armitage & Conner, 1999). It also ignores how one's intention/decision is energized (Perugini & Bagozzi, 2001), which is especially important in the context of sustainable tourism (Teng *et al.*, 2015). Indeed, several researchers suggested that this approach overlooked some cognitive (e.g., image and awareness) and affective components that are crucial in explaining sustainable/pro-environmental intentions and behaviors (Meng & Choi, 2016).

Environmental attitudes, perceived behavioral control, and subjective norms have also been linked to the ERB of tourism sites (Poudel and Nyaupane, 2017). ERB is also linked to other key aspects of sustainable tourism, including environmental commitment, perceived value, and service quality (Sahabuddin *et al.*, 2021).

People may intend to recycle their household waste, but they do not because they believe that one person's actions will not have a significant environmental impact (Miliute-Plepiene *et al.*, 2016). A person's desire to engage in pro-environmental behavior (PEB) should grow to the point where they exhibit more favorable behavior toward PEB (Kotze, 2020).

2.2. Hypotheses development

2.2.1. Attitude and environmentally responsible behavioral intention

The most applicable definition of attitude was put forth by Ajzen (1991). He refers to attitude as “the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question”. Attitude might be favorable or unfavorable, positive or negative, like or dislike (Fang, 2017). Since attitude refers to how one feels about performing in a certain way, it can be either good or negative (Ajzen, 2011). In other words, a person's desire to engage in or carry out a given conduct is higher the more positive their attitude (Fenitra, et al., 2021). It is a complex and multifaceted idea that incorporates both good and negative environmental perceptions as well as a mental state that influences people's climate-related decisions (Chauhan, 2020). Environmental attitudes have a favorable impact on waste-classification behavior, according to Tang and Chooi (2022). The degree to which a consumer has favorable (likes) or unfavorable (dislikes) prescription waste reduction actions is referred to as attitude (Mouloudj et al., 2023).

According to the theory of planned behavior, attitudes toward particular behaviors positively influence the intention to engage in those behavioral intention (Ajzen, 1991; Aboelmaged, 2020). According to the expectation-disconfirmation paradigm, a positive attitude results in favorable expectations, which in turn provide positive motivation to drive behavioral intentions (Wong et al., 2021). In other words, a person's desire to engage in or carry out a given conduct is higher the more positive their attitude. Environmental attitudes increase a person's propensity to engage in sustainable conduct, according to Hu et al. (2018). Additionally, a person's attitude can predict whether they would act in a way that is pro-environmental (Arrow et al., 2017). Visitors who are more in tune with the local environment are more likely to engage in ecologically responsible behavior (Wang et al., 2019). According to Dixit and Badgaiyan (2016), people who have a positive attitude are more likely to support sustainable behaviors. Numerous research have emphasized the correlation between attitude and pro-environmental behavioral intention (Fenitra et al., 2021; Wang et al., 2018; Liu et al., 2020; Patwary et al., 2021; Zheng et al., 2022; Xu and Hu, 2023). In an empirical study on visitors to Tasmanian parks' environmentally responsible conduct, Brown et al. (2010) showed that a more positive attitude toward the action motivates intention behavior. According to empirical research by Patwary et al. (2021), environmental attitude is positively correlated with intention. Visitors who are more in tune with the local environment are more inclined to practice ecologically responsible behavior (Wang et al., 2018). Kumar (2019) found that when people had a favorable attitude of the environment, they would desire to reduce the negative effects of their conduct on the environment. Regarding their research, Hu et al. (2018) and Hu et al. (2019) made the claim that attitudes influence people's intentions to litter. Additionally, Ibrahim et al. (2021) investigated the relationship between attitude and anti-littering using data from a survey of 303 Malaysians. The statistical analysis demonstrates that attitude is a strong predictor of anti-littering intention. According to research on waste, attitudes are a significant predictor of travelers' intentions to reduce their waste (Fang et al., 2017; Wang et al., 2021; Mouloudj et al., 2023). Based on prior research, this study revealed that a more positive outlook increases the intention to act in an environmentally responsible manner (Fenitra et al., 2021).

Findings have been made on the relationship between good attitudes toward waste reduction and the intention to decrease plastic waste (So et al., 2021). Additionally, Aruta (2022) found that favorable views substantially predicted intentions to reduce plastic consumption in order to prevent plastic waste. Higher knowledge had a substantial impact on Hajj et al. (2022)'s discovery that favorable attitudes regarding proper (unused or expired) drug disposal were altered.. In contrast, Additionally, Xu et al. (2017) discovered that attitude had little bearing on one's intention to separate garbage. Based on prior research, this study hypothesized the following hypothesis:

H1: Attitude toward reducing plastic waste affects positively local tourists' behavioral intentions.

Subjective norms has a positive impact on local tourists' behavioral intentions to reduce plastic waste.

Subjective norm is the second construct in TPB, which can be defined as the “perceived social pressures from referents” such as family members, close friends, and peers (Hu et al., 2019).

In other words, a subjective norm is the perception of important persons who are close to a person and have the power to affect that person's decisions (such as family members, close friends, coworkers, or business partners) (Fenitra et al., 2021; Zheng et al., 2023; Tian et al., 2019). The norms activation theory (Schwartz, 1976) proposes that the consumer's subjective norms will imply that performing trash classification is acceptable and valuable because it is compatible with the behavioral patterns of his or her family, friends, and other significant individuals around (Tian et al, 2019).

According to the TPB, subjective norm is a major factor in predicting one's intentions (Ajzen, 1991). The subjective norm, according to previous researchers, is a crucial variable that affects people's intended pro-environmental conduct (Fenitra et al., 2021). According to Kumar (2019), applying more social pressure to individuals may influence their decision to engage in pro-environmental conduct. In other words, friends and family can encourage sustainable lifestyle choices in someone or prevent unsustainable behavior. More social pressure makes people more likely to act in an environmentally responsible manner (Khan et al., 2019). Subjective norm, which act as a type of peer pressure, compel people to change their behavior when it comes to being socially and environmentally conscious (Ulker-Demirel & Ciftci, 2020). Several academics argued that a person's intention to act sustainably can be predicted by the strength of their social pressure (Khan et al., 2019; Kumar, 2019; Fenitra et al., 2021; Cheng et al., 2006; Kim & Hall., 2022; Khan et al., 2019; Zheng et al., 2022 ; Fang, 2017).

Numerous empirical studies have shown that subjective norms influence intention toward ecologically responsible conduct, including the intention to pick up trash (Brown et al., 2010), prevent littering (Hu et al., 2018), and separate garbage (Xu et al., 2017). According to Venkatesh and Davis (2000), a strong predictor of a person's intention to accept a new system is their readiness to live up to the standards of a reference group. Additionally, it has been shown that people will, despite their negative feelings, yield to societal pressure. (Aboelmaged, 2020). For instance, it has been discovered that the intentions of outbound visitors to engage in pro-environmental activities are significantly influenced by subjective standards (Ng, 2021). In tourism literature, various studies demonstrate that tourists are more likely to exhibit environmental behavior if they consider how the reference person wants them to behave (Hu et al., 2018; Hu et al., 2019; Liu et al., 2020; Panwanitdumrong& Chen, 2021). Numerous research in the waste literature have revealed that subjective norms had an impact on waste minimization intentions (Wang et al., 2021; Wang et al., 2023; Mouloudj et al., 2023). Additionally, Rakhmawati et al. (2023) discovered that social norms significantly influence visitor waste reduction. However, a study by So et al. (2021) found that intentions to reduce plastic trash in Hong Kong were unaffected by subjective standards. Jiang et al. (2018) looked at the psychological factors that influence Chinese farmers' intentions to recycle agricultural waste. They argued that the intention to recycle biomass waste might be greatly stimulated by subjective norms (Aboelmaged, 2020). Khan et al. (2019) used the TPB lens to examine behavioral intentions to recycle plastic garbage in a developing context. The findings indicated that subjective norms are significant indicators of consumers' propensity to return.

Fenitra et al., (2021) revealed that as societal pressure on tourists increases, so does their intention to act in an environmentally friendly manner. Additionally, a related study that looked at the factors influencing the Zero Litter Initiative (ZLI) at the Huangshan National Park in China supported the findings. Hierarchical regression analysis showed that subjective norms have a favorable impact on intention behavior (Fenitra et al, 2021). Additionally, it was demonstrated that subjective standards had no bearing on individuals' intents to reduce food waste (Marek-Andrzejewska; Wielicka-Regulska, 2021). To counter this claim, Pikturnien and Bäumle (2016), Tweneboah-Koduah et al. (2019), and Liu et al. (2020) stated that raising the subjective norm does not encourage people to act in an environmentally responsible manner. We came up with the second hypothesis in light of the TPB's proposal and the previous discussion.

H2: Subjective norms affects positively local tourists' behavioral intentions to reduce plastic waste.

Perceived behavior control and environmentally responsible behavior intention

The perceived behavioral control, which is defined as "the person's perception of the ease or difficulty of performing the behavior of interest" (Ajzen, 1991) (p. 183), is an important factor in determining the TPB (Mouloudj et al., 2023). Perceived behavioral control refers to a person's sense of control over their actions and decisions, which determines how they assess the risks and advantages of doing something. As a result, if a person perceives additional difficulties in performing, their desire to do so is reduced (Zhou, 2016). It is concerned with the existence of circumstances that can either facilitate or impede the performance of a behavior (Panwanitdumrong & Chen, 2021). An individual's perceived capacity and ability to carry out a specific conduct is referred to as perceived behavior control (PBC) (Wang et al., 2021).

In other words, perceived behavioral control measures an individual's perception of his or her ability to manage volitional elements and foresee difficulties (Mugiarti et al., 2022). People's internal controllability and self-efficacy to carry out the behavior, as well as external conditions such as preparation time and facilities, determine the judgment of difficulty (Gao et al., 2017). Examples of control factors include the availability or lack of time and money, collaboration with others, the required skills and abilities, and other elements (Ajzen, 1991). Mouloudj et al., (2023) refer to perceived behavior control as the person's belief in his or her ability to lower prescription waste. Therefore, impediments to waste reduction behavior can include a lack of facilities for returning undesired prescriptions and the high cost (both financially and psychologically).

This concept was seen by many sustainable behavior researchers as an important factor in intended behavior (Fenitra et al., 2021). Perceived behavior control governs intention behavior in accordance with the theory of Planned Behavior (Ajzen, 1991). Numerous research in the area of tourism have provided empirical support for this positive impact of perceived behavior control on intention behavior. According to (Lee et al., 2017), this concept significantly affects the intention to engage in ecotourism. Han et al.'s (2018) research further supports the idea that perceived behavior control is what motivates tourists to engage in pro-environmental activities. In context of sustainable behavior, while some studies have demonstrated PBC to have a significant relationship with behavioral intention (Juschten et al., 2019; Zheng et al., 2022), others have discovered minimal or nonexistent correlations (Khan et al., 2019; Fenitra et al., 2021; Kumar, 2019).

The results of these studies suggest that even if a person has a positive attitude or subjective norm toward the intended act, their behavioral intention will be lower if they have little control over performing a particular behavior due to a lack of available resources (such as costs or time) (Han et al., 2010). Perceived behavioral control is the most potent predictor of a number of pro-environmental behaviors (Lizin et al., 2017). This is because engaging in pro-environmental behaviors may require some level of personal inconveniences and sacrifices (Schmerzler, 1991). For instance, some researchers discovered that modifying visitors' perceptions of their behavioral control has a beneficial impact on their intention to engage in eco-friendly activities (Wang et al., 2018). For example, researchers discovered that perceived behavioral control was positively correlated with attitude toward pro-environmental behavioral intentions in a comparative study of visitors' pro-environmental behavioral intentions in destinations with a focus on nature (Schmerzler, 1991). The results of earlier studies show a favorable association between PBC and desire to reduce waste (Wang et al., 2021, Wang et al., 2023; Mouloudj et al., 2023). For example, consumers' perceived behavioral control positively influenced their intentions to bring a reusable bag when shopping (Wang; Li, 2022). Additionally, according to a survey of 546 Chinese visitors, perceived behavior control increases visitors' intention to minimize trash in a good way (Wang et al., 2021).

Wang et al., (2018) conducted additional research that demonstrated the PBC variable has a significant influence on Chinese customers' decisions to buy environmentally friendly goods. Although this data indicates a positive relationship between perceived behavioral control and intention to act in an environmentally responsible manner, Pikturien and Bäumle (2016) and Tweneboah-Koduah et al. (2019) have found different results. Perceived behavior control is not linked to a desire to engage in pro-environmental conduct, according to research by Khan et al. (2019) and Liu et al. (2020). PBC is not a significant predictor of waste separation intention, according to (Xu et al., 2017; Mouloudj et al., 2023). Based on the above, the third hypothesis as follows:

H3: Perceived behavior control affects positively local tourists' behavioral intentions to reduce plastic waste.

Awareness of consequences and environmentally responsible behavior intention

According to Schwartz (1977), environmental awareness is the degree to which a person is mindful of the detrimental effects that their actions may have on their valued objects—such as the environment, other people, animals, habitats, and plants—when they choose not to engage in pro-environmental activities. Awareness of consequences can be defined as “the extent to which someone is aware of the adverse consequences of not acting pro-socially for others or for other things over values” (Steg and De Groot, 2010, p. 725). According to Harland et al. (2007), awareness of consequences relates to a person's openness to situational cues of need. Knowing the positive or negative effects of a conduct is referred to as awareness of consequences (AC) (Bamberg et al., 2007).

Numerous research in the literature on environmental behavior highlight the significant relationships between attitudes toward behavior, environmental awareness, and eco-friendly intents and actions (Chen & Tung, 2014; Meng & Choi, 2016; Yadav & Pathak, 2016). All of these researchers came to the same conclusion: behavior attitudes are directly impacted by environmental awareness, and behavior attitudes in turn drive pro-environmental intentions (Heesup Han et al., 2018). At six hostels in Byron Bay, Firth and Hing (1999) conducted surveys on the attitudes and practices of backpacker hostel visitors about sustainable tourism. It was discovered that the respondents' holiday behavior was allegedly impacted by environmental measures in certain instances. For instance, 17% of participants reported that they had been adopting eco-friendly behaviors, including recycling, while on vacation in the Shire as a result of Byron Bay's growing environmental consciousness. However, 12% acknowledged that although they were fairly ecologically careful when they were at home, they let this level of care go when they were on vacation. According to Lee and Moscardo (2005), guests' positive environmental attitudes may be reinforced by learning about in-resort environmental practices and having positive experiences in ecotourism accommodations, which will pique their interest in more ecotourism activities. According to Sparks et al., (2013), pro-environmental travel UGC participation is predicated on environmental understanding. Han (2015) indicated that the awareness of consequence and the normative process were significant predictors of the pro-environmental intention. In their examination of young customers' intention formation with regard to green products, Yadav and Pathak (2016) identified that environmental awareness was a significant determinant. Results of Meng and Choi's (2016) study in the sustainable tourism context also showed the considerable influence of volitional and non-volitional variables on travelers' sustainable intention/behavior.

Kourosh Esfandiar et al., (2019) revealed the association between awareness of consequences and personal norms was the strongest, and personal norm was the most influential determinant of pro-environmental binning behavior. Kourosh Esfandiar et al., (2019) showed that the causal relationships of awareness of consequences, such as problem awareness, ascribed responsibility, personal norm, and intention were supported. Hu et al. (2019) looked at what influences visitors' desire to take part in Huangshan National Park's Zero Litter Initiative. The study's findings showed that understanding of visitors' environmental responsibilities is crucial to reduce litter. This theory suggests that there is a strong correlation between visitors' knowledge or awareness levels and littering. Numerous research have shown that a person's behavior related to littering may be influenced by their level of environmental "awareness" (Kaseva & Moirana, 2010; Sharp, Giorgi, & Wilson, 2010). According to research by Heesup Han et al., (2018), the theory of planned behavior's predictive value was enhanced by the addition of green image, environmental awareness, and expected sensations. The substantial contribution of these integrated variables to raising intentions for waste reduction was further validated by the results. However, the research on tourism has highlighted the importance of the influence of characteristics including affective moods, green image, and environmental knowledge on the waste reduction practices of young travelers. Furthermore, it is rare that an existing sociopsychological theory for the understandable explanation of young travelers' waste reduction practices when traveling incorporates these crucial ideas (Heesup Han et al., 2018). Based on prior research, this study proposes the following hypothesis:

H4: awareness of negative consequences affects positively local tourists' behavioral intentions to reduce plastic waste.

3. Research Methodology

This section of the paper discusses the research's demographic and sample, as well as the tools and methods used to collect data and the statistical techniques utilized to analyze the data. The study used a descriptive survey design, as the research aimed to examine the impact of attitude, subjective norms, behavioral control and awareness of consequences on local tourists' behavioral intentions to reduce plastic waste. Because of the nature of the data, a quantitative method was used.

3.1. Sample size

Local tourists in Jeddah city are the study's target group. Using a questionnaire survey, this study takes a quantitative method. Based on this, questionnaire surveys were distributed among 390 local tourists who were interviewed over the two-month data collection period between June and August, 2023, and requested to participate. The study's participants were selected randomly. 340 of them agreed and answered the questionnaire, yielding a percentage response rate 87.17%. This produced 271 valid questionnaires for data analysis after closely examining the survey. The authors requested approval from Hail University's deanship of scientific research. Once approved, the primary data collection instrument was a structured questionnaire. A cover letter explaining the purpose, parameters, and confidentiality of the study was attached to every questionnaire. Participation in the survey was strictly voluntary.

3.2. Research instruments

There were two main sections of the questionnaire employed in this study. The purpose of the first section of the questionnaire was to gather basic socio-demographic information from the respondents, including gender, age, occupation, education level, and number of beach visits. The purpose of the second section was to measure the research construct items. Every item for each of the five components was modified based on results from earlier studies on environmental behavior. There were a total of 21 items in the measurement set. The attitude items were adapted from Ajzen (1991), Liu et al. (2019), and Wang et al. (2019). It was measured by six items including "For me, reducing plastic waste in beaches is a good idea", "I think doing a good job in plastic waste reduction is useful for protecting the marine life", "dropping waste in the beaches has harmful effects on human health", "I think efforts by official organizations to reduce plastic waste reduction in beaches are effective", "I think efforts by official organizations to reduce plastic waste reduction in beaches are important for the tourist activity". The subjective norms items were adjusted from Ajzen (1991), Liu et al. (2019), and Wang et al. (2019a) to gauge the social pressure on local tourists to act or not to act on reducing plastic wastes. Five items were used to measure it. "I believe that my friends, family, and coworkers expect me to use less plastic when I visit beaches," "I believe (family, friends, and coworkers) are aware of the pollution caused by plastic waste and tend to reduce plastic wastes in their vacations," "Individuals (friends, family, and coworkers) who are important to me would influence me to reduce plastic wastes", and "most people who are important to me would want me to have environmentally responsible behavior". The planned behavioral control items were adapted from Ajzen (1991), Liu et al. (2019), and Wang et al. (2019a) to appraise tourists' ability to have self-control while engaging in ERB, including five items "I am confident that if I want, I can use less plastic materials while I visit beaches," "I have enough time to look for alternatives for plastic materials while visiting beaches," "I have enough money to buy alternatives for plastic materials while I visit the beaches," "It is completely up to me whether or not I can engage in reducing plastic wastes in beaches," "I am confident that if I want, I can have environmentally responsible behavior".

Awareness of consequences were adapted from Han (2015, Kourosch Esfandiar et al., 2019) including "The plastic wastes on beaches and their impacts on the marine life are more serious than what individuals think", "I concern that plastic wastes in beaches and their impact on the

environment lasts longer than we expect” , “I am aware of the seriousness of plastic wastes and their considerable influence on the tourism industry” , “ If plastic wastes progress due to mass use of plastic in beaches, marine species will become extinct” , “If plastic wastes progress due to mass use of plastic in beaches, environmental threats to public health will become serious”. Every measurement construct was evaluated using a Likert scale with five points. The questionnaire, originally developed in Arabic, was translated into English and then translated back to ensure content validity. In addition, 3 academics reviewed and commented on it. It was slightly adjusted in terms of wording and formatting.

3.3. Data collection

The data for this study was gathered by a random sampling method. Tourists visiting Jeddah were asked to engage in the survey on a voluntary basis while on holiday. The technique of data gathering was face-to-face. The ethics committee at Hail University was given its approval to the project. A pilot study was conducted prior to the final survey to assess the reliability of the questionnaire items. 50 respondents were chosen at random from the target group for this study. Over the two-month data collection period from June 15 to 15 August, 2023, data was collected by delivering self-administered surveys. 390 questionnaires were distributed to the target population of study.

3.4. Data analysis

To analyze the constructed model, the current study used the Partial Least Squares Structural Equation Modeling (PLS-SEM) technique. The PLS-SEM was utilized to evaluate the measurement and structural models in this investigation. The measurement model (outer model) relates to the relationship between the constructs and their indicators, whereas the structural model refers to the relationship between the latent constructs themselves. The use of PLS-SEM in this work is due to the fact that it allows for simultaneous analysis of both measurement and structural model, resulting in more accurate calculations.

3.5. Results

3.5.1. Data description

Characteristics of Respondents

The characteristics of the sample are listed in Table 1. Males made up around 78.2 percent of all responders. 55.7% of the respondents were in the age range of 21 to 30. Roughly 75 percent are unmarried. 46.9% of the population have a high school diploma. Of these, 51.8 percent worked, and 69% of them were married. Moreover, 66.4% of participants stated that they visited beaches at least once a week.

Table 1. Respondents` demographic characteristics.

Age group	Frequency	Percent
Younger than 20	58	21.4
21 – 30	151	55.7
31 - 40	28	10.3
41 - 50	17	6.3
51 - 60	9	3.3
60 +	8	3.0
Total	271	100.00

Gender		
Male	212	78.2
Female	59	21.8
Total	271	100.0
Marital Status		
Single	203	74.9
Married	61	22.5
Widow/ Widower	2	.7
Divorced	5	1.8
Total	271	100.0
Education		
Primary School	0	0
Prep. School	3	1.1
High School	127	46.9
University	118	43.5
Post graduate	18	6.6
Other	5	1.8
Total	271	100.0
No. of visits to beaches		
1 times	180	66.4
1-4 times	46	17.0
5-10 times	19	7.0
11-15 times	26	9.6
More than 15 times	271	100.0
Total	180	66.4

Means and Standard Deviation

The descriptive statistics of all the items are shown in Table 2, including their mean and standard deviation. The levels of behavioural intention and awareness of consequences are very high. Attitude, perceived behavioural control and subjective norms are high.

Table 2. Descriptive statistics of questionnaire items.

	Mean	Standard deviation
Attitude	4.332	1.0868
Subjective norms	3.925	1.31725
Perceived behavioral control	3.934	1.309
Awareness of consequences	4.628	.6364
Behavioral intention	4.675	0.56675

Measurement Model Test: Reliability and Validity

This research paper is designed to examine the structural model of responsible local tourists' behavior. The model describes the relationship between several latent variables, each measured by many indicators. The modeling output, which underwent multiple evaluation phases, is the final model that is being discussed. First, the evaluation of the model was carried out on the validity and reliability of the latent variable construction. As shown in Table 3, both the minimum values of CR and Cronbach's alpha are higher than the recommended 0.70, suggesting good internal consistency of the items of each construct. Factor loadings for the constructs and the extracted average variance (AVE) were used to quantify convergent validity. If a variable's AVE value is more than 0.50, it can be accepted and recognized as valid. Considering the magnitude of these criteria, all latent variables can be declared adequate or acceptable. The AVE scores and factor loading data show that all of the measurement items have strong convergent validity. If the value of the cross-loading on the variable in question is the greatest and more significant among the cross-loading values for other variables, then the measuring indicator of the latent variable is valid and acceptable as a measure of the latent variable.

Table 4 lists each item's cross-loading that measures the latent variable in this paper. Column 1 has an attitude indicator. It appears that the value is 0.777 for the ATT2 indicator and 0.755 for the ATT1 indicator. When compared to the loading value in the other indicators, the loading value of these two indicators is the largest and most significant. This suggests that ATT2 and ATT1 are the best indicators for the attitude variable, particularly when compared to other indicators such as ATT3, ATT4, and ATT5. We can evaluate the Subjective norm, Perceived behavioral control, Awareness of consequences, and Behavioral intention variables' item validity by using the same method.

Items SN4 and SN2 are the best measure of the subjective norm variable. Items BC5 and BC1 are the best measures of the Perceived behavioral control variable, with a loading of 0.816 and 0.772 being the highest when compared to other items, while the Awareness of consequences variable mainly comprises indicators AC1 to AC5 with loading values ranging from 0.818 to 0.779. The Behavioral intention variable with the BI1– BI4 items having adequate loading values ranging from 0.868 to 0.779 and BI1– BI4 having loading values ranging from 0.828 to 0.779. These useful items are measures of each latent variable in the measurement model depicted in Figure 1.

Table 3. Results of measurement model test for reliability and validity.

Construct	Item	Factor loading	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Attitude	ATT1	0.755	0.725	0.744	0.819	0.537
	ATT2	0.777				
	ATT3	0.652				
	ATT4	0.604				
	ATT5	0.648				
Subjective norm	SN1	0.688	0.720	0.722	0.826	0.543
	SN2	0.753				
	SN3	0.714				
	SN4	0.790				
Perceived behavioral control	BC1	0.772	0.792	0.815	0.855	0.543
	BC2	0.716				

	BC3	0.640				
	BC4	0.729				
	BC5	0.816				
Awareness of consequences	AC1	0.815				
	AC2	0.800	0.868	0.868	0.904	0.654
	AC3	0.818				
	AC4	0.779				
	AC5	0.832				
Behavioral intention	BI1	0.828				
	BI2	0.864	0.855	0.855	0.902	
	BI3	0.868				0.698
	BI4	0.779				

Discriminant validity

Discriminant validity for each latent variable can be seen using the Fornell–Larcker criterion (FLC) and heterotrait–monotrait ratio (HTMT). These two criteria are used to detect multicollinearity in constructs. If a variable's value is less than 0.80, multicollinearity issues do not exist. Tables 4 and 5 display the FLC and HTMT, respectively, for every variable. In the off-diagonal cell, there are no numbers whose values are equal to or more than 0.80. This condition shows that there is no multicollinearity problem for all latent variables.

Table 4. Fornell–Larcker criterion (FLC).

	Attitude	Awareness of consequences	Behavioral control	Behavioral intention	Subjective norm
Attitude	0.691				
Awareness of consequences	0.498	0.709			
Behavioral control	0.574	0.511	0.737		
Behavioral intention	0.483	0.627	0.570	0.736	
Subjective norm	0.546	0.392	0.686	0.498	0.737

Table 5. Heterotrait–monotrait ratio (HTMT).

	Attitude	Awareness of consequences	Behavioral control	Behavioral intention	Subjective norm
Attitude					
Awareness of consequences	0.630				
Behavioral control	0.761	0.603			

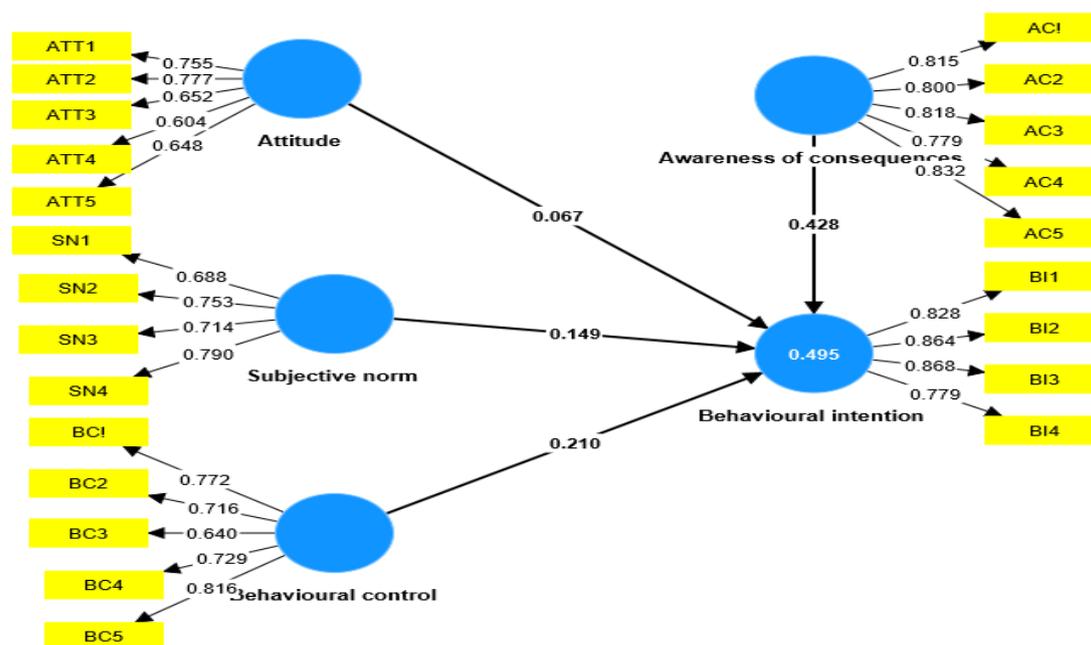
Behavioral intention	0.601	0.726	0.671	
Subjective norm	0.774	0.488	0.912	0.625

Path analysis

A bootstrapping procedure that examines the statistical significance of the weights of sub-constructs and path co-efficient was employed. The hypothesized relationships in the proposed model were evaluated and the findings from the structural model is shown in Table 6. Hypotheses 1, 3 and 4 proposed relationships among the original constructs of TPB theory and. Hypothesis 2 proposed added variable of awareness of consequences to TPB constructs. Results showed that the Hypotheses 1, 3 and 4, were supported and hypotheses 2 was not supported. The findings indicate that attitude value did not predict behavioral intention, while subjective norm, perceived behavioral control and awareness of consequences values were significant predictors of behavioral intention. Table 7 provides numbers representing the coefficient's amount and the direct relationship between the variable's influence and other variables. Attitude ($t = 0.927$ and $p = 0.354$), subjective norms ($t = 2.166$ and $p = 0.030$), perceived behavioral control ($t = 2.325$ and $p = 0.020$) and awareness of consequences ($t = 5.318$ and $p = 0.000$) all had substantial positive effects on pro-environmental behavioral intention except attitude. The better one's environmental behavioral intention, the higher one's awareness of consequences, behavioral control, and subjective norms.

Table 6. Statistics indicators of path relationship between variables.

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
Attitude -> Behavioral intention	0.067	0.077	0.073	0.927	0.354
Awareness of consequences -> Behavioral intention	0.428	0.426	0.080	5.318	0.000
Behavioral control -> Behavioral intention	0.210	0.208	0.090	2.325	0.020
Subjective norm -> Behavioral intention	0.149	0.150	0.069	2.166	0.030



4. Discussion

Plastic waste is currently a problem that has gotten out of control. It has an incalculable and permanent negative impact on human health, aesthetics, the economy, public perception, and biological interactions on local, regional, national, and global scales (Slavin, et al., 2012). Plastic pollution in the terrestrial and marine environment is being caused and increased by a lack of legislation, personal and societal behavioral patterns and consumption habits, inefficient use, and bad management (Auta et al., 2017). The samples collected in the study were from local tourist's visiting Jeddah city in the kingdom of Saudi Arabia. The aim of this study is to have a clearer understanding of local tourist's behavior to reduce plastic wastes while visiting marine beaches in order to make up for the shortcomings of the existing research. Although previous studies have used the planned behavior theory (ref.) as a psychological model (ref.), this study extended the TPB by adding the awareness of consequences to explore pro-environmental behavior regarding plastic wastes reduction ; since waste issues are complex affecting several levels of the environment, society and public health of a country excellent fit to the data; the superiority of the proposed model in predicting the behaviors of local tourists to dispose wastes was evident;; the predictive relevance of the extended model was empirically identified; and of four assumed relationships, three hypotheses were supported.

Our results revealed that subjective norm exerts a significant effect on the intention to reduce plastic waste; it turned out to be an influential construct in forming the intention to reduce plastic waste. This means that reference groups can exert a positive pressure on wasteful people to reduce or stop their plastic waste in beaches. As a result, individuals of reference groups who are more trusted have greater persuasive power and are able to put a lot of pressure on others who follow them (i.e., wasters). It is widely accepted, and consistent with empirical evidence, that subjective norm was an important predictor of intention to reduce waste. This finding is in line with previous works (Knussen et al. 2004; Russell et al. 2017).

This study demonstrates that planned behavioral control has a positive effect on local tourists' willingness for behavioral intention. This is supported by previous studies (Juschten et al., 2019; Zheng et al., 2022) and it indicates that PBC is accessible through a set of control beliefs that may impede or facilitate behavior. More importantly, it reflects that local tourists are more likely to intend to enact pro- environmental activities to reduce plastic wastes. According to some research, within the context of TPB, perceived behavioral control may have the biggest impact on other pro-environmental intents or behaviors (Ru et al., 2018). However, perceived behavioral control has far less of an impact on other pro-environmental actions (Wang et al., 2014, Yadav; Pathak, 2016). The

main cause of the various annoyances brought on by various pro-environmental actions is the varied impact power of PBC. Purchasing eco-friendly products, for example, does not require additional work during the entire purchasing process.

On the other hand, findings indicate that attitude doesn't have a positive effect on plastic waste reduction. This result is contradicted with earlier studies (Wang et al. 2021; Heidari et al. 2018). The intention to reduce plastic trash was found to be highly impacted by environmental awareness of the consequences, according to our study. This implies that people will have good intentions to reduce plastic waste when they are more environmentally conscious of the effects and consequences of plastic trash. The majority of respondents obviously know enough about the effects of plastic waste on the environment ($M = 4.628$). In this regard, Matharu et al. (2020) noted that educational initiatives are necessary to increase domestic consumers' awareness of waste. In summary, we find that people who are subject to high-risk perception influences may alter their good intentions about plastic garbage found on Jeddah beaches.

5. Conclusion

One of the biggest sources of garbage is tourism. It's true that there is ample evidence of the negative impact of tourism on pollution (Nabirye, 2018). It has been determined that tourism uses a lot of energy and water resources. It also generates a significant amount of solid waste from hotels and other tourist destinations (Utopy and Practice, 2020). Based on the notion of planned behavior, this study used a structured survey to find out the behavioral intention of 390 local tourists visiting Jeddah beaches to reduce plastic trash. The awareness of consequence aspect was added to the theory of planned conduct in this study. Three main conclusions may be drawn from the results, and they are as follows: The findings indicate that, in terms of path weight to behavioral intention, awareness of consequences ranks first, behavioral control ranks second, and subjective norm ranks lowest. As a result, when implementing waste reduction, people focus more on their negative issues that arise from discarding plastic waste than on their own abilities and their social networks (friends, family, and universities). Together, these three variables were able to account for almost 77% of the variation in the desire to reduce plastic waste.

Since the awareness of consequences construct accounts for approximately 42% of the variance in plastic waste reduction intention – which is the key determinant of this behavioral intention – it is clear that the TPB model may be extended to account for waste reduction behavior. However, the attitudes of local tourists do not influence their readiness to lessen the amount of plastic debris seen on Jeddah beaches. Therefore, given that the actions of local tourists have the potential to increase the amount of plastic garbage generated, it is worthwhile to look into the elements that lessen this behavior from the perspective of local tourists in order to comprehend how to involve them in waste management techniques.

According to these findings, educating people about the risks associated with plastic trash, increasing their awareness of the environment, and highlighting the influence of subjective norms – like families and relatives – all contribute significantly to the development of intentions to reduce plastic waste. Therefore, it is necessary for policy makers and plastic crisis managers to make this behavior more manageable or convenient for local tourists in order to urge them to limit plastic wastes while beaching. Possible initiatives include creating reusable bags.

6. Theoretical contributions

The study on its own differs from earlier research, as per the authors' expertise, it is among the first studies in tourism research to integrate the theory of planned behavior with awareness of consequences to investigate local tourists' behavioral intention towards reducing wastes in marine beaches of Jeddah. The findings of this research add to related literature and studies on sustainable tourism. The results of this study are theoretically valuable due to the fact that the process of forming individuals' eco-friendly behavioral intentions to reduce plastic wastes in marine beaches was first described in Saudi Arabia. Second, this study extended the planned behavior theory by adding awareness of consequences variable. Hence, adding awareness of consequences variables to TPB has

been proven to be more powerful in predicting local tourists' behavioral intentions. In other words, local tourists' behavioral intentions are better predicted by AC in conjunction with TPB constructs and. Thus, the present study better explains the individuals' eco-friendly behavioral intentions in the context of reducing plastic wastes.

7. Managerial implications

The study's findings emphasize the role that awareness of consequences, subjective norms, perceived behavioral control, and perceived behavioral control in persuading visitors to minimize their use of plastic bags on Jeddah's marine beaches. This has a number of managerial implications for destination management. First, the study's findings highlighted how important it is to be mindful of potential drawbacks while developing intentions to reduce plastic wastes. It can also be beneficial to inform people about the potential harm that using plastic products on beaches is expected to cause to the environment. It might make customers think about the drawbacks of not discarding plastic waste. The study's findings highlighted the role that subjective standards, also known as in-group norms, play in shaping behavioral intentions to reduce plastic waste. It implies that significant others who accompany tourists to their destinations—such as friends, family, and coworkers—should also receive attention.

These significant companions' social pressure can have a big impact on behavioral intention. Therefore, in order to support the promotion and advocacy of plastic waste reduction in tourist locations, awareness campaigns for the reduction of plastic trash can be undertaken, during which certain subjective norms might be emphasized. The policy makers and plastic crisis managers are advised to take certain actions, such giving away free first reusable bags to visitors and creating laws that compel visitors and locals to use reusable bags (by, for example, progressively raising the cost of plastic carrier bags). To facilitate the practice of cutting down on plastic waste, perceived behavioral control could be enhanced. According to Sun et al. (2017), people are unlikely to use plastic bags if they are not available to them. In order to limit the manufacturing of plastic bags, the government could therefore impose regulations on paid plastic bags or impose a tax on plastic bags. However, the results showed that their behavioral intention toward plastic trash is not predicted by their attitude. Therefore, in order to assist people adopt this new policy concept and establish new habits, the government should step up publicity efforts and provide facilities for the disposal of plastic garbage. People also need to modify the way they live. The government should emphasize more in its programs to reduce plastic garbage because doing so will help safeguard the environment and positively impact the perceptions of visitors from the area.

8. Limitation and future research

In spite of contributions to the study on tourism sustainability, the following limitations should be carefully taken into account for subsequent investigations. Data for the study was only gathered from one location—Jeddah, Kingdom of Saudi Arabia. It is necessary to repeat these findings in other cities. Consequently, the research findings cannot have a high degree of generalizability. Therefore, more investigation is required to ascertain whether the study's findings may be applied to other areas. Future studies should think about using metropolitan locations in order to increase the research framework's applicability and dependability.

Self-reported data was used to acquire the study's data. To more precisely evaluate the variables, it is advised that future study employ multiple data gathering techniques, numerous metrics, and data triangulation. Second, a questionnaire was used to collect the study's data. The technique was developed by the researchers and consists of a set of closed-ended questions. There was no provision for respondents to provide answers beyond what was offered. Due to sample size, the study did not control for the effects of demographic variables. This makes it possible for more extensive sample sizes to be used in future study to examine these variables. Lastly, the SEM approach was employed in this study to look at the linear correlations between the variables. The fuzzy-set qualitative comparative analysis can help future researchers, better grasp the non-linear effect because it focuses on the asymmetric relationships between variables. This study was also restricted to assessing how

tourists' intentions to engage in ecologically responsible behavior, particularly by cutting back on trash, are formed. Therefore, more research on this process should cover how the purpose behind environmentally responsible conduct actually converted into such behavior. Future research should also cover other forms of ecologically friendly behavior, such as trash collection, recycling, and nature preservation.

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