



# What influences water conservation and towel reuse practices of hotel guests?



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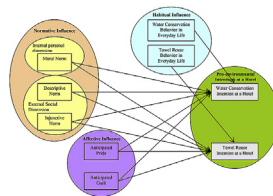
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## HIGHLIGHTS

- We successfully identified the factors that trigger hotel guests' water conservation and towel reuse behaviors.
- Eco-friendly behaviors in everyday life were significantly linked to guests' pro-environmental intentions.
- Increasing moral norm was particularly critical to promote water conservation behavior.
- Enhancing descriptive norm was of importance in encouraging towel reuse behavior.
- Anticipated pride and guilt contributed to inducing pro-environmental decisions.

## GRAPHICAL ABSTRACT



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## ABSTRACT

Understanding guests' water conservation and towel reuse behaviors is essential as sustainability is recently a vital issue in the hotel industry. Yet, guests' decision formation for such pro-environmental behaviors has not been sufficiently explored. This research filled such a void in the extant literature. Our empirical findings showed that guests' water conservation intention was a significant function of moral norm, anticipated feelings, and water saving behavior in everyday life. Our results also indicated that guests' towel reuse intention was significantly affected by moral norm, social norms, anticipated feelings, and towel reuse behavior in everyday life. Moreover, moral norm and descriptive norm were found to be the most influential factors determining water conservation and towel reuse intentions, respectively. This research adds to the extant literature in hospitality/tourism by providing valuable insights into how normative, affective, and habitual processes relate to guests' pro-environmental decisions during their stay at a hotel.

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## 1. Introduction

The use of energy efficient light bulbs, towel reuse, waste/grey water treatment, and water conservation are regarded to be the popular and well-known eco-friendly practices adopted in the hotel industry (Bohdanowicz, 2006; Bruns-Smith, Choy, Chong, &

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Verma, 2015; Chan, Wong, & Lo, 2009; Dimara, Manganari, & Skuras, 2017). Among these practices, towel reuse and water conservation are directly related to hotel guests' environmentally responsible behaviors. Hotels can save energy and reduce detergent use when customers reuse towels in the guest room (Bohner & Schlüter, 2014; Goldstein, Cialdini, & Griskevicius, 2008), and hotels can also lower grey water generation and save costs when patrons avoid the excessive use of water in the guest room (Untaru, Ispas, Candrea, Luca, & Epuran, 2016). Although hotel practitioners' primary aims to induce guests' conservation behaviors are reducing costs (Bohner & Schlüter, 2014) and fulfilling governmental regulations/rules designed to preserve the environment (Han, 2015), these eco-friendly behaviors by hotel guests undoubtedly reduce the environmental impact of the hotel industry, contributing to a cleaner environment.

There are many studies devoted to the examination of the possible effect of individuals' traveling behaviors on the environment (Bruns-Smith et al., 2015; Chan, 2014; Chou & Chen, 2014; Goldstein et al., 2008; Han, 2014; Han, Hsu, & Sheu, 2010; Van Riper & Kyle, 2014; Schultz, Khazian, & Zaleski, 2008; Untaru et al., 2016). Researchers in these studies made a general consensus that normative process comprising moral and social norms, emotional process encompassing anticipated pride and guilt, and habitual process comprising frequency of eco-friendly behaviors in daily life are central concepts in explicating travelers' environmentally responsible decision formation and behaviors. In particular, studies in various domains have shown that social norms (descriptive and injunctive) effectively facilitate pro-environmental behaviors (Goldstein et al., 2008; Schultz et al., 2008). Social norm refers to "rules and standards that are understood by members of a group, and that guide and/or constrain human behavior without the force of laws" (Cialdini & Trost, 1998, p. 152). Social norm is not a solitary concept that promotes conservation. A significant impact of moral norm on eco-friendly intention/behavior has been also identified in relevant literature (Klößner, 2013; Stern, Dietz, Abel, Guagnano, & Kalof, 1999; Van Riper & Kyle, 2014). This moral norm refers to one's internal moral obligation to perform/refrain from particular actions (Schwartz & Howard, 1981). In addition, the considerable impact of anticipated emotions has been reported on extended norm activation process (Han, 2014; Onwezen, Antonides, & Bartels, 2013), and a positive influence of daily eco-friendly activities has been clearly reported on pro-environmental intention/behavior (Han et al., 2010; Untaru et al., 2016).

Despite the criticality of these above-mentioned concepts, it remains uncertain how anticipated feelings of pride and guilt affect guests' water conservation and towel reuse behaviors while staying at a hotel, and how these guests' daily activities of saving water and reusing towels influence such pro-environmental behaviors at a hotel. In addition, many studies in consumer behavior indicated that the internal aspect of normative processes (e.g., moral norm) should not be ignored not only in explicating hotel guests' environmentally friendly behaviors (Han, 2015) but also in explaining customers' general eco-friendly consumption activities (Bamberg, Hunecke, & Blobaum, 2007; Klößner & Matthies, 2004). Nevertheless, existing studies are mostly centered on the external/social dimension of normative processes (e.g., descriptive norm) for explicating lodging guests' pro-environmental behaviors (e.g., towel/linen reuse) (e.g., Bohner & Schlüter, 2014; Goldstein et al., 2008). In general, studies about hotel customers' water conservation and towel reuse behaviors in the extant literature somewhat underscored the importance of anticipated feelings, moral norm, and eco-friendly activities in everyday life. Moreover, a simultaneous approach comprising these variables along with descriptive and injunctive social norms for the explication of guests' pro-

environmental decision formation within one theoretical framework has been hardly made.

Given these voids, this research was designed (1) to explore if moral norm, social norms (descriptive and injunctive), anticipated feelings (pride and guilt), and daily eco-friendly activities (saving water and reusing towels in everyday life) are effective factors in promoting water conservation intention among hotel guests and to elicit towel reuse intention among hotel guests, (2) to develop a theoretical framework encompassing such determinants and test its predictive ability for guests' pro-environmental decisions, and (3) to unearth the relative impact of moral (internal normative) process, social (external normative) process, affective process, and behavioral/habitual process on water conservation and towel reuse intentions at a hotel.

## 2. Literature review

### 2.1. Two main guest conservation behaviors at a hotel

Lodging operations in the past few decades have increasingly been expected to uphold green programs as a common feature of their hotel businesses (Bruns-Smith et al., 2015). Although hotels' environmental commitment is an important requisite in order to introduce green initiatives/practices (Dimara et al., 2017; Teng, Horng, Hu, Chien, & Shen, 2012), guests' engagement is essential in implementing such green initiatives/practices. Towel reuse and water conservation programs mainly needing guests' engagement therefore have long been of great interest to hotel practitioners and researchers (e.g., Bohdanowicz, 2006; Chan et al., 2009; Dimara et al., 2017; Goldstein et al., 2008). Among the general eco-friendly practices in a hotel, these two programs are regarded nearly universal in the global lodging industry (Bruns-Smith et al., 2015).

#### 2.1.1. Water reduction

Water is an essential natural resource in the hospitality industry. In a hotel, conserving water is one of the most effectual and extensively used environmentally responsible practices since, like many hospitality businesses, water is a fundamental resource for operating a hotel (Untaru et al., 2016). Greywater along with solid wastes and energy-induced carbon emissions are believed to be the most serious environmental threats derived from the lodging industry (Chan et al., 2009). For the past few decades, environmental costs of water resource consumption, together with operational costs, have been rapidly increasing in the hotel industry (Chan et al., 2009). Water consumption is therefore of great interest for hotel operations. Comprehensive efforts for sewage reduction can bring considerable benefits to hotels (e.g., environmental and operational cost savings) (Chan & Lam, 2001; Untaru et al., 2016). The popular way for waste water reduction in a hotel is the replacement of current appliances to be water-efficient (e.g., aerated faucets, low-flow shower heads, low-flush or dual flush toilets, and eco-friendly laundry facilities) (Bruns-Smith et al., 2015). Another way is related to reusing waste water through a greywater recycling system. According to Bruns-Smith et al. (2015), hotels can reduce nearly 23% of their total water use using the above methods. Nevertheless, the most effective way is undoubtedly regarded as reducing guests' water consumption (Page, Essex, & Causevic, 2014; Untaru et al., 2016).

In most cases, guests' water use occurs in the bathroom of hotel rooms, which normally includes activities (e.g., taking a shower, flushing the toilet, brushing teeth, washing, and changing towels) entirely under the control of individual guest (Page et al., 2014; Untaru et al., 2016). Untaru et al. (2016) indicated that the major reason for such high water consumption in the guest rooms is due

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