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Aili Wu

*Rosen College of Hospitality Management, University of Central Florida*

Juhee Kang

*University of Central Florida*

Wei Wei

*University of Central Florida*

David J. Kwun

*University of Central Florida*

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# Level Up Eco-Friendly Hotel Stay: Guest Power Up and Save Energy with Gamification

Aili Wu<sup>1</sup> | Juhee Kang<sup>1</sup> | Wei Wei<sup>1</sup> | David J. Kwun<sup>1</sup>

<sup>1</sup>Rosen College of Hospitality Management, University of Central Florida

**Executive Summary:** Hotel businesses endeavor to achieve successful green practices for long-lasting business success. The key issue is to promote consumers' willingness to participate in such practices. Despite increased environmental awareness among today's consumers, a relatively large percentage of consumers hesitate to actively engage with green practices because they are unwilling to sacrifice their comforts and convenience for their paid experience. This report introduces a gamification approach to hotels' green practices through an investigation of how game components motivate guests' energy-saving participation. This report finds that the energy-saving game can improve hotel guests' willingness to save energy and even revisit the hotel. This paper offers fruitful suggestions on using gamification to encourage guests' energy-saving and revisit behaviors.

**KEYWORDS:** Hotels, Green Practices, Energy-saving, Gamification, Hotel revisit behaviors

## Introduction

According to the United Nations World Tourism Organization (n.d., 2021), hotel sectors contributed to approximately 2% of global tourism greenhouse gas emissions and are estimated to grow to 25% in 2030. These greenhouse gas emissions come from excessive water and energy consumption from hotels (Khatter et al., 2019). Examples are water contamination caused by using detergent and bleach for cleaning linens and a 24-hour supplement of electricity,

such as lighting, cooling, and heating. These negative environmental impacts have drawn hotel practitioners' attention due to the harmful impacts on natural resource depletion, hotels' social image, and long-term business success (Hawken et al., 2019).

Green practices have become a popular approach among hotels to reduce negative environmental impacts. According to Bruns-Smith et al. (2015), hotels' water and energy consumption takes up around 60%~70% of the total hotel utility expenditure. By

implementing a towel reuse program, a hotel with 150 rooms can save up to approximately 210,000 gallons of water and 143 gallons of detergent annually (Dimara et al., 2017). Further, hotels can save \$1.5 per room from daily fresh towel costs (Goldstein, 2009) and more than \$6.5 per occupied room per day from towel-related energy consumption costs (Griffin, 2001).

As a result of green campaigns, hotels can sustain market development, cost efficiency, and revenue optimization (Walsh & Dodds, 2017). They can also build favorable images as socially responsible companies that protect the environment from natural resource depletion. Hotels have used green strategies as a way to differentiate themselves from competitors (Floričić, 2020) and lead to long-lasting business success by building guests' trust and loyalty (Hawken et al., 2019; Negruşa et al., 2015).

Despite the advantages of using green strategies, hotels have faced difficulties in creating guests' interest and participation in green practices. This report discusses the obstacles that hinder hotel practitioners from achieving successful green practices and suggests effective implications. The goal of this study is to introduce a digital game approach that can assist hotel practitioners in developing innovative and successful green strategies from guests' energy-saving participation. This study collected 437 data from U.S. residents who were potential hotel guests and had gamification experiences. A digital achievement gamification was introduced to collect participants' feedback toward the energy-saving game and their intentions to visit hotels with an energy-saving game. The

results of this study are beneficial to hotel practitioners in reducing energy consumption to protect the environment, minimizing utility expenditure, creating favorable brand images, and maintaining long-lasting business success through loyal guests' green behaviors.

### **Obstacles to hotel guests' energy-saving behaviors**

Despite the various benefits of green practices, one critical issue is that hotel guests are the personage in green practices participation, and their willingness to participate in green practices can greatly determine the success of a green practice (Chan, 2013). Even if hotels use energy-saving light bulbs, shower heads, and air conditioning, their guests can still waste excessive energy from their anti-eco-friendly behaviors, such as not switching off lights, air conditioning, and TVs when they leave the hotel rooms. They can also request as many towels as they want and use more water than is needed when they take showers. Researchers estimated that guests could generate a total amount of 13.8 kg of CO<sub>2</sub> (272 megajoules) and 350L of water during one hotel stay (Gössling & Peeters, 2015).

Although individuals have a better awareness of environmental protection, studies have shown that hotel guests are still unwilling to participate in green practices during their hotel stays (Rodriguez-Sanchez et al., 2020). A study conducted in the U.S. found that 45% of the participants are resistant to adopting hotels' energy-saving practices, whereas only 15%

of them are positive in executing energy-saving behaviors (Palani & Karatas, 2021). Hotel guests are less motivated to sacrifice their comforts and convenience during hotel stays as they believe they paid for the experience and services (Rodriguez–Sanchez et al., 2020). For this reason, previous researchers indicated that hedonic motivation is the robust driving force of hotel guests' green participation behaviors (Miao & Wei, 2013). Gamification can evoke guests' hedonic motivation. Playing games allows hotel guests to develop a sense of achievement by conquering quests from entry levels to higher levels and competence by participating in environmental protection practices (Groening & Binnewies, 2019). Therefore, this study explored a game approach to motivate hotel guests' participation in green practices from a hedonic experience.

### **Energy-saving game approach as the motivational tool**

Games have been used to promote behaviors in various settings, such as students' proactive learning behaviors (Huang & Soman, 2013) and consumers' patronage behaviors (Hsu & Chen, 2018). Environmentalists have also used such game approaches to stimulate people's energy-saving behaviors. For instance, gamified apps called WasteApp, Cool Choice, and Social Power were used to motivate people's energy-saving behaviors. These games utilize gamification processes, which involve gamified elements (i.e., points, leaderboards, and badges) in non-game situations (Deterding et al., 2011). In other words, gamification incentivizes customers

in game-like experiences and consequently impacts their emotions and behaviors (Harwood & Garry, 2015; Huotari & Hamari, 2017).

In fact, gamification is gaining popularity among leading hotel corporations. Hotel corporations such as Marriott International, Hilton Hotels Corporation, Hyatt Hotels & Resorts, and Intercontinental Hotel Group have used various game approaches to motivate guests to stay loyal to their hotel brands (Zuo et al., 2017). Many of these approaches are based on points systems that provide specific tasks and goals for hotel guests to achieve. As a result, hotel guests are motivated to accomplish tasks that can accumulate points and redeem rewards. In the gamification domain, a more comprehensive game design behind this points system is digital achievements. Therefore, we use digital achievements as the main component in the current energy-saving game approach.

Digital achievements are one of the most basic gamification elements, which are manifested in using points, badges, and rewards (Groening & Binnewies, 2019). Digital achievements are defined as setting up sub-goals for users to achieve and get rewards and gradually guiding users to reach the main goals in a game to obtain final rewards (Groening & Binnewies, 2019). If goals are achievable and challenging enough, people will be more motivated to achieve the preset goals and pursue the game (Fortes Tondello et al., 2018). In contrast, people would abandon the goals and quit the game if goals are not achievable.

In a digital game design, badges represent the goals that players can achieve. By accomplishing the tasks that a badge requires, players can obtain the badge with a number of points as the subgame reward. As players progress forward in the game, the badges are gradually becoming more difficult to obtain. However, players are more engaged in conquering the quests. When game players are close to achieving the final goals and accumulate more points to redeem final rewards, they perceive a sense of achievement and self-efficacy in this game experience.

### Potential gamification design for hotels' green practice

Based on the concept of digital achievements, this study designed an energy-saving game with digital

achievement features tailored for hotel guests (see Figure 1.). In this game, hotel guests are guided to sign in and play the game called "Earth Guardians". They can earn badges by joining the game and accumulating water droplets. If they register for the game, they will automatically get 10 water droplets for free and obtain the "Sustainability Soldier badge". The next step for hotel guests is to participate in the game with actual green actions. The very first badge is called the "Environmental Lieutenant Badge." This badge requires hotel guests to reuse their towels once every three days. The system tells them that each guest can get a set of towels (such as a washcloth, a hand towel, and a bath towel) and a bathmat for the room as the default game setting. If hotel guests reuse the default towels once every three days, they can get 25 water droplets.



Figure 1. The Energy-Saving Game: Earth Guardians

Going forward in the game, hotel guests can unlock badges that are more difficult to achieve and earn more water droplets. The “Conservation Captain Badge” asks hotel guests to repeat the towel reuse behavior (i.e., reuse towels once every three days) three times. The “Green General Badge” and “Planet Saver Badge” require hotel guests to use repeat the towel reuse behavior six and nine times, respectively. Hotel guests can earn more water droplets when they obtain the “Conservation Captain Badge” (88 water droplets), the “Green General Badge” (220 water droplets), and the “Planet Saver Badge” (550 water droplets). With the number of water droplets, they can get rewards such as hotel amenities (complimentary beverages & meals), room upgrades, or free hotel nights.

To test if hotel guests are willing to use the energy-saving game with digital achievement features, this study applied measurement metrics in the theory of planned behavior (Fishbein & Ajzen, 1980). According to the theory of planned behavior, if hotel guests like the energy-saving game because it creates fun experiences via achieving goals and getting rewards, they are more willing to play the energy-saving games. If hotel guests believe their family, friends, and coworkers are supportive of using such a game and perceive it to protect the environment, they are more likely to play it to save energy. If hotel guests perceive the energy-saving game as doable and achievable, they tend to play it to save energy more.

This study recruited potential hotel guests in the U.S. and collected a total of 437 data

in May 2021. In terms of participants’ previous green hotel experiences, 38% of them had visited a green hotel more than once, followed by 28.4% of them who had visited a green hotel once, and 21.3% of them did not visit a green hotel. 62.5% of them had an average length of hotel stay of around 2 to 4 nights. 70.3% of them had joined a hotel loyalty program. More than half of the participants occasionally use gamification-related apps.

Based on our research findings, this report can address three aspects of hotel guests’ energy-saving behaviors. First, when hotel guests are motivated to achieve the towel-reuse goals from the digital achievement game experience, they are more likely to have a positive attitude toward the energy-saving game. Second, with the digital achievements game experience, hotel guests are motivated to achieve towel-reuse goals to seek positive appraisals from family, friends, and coworkers. Third, hotel guests are more motivated to achieve the towel-reuse goals when these goals are not too difficult to achieve. As anticipated, potential hotel guests would be more motivated in using achievement-featured energy-saving games and build up strong positive attitudes toward the energy-saving game. Thus, they are more inclined to save energy in the hotel and revisit the hotel. They would also be more encouraged to prove their ability to achieve the energy-saving goals in the game, save energy, and revisit the hotel.

## **Industry Implications**

Our study provides several suggestions for hotel practitioners based on the result that

the energy-saving game with digital achievement features can motivate hotel guests' energy-saving participation and revisit behaviors. First, hotel practitioners should use digital achievements in their energy-saving games. Digital achievements provide challenging and achievement experiences. Hotel practitioners can ensure that the energy-saving game includes badges and points to reward hotel guests' energy-saving behaviors and allow them to unlock different energy-saving goals to redeem tangible rewards from their accumulated points. Using such an energy-saving game, hotels can inspire guests to save energy and obtain a sense of achievement and competence through game-like experiences. Badges in different levels and points are functioning in a way to incentivize hotel guests' energy-saving efforts and improve their self/social images in a gameplay experience and thus create hotel guests' hedonic motivation to execute energy-saving behaviors and revisit intentions.

Second, hotel practitioners should consider the level of difficulties or challenges when designing and/or adopting an energy-saving game. If hotel guests perceive that the energy-saving game is too difficult to achieve badges, it could backfire. The energy-saving game should not be too easy to let the hotel guests feel it is boring, but it also should not be too difficult to let them abandon the game. Hotel practitioners can determine the game's difficulty levels based on the characteristics of hotel guests and improve its design and game settings. For example, the average length of hotel stays, and the mobile usage of hotel guests should

be considered when determining the game rules and settings. The energy-saving game should develop guests' competence in accomplishing energy-saving tasks with an appropriate level of difficulty. Therefore, hotel practitioners should learn about guests' perceptions related to the level of difficulty in the energy-saving game and design difficulties and challenges in the game catering to guests' expectations.

Third, hotel practitioners should also encourage guests to share energy-saving game experiences on their social media platforms. When such experiences are shared, guests can receive positive and cheerful messages from their families and reference groups as well as influence others to participate in similar activities in their future trips. As such, hotel guests are more likely to advocate for the hotel and promote favorable social images of the company. Moreover, hotel practitioners can recognize energy-saving star customers to enhance guest engagement and social recognition as an additional marketing strategy. By doing so, hotels will likely stand out from their competitors using this innovative green strategy.

Fourth, hotel practitioners can consider embedding the game in their currently available hotel apps. Hotel guests are more willing to use the hotel's energy-saving games if they are familiar with the hotel app. Hotel management can design a gamification reward system similar to and compatible with their hotel points systems. In this way, hotel practitioners can easily manage their energy-saving game rewards system according to their original points system. Hotel guests would feel the game is

more achievable because they already know the points system. The energy-saving game would also add even more fun experiences than the hotels already have, strengthening the relationship between the company and their current loyal guests. This is probably the easier way for hotels to save energy and sustain loyal guests by encouraging guests to game for a better, greener, and more successful future.

Lastly, if hotel practitioners are interested in the same towel reuse game we designed, they also need to ensure guests have enough space near windows/ventilation to dry their towels. We found that more than half of hotel guests changed towels in an everyday manner. Hotel practitioners must put an effort into disseminating hygiene information related to guests' concerns. For example, hotel practitioners should highlight in the energy-saving game that with enough ventilation, changing towels once every three days is free of hygiene issues and can save the planet.

## **Conclusion**

Overall, the results of this study showed that an energy-saving game with digital achievement features could improve guests' green participation during their hotel stays and revisit behaviors. We highly recommend that hotel practitioners use energy-saving game approaches as the new green strategy to gain competitive advantages over their competitors. Specifically, embedding the digital achievement features in the energy-saving game can solve the obstacles of hotel guests' low motivation to participate in green activities during hotel stays. This is

because digital achievement game designs can motivate hotel guests with fun and challenging experiences, fostering a sense of guests' achievement to conquer their low motivation to engage in green activities. However, hotel practitioners should make sure the energy-saving game has the appropriate level of difficulty that can motivate guests in developing their competence in the game.

The direct benefits of using such a game are saving hotel energy, reducing utility expenditure, and improving financial status. In particular, this green strategy is a low-cost but high-return method. The long-term benefits of using such a game include disseminating an excellent social image of the hotel from environmental protection, gaining positive word of mouth from a massive social media energy-saving campaign among hotel guests, attracting new hotel guests to be loyal guests, and sustaining loyal guests in a more engaged way of customer and company interactions. As most hotels already use a points system to sustain loyal guests, an energy-saving game approach is even easier to implement if hotels combine it with their current points system. Do not hesitate to make your hotel guests play games to save energy and gain long-lasting business success!



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