

LEVEL UP YOUR STAY:

How Energy-Saving Games Are Changing Green Hotel Loyalty

ROSEN RESEARCH REVIEW

AILI WU, JUHEE KANG,
DAVID KWUN & WEI WEI

JOIN OUR GREEN INITIATIVE



WATER
CONSERVATION



RECYCLING
PROGRAM



ENERGY
SAVING

The research by Wu, Kang, Kwun, and Wei reveals how gamification—specifically achievement-based energy-saving games—can transform hotel guests' attitudes and behaviors toward sustainability. By integrating achievement-goal theory and the theory of planned behavior, the study shows that when guests feel challenged and motivated, they are more likely to engage in green practices and return to the hotel. Interestingly, perceived control over the game sometimes reduces revisit intentions, suggesting that too much ease can lead to boredom. Guests with prior green hotel experiences respond even more positively to gamified sustainability. This research offers a fresh perspective on how hotels can use game design to boost engagement, environmental impact, and loyalty.

Visible green initiatives encourage achievement-driven engagement and repeat stays.

GREEN GOALS AND GAMIFIED GETAWAYS

Hotels are under pressure to reduce their environmental footprint. With the industry responsible for 1% of global greenhouse gas emissions—and projected to reach 25% by 2030—sustainability is no longer optional. Yet, convincing guests to participate in green practices like towel reuse or shorter showers remains a challenge. Many travelers, despite supporting eco-friendly initiatives, hesitate to sacrifice comfort.

Enter gamification. This study explores how achievement-based energy-saving gamification (ABESG) can motivate guests to engage in green behaviors. Imagine a hotel stay where reusing towels earns you points, badges, and social recognition. Suddenly, sustainability becomes a game—and guests become players.

Drawing on achievement-goal theory and the theory of planned behavior, the researchers examined how perceived task complexity and achievement motives influence attitudes, social norms, and perceived control. They also looked at how these factors affect guests' intentions to revisit the hotel. The results are compelling.

When guests feel challenged and motivated, they develop positive attitudes and seek social approval for their eco-friendly actions. But if the game feels too easy or too hard, their engagement drops. Interestingly, guests with prior green hotel experiences respond even more favorably to gamification. They feel more capable, more motivated,

and more eager to share their achievements.

This study offers a roadmap for hotels looking to turn sustainability into a loyalty strategy. By designing games that balance challenge and reward, hotels can inspire guests to save energy—and come back for more.

THE QUEST FOR GREEN BEHAVIOR

Gamification has proven effective in industries from education to retail. Starbucks Rewards and McDonald's Monopoly are just two examples of how game elements like points and badges drive customer engagement. But in hospitality, especially in sustainability, the potential remains underexplored.

Wu and colleagues saw an opportunity to bridge this gap. They focused on achievement-based gamification—games that reward users for completing tasks, overcoming challenges, and demonstrating competence. In the hotel context, this meant reimagining towel reuse programs as quests, with levels, badges, and social recognition.

To understand how guests respond to such games, the researchers turned to two theories. Achievement-goal theory explains how people are motivated by learning and performance goals. The theory of planned behavior outlines how attitudes, social norms, and perceived control shape intentions.

“WE DISCOVERED THAT GAMIFICATION ACHIEVEMENTS—ESPECIALLY THE DESIRE TO PROVE ONE’S ABILITY—CAN SIGNIFICANTLY SHAPE GUESTS’ ATTITUDES AND INTENTIONS TOWARD GREEN HOTEL PRACTICES.”

By combining these frameworks, the study examined how task complexity (how hard the game feels) and achievement motives (the desire to prove oneself) influence guests' attitudes toward ABESG, their perception of social expectations, and their sense of control.



Hotels can use gamification to turn sustainability into a loyalty strategy.

The researchers also explored how these factors affect guests' intentions to revisit the hotel. Would a well-designed game make them more likely to return? And would prior experience with green hotels amplify the effect?

Using a survey of 437 U.S. hotel guests who had used gamified apps, the study tested these relationships through structural equation modeling and multigroup analysis.

The findings reveal a nuanced picture. Task complexity can both motivate and discourage. Achievement motives consistently boost engagement. And prior green hotel experience strengthens all positive effects.

This research reframes gamification not just as a tool for engagement, but as a strategic lever for sustainability and loyalty in hospitality.

PLAYING FOR DATA

The study surveyed 437 U.S. hotel guests via Amazon Mechanical Turk. Participants had to be over 18, have stayed in a hotel within the past 18 months, and have used gamified apps like Starbucks Rewards or Air Canada's Earn Your Wing.

The survey introduced participants to a fictional energy-saving game where reusing towels earned points and badges. Visuals and descriptions helped them imagine the experience. Researchers measured two gamification achievement factors—task complexity and achievement motives—and three theory of planned behavior constructs: attitudes, subjective norms, and perceived behavioral control. Revisit intentions were also assessed. All items used a 7-point Likert scale. Data was analyzed using confirmatory factor analysis and structural equation modeling. Multigroup analysis tested the moderating effect of prior green hotel experience.

WHO PLAYED THE GAME

The sample included 437 U.S. hotel guests, 55% male and 45% female, mostly aged 31–45. Over half had a bachelor's degree, and 78.8% had stayed at a green hotel in the past 18 months.

Participants had experience with gamified apps and were familiar with hotel stays. This made them ideal for evaluating the impact of gamification on sustainability behaviors.

Their responses provided insights into how real-world guests perceive energy-saving games—and how those perceptions influence their loyalty.

THE WINNING COMBINATION

The study found several key dynamics shaping guest behavior.



Shared sustainability goals thrive when hotels balance challenge with rewarding engagement.

Task complexity had a mixed impact—it lowered attitudes and perceived control but increased subjective norms, as guests felt challenged and sought social approval. Achievement motives played a strong role, boosting attitudes, norms, and control, with guests eager to prove their competence. These attitudes and norms, in turn, increased revisit intentions. Interestingly, perceived behavioral control reduced revisit intentions, suggesting that too much ease may lead to boredom.

Guests with prior green hotel experience responded even more positively, amplifying the effects of achievement motives.

In short, guests who feel motivated and socially validated are more likely to engage in green practices and return. But the game must strike the right balance—too easy or too hard, and the magic fades.

game feels too hard, guests get discouraged. But the right challenge builds confidence and a positive self-image.

Surprisingly, perceived behavioral control—typically linked to positive behavior—had a negative effect on revisit intentions. When guests feel overly in control, the game loses appeal. It becomes routine, not rewarding.

Guests with prior green hotel experience responded more positively. They felt more capable, motivated, and eager to share achievements. This underscores the value of targeting early adopters and designing games that evolve. Static games lose charm, but adaptive ones sustain engagement. Ultimately, gamification isn't just fun—it's about identity, recognition, and meaningful action. When designed thoughtfully, it turns sustainability into pride and loyalty.

“ TO BOOST LOYALTY AND SUSTAINABILITY, HOTELS SHOULD DESIGN ENERGY-SAVING GAMES THAT BALANCE CHALLENGE, REWARD, AND SOCIALrecognition—TURNING ECO-FRIENDLY BEHAVIOR INTO A SOURCE OF PRIDE.”

THE PSYCHOLOGY OF PLAY AND PLANET-SAVING

According to Wu and colleagues, gamification works best when it taps into guests' desire to prove themselves. Achievement motives—like wanting recognition or feeling proud—drive positive attitudes and behaviors. Task complexity is a double-edged sword. If the

DESIGNING THE GAME THAT GUESTS WANT TO PLAY

For hotel managers and game designers, this study offers clear guidance. First, balance complexity—make the game rewarding but not frustrating. Use levels to increase difficulty gradually. Second, highlight achievement. Guests want to feel competent, so use badges, points,

and social recognition to celebrate efforts. Third, leverage social influence. Guests care what others think, so create ways to share achievements—like “Planet Saver” badges—with messages such as “You saved 100 gallons of water” or “The dolphins thank you.”

Fourth, target green hotel veterans. They're more receptive and make ideal early adopters and brand ambassadors. Fifth, avoid boredom. If the game feels too easy or repetitive, guests lose interest.

Regular updates with new features and rewards maintain engagement. Finally, test before launch. Market testing helps refine the game and identify what motivates guests versus what feels like a chore.

By turning sustainability into a game, hotels can inspire meaningful behavior—and build lasting loyalty.

NEXT LEVELS IN GREEN GAMIFICATION

This study opens the door to exciting future research. What happens when other game elements—like leaderboards, avatars, or team challenges—are added? Could social competition boost engagement even more?

Researchers could also explore gamifying other green behaviors, such as tracking electricity use or shower duration. Field experiments with real hotel apps would offer deeper insights.

Expanding the study beyond the U.S. could reveal cultural differences in gamification response. Do guests in Asia or Europe react differently to achievement-based games?

Finally, comparing guests who've used gamified apps with those who haven't could uncover new strategies for onboarding and education.

As hotels seek innovative ways to promote sustainability, gamification offers a promising path. The next step is to keep playing—and keep learning.

RESEARCHERS IN FOCUS



Aili Wu is a Ph.D. Candidate, Instructor, and Research Assistant at UCF Rosen College of Hospitality Management. Her research explores emerging technology and innovation in hospitality, focusing on gamification and consumer behavior. She is the founding president of REIgKNIGHTS, a student club that promotes entrepreneurship and innovation among UCF students.

AILI WU, M.S.
AILI.WU@UCF.EDU



Dr. Juhee Kang joined the Rosen College of Hospitality Management at the University of Central Florida in 2012. She holds a Ph.D. in Hospitality Management from Iowa State University.

DR. JUHEE KANG
JUHEE.KANG@UCF.EDU



Dr. Kwun received his Ph.D. in Foodservice and Lodging Management at Iowa State University. He teaches marketing and strategy related courses at the undergraduate and graduate levels. He brings a diverse perspective to his students from national and international backgrounds in the academia and hospitality industry.

DR. DAVID KWUN
DAVID.KWUN@UCF.EDU



Dr. Wei's research agenda is driven by her strong desire to advance the understanding of human psychology and behaviors within the evolving landscapes of hospitality and tourism. Her primary research tackles some of the most urgent issues in the field, such as customer-to-customer incivility and interactions, influencer marketing, and the effects of emerging technological innovations on consumer behaviors and experiences.

DR. WEI WEI
WEI.WEI@UCF.EDU

REFERENCES:

Wu, A., Kang, J., Kwun, D., & Wei, W. (2024). When green meets gamification: A winning combo for hotel revisit intentions. *International Journal of Hospitality Management*, 119, 103734.

AUTHORS' RESPONSE

Why did you focus on towel reuse as the gamified behavior?

“ Towel reuse is one of the most common and impactful green practices in hotels. It is simple, measurable, and directly tied to water and energy savings. By gamifying this behavior, we could create a clear and relatable scenario for participants. It also allowed us to design levels of complexity—like reusing towels for multiple days—and link those actions to rewards. This made it ideal for testing how gamification achievements influence attitudes and intentions. Plus, it reflects a real-world challenge: how to encourage guests to participate in sustainability without compromising their comfort.

What surprised you most about the results?

“ We were surprised that perceived behavioral control had a negative impact on revisit intentions. Typically, feeling in control leads to positive outcomes. But in this case, it seems that when guests felt the game was too easy or routine, they lost interest. It reminded us that gamification must maintain a sense of challenge and novelty. Another surprise was how strongly prior green hotel experience amplified positive effects. It shows that experience builds confidence—and confidence drives engagement.