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## A Conceptual Review of Hotel Employees' Zero Waste Knowledge within the Framework of the Theory of Planned Behavior

### Planlı Davranış Teorisi Çerçevesinde Otel Çalışanlarının Sıfır Atık Bilgileri Üzerine Kavramsal Bir İnceleme

#### ABSTRACT

Environmental challenges such as climate change, resource depletion, and increasing waste generation have intensified the need for sustainable development practices across all sectors. Within this context, zero waste management has emerged as a comprehensive strategy that aims to prevent waste at its source, promote reuse and recycling, and support the transition to a circular economy. The tourism sector, particularly accommodation establishments, represents a critical area for the implementation of zero-waste practices due to its high consumption patterns and significant waste output. This study examines zero waste management within the framework of sustainability, with a specific focus on the role of hotel employees in the successful implementation of such practices. Drawing on the Theory of Planned Behavior (TPB), the research explores how employees' knowledge, attitudes, behavioral intentions, and perceived behavioral control influence their participation in zero-waste initiatives. Unlike much of the existing literature, which predominantly focuses on technical infrastructure or consumer behavior, this study emphasizes the human dimension of sustainability by addressing employee-related factors in a holistic manner. The findings indicate that effective waste management in accommodation establishments cannot be achieved solely through technical systems or regulatory compliance. Instead, it requires an integrated approach that combines environmental awareness, organizational commitment, and individual behavioral change. Employees with higher levels of knowledge and positive attitudes toward zero-waste practices are more likely to develop strong behavioral intentions, which in turn lead to consistent and effective implementation of sustainable practices. Moreover, perceived behavioral control and supportive social norms significantly enhance employees' engagement in these processes. The study also highlights the importance of organizational factors such as training programs, managerial support, and institutional culture in shaping employee behavior. Continuous education, incentive mechanisms, and leadership commitment are identified as key drivers in fostering long-term participation and ensuring the sustainability of zero-waste systems. Additionally, employees' active involvement not only improves operational efficiency but also positively influences guests' environmental awareness and behaviors. In conclusion, zero waste management in the accommodation sector should be considered a multidimensional strategy that integrates technical, organizational, and human factors. The success of such systems largely depends on empowering employees through knowledge, motivation, and supportive work environments. This study contributes to the literature by underlining the critical role of employee behavior in sustainability practices and provides a foundation for future empirical research in this field.

**Keywords:** Theory of Planned Behavior, Zero Waste Knowledge, Tourism.

#### ÖZET

İklim değişikliği, kaynakların tükenmesi ve artan atık üretimi gibi çevresel sorunlar, tüm sektörlerde sürdürülebilir kalkınma uygulamalarına duyulan ihtiyacı artırmıştır. Bu bağlamda, sıfır atık yönetimi; atığın kaynağında önlenmesini amaçlayan, yeniden kullanım ve geri dönüşümü teşvik eden ve döngüsel ekonomiye geçişi destekleyen kapsamlı bir strateji olarak ortaya çıkmıştır. Turizm sektörü, özellikle konaklama işletmeleri, yüksek tüketim düzeyleri ve önemli miktarda atık üretmeleri nedeniyle sıfır atık uygulamalarının hayata geçirilmesi açısından kritik bir alan oluşturmaktadır. Bu çalışma, sürdürülebilirlik çerçevesinde sıfır atık yönetimini incelemekte ve özellikle bu uygulamaların başarılı bir şekilde hayata geçirilmesinde otel çalışanlarının rolüne odaklanmaktadır. Planlı Davranış Teorisi'nden (TPB) yararlanarak araştırma, çalışanların bilgi düzeylerinin, tutumlarının, davranışsal niyetlerinin ve algılanan davranışsal kontrollerinin sıfır atık girişimlerine katılımlarını nasıl etkilediğini ele almaktadır. Mevcut literatürün büyük ölçüde teknik altyapı veya tüketici davranışına odaklanmasının aksine, bu çalışma sürdürülebilirliğin insani boyutunu vurgulayarak çalışanlara ilişkin faktörleri bütüncül bir şekilde incelemektedir. Bulgular, konaklama işletmelerinde etkili atık yönetiminin yalnızca teknik sistemler veya yasal düzenlemelere uyum yoluyla sağlanamayacağını göstermektedir. Bunun yerine, çevresel farkındalık, kurumsal bağlılık ve bireysel davranış değişikliğini bir araya getiren entegre bir yaklaşım gerekmektedir. Sıfır atık uygulamalarına ilişkin daha yüksek bilgi düzeyine ve olumlu tutumlara sahip çalışanların güçlü davranışsal niyetler geliştirme olasılığı daha yüksektir; bu da sürdürülebilir uygulamaların tutarlı ve etkili bir şekilde hayata geçirilmesine yol açmaktadır. Ayrıca, algılanan davranışsal kontrol ve destekleyici sosyal normlar, çalışanların bu süreçlere katılımını önemli ölçüde artırmaktadır. Çalışma ayrıca, eğitim programları, yönetim desteği ve kurumsal kültür gibi örgütsel faktörlerin çalışan davranışlarını şekillendirmedeki önemini de ortaya koymaktadır. Sürekli eğitim, teşvik mekanizmaları ve liderlik bağlılığı, uzun vadeli katılımı teşvik eden ve sıfır atık sistemlerinin sürdürülebilirliğini sağlayan temel unsurlar olarak öne çıkmaktadır. Bunun yanı sıra, çalışanların aktif katılımı yalnızca operasyonel verimliliği artırmakla kalmamakta, aynı zamanda misafirlerin çevresel farkındalığını ve davranışlarını da olumlu yönde etkilemektedir. Sonuç olarak, konaklama sektöründe sıfır atık yönetimi; teknik, örgütsel ve insani faktörleri bütünleştiren çok boyutlu bir strateji olarak ele alınmalıdır. Bu tür sistemlerin başarısı büyük ölçüde çalışanların bilgi, motivasyon ve destekleyici çalışma ortamları aracılığıyla güçlendirilmesine bağlıdır. Bu çalışma, sürdürülebilirlik uygulamalarında çalışan davranışının kritik rolünü vurgulayarak literatüre katkı sağlamakta ve bu alanda yapılacak gelecekteki ampirik araştırmalar için bir temel oluşturmaktadır.

**Anahtar Kelimeler:** Planlı Davranış Teorisi, Sıfır Atık Bilgisi, Turizm.

## 1. INTRODUCTION

Waste management is recognized as one of the most important practical dimensions of sustainability. The zero-waste approach aims to prevent waste generation at the source, promote reuse and recycling, and minimize final disposal through a systematic waste management hierarchy. In sectors characterized by intensive consumption, such as tourism, the success of zero-waste practices depends not only on technical infrastructure but also on employees' knowledge, attitudes, intentions, and perceived behavioral control. In this regard, the Theory of Planned Behavior (TPB) provides a strong theoretical framework for explaining environmentally responsible behaviors (Ajzen, 1991).

One of the most significant initiatives implemented in Türkiye in the field of waste management is the Zero Waste Project launched in 2017 by the Ministry of Environment, Urbanization and Climate Change. The project aims to increase recycling rates through source separation, reduce the consumption of natural resources, and promote a circular economy approach. The implementation of zero-waste practices in the tourism sector is particularly important due to the large quantities of waste generated through accommodation, food and beverage services, housekeeping activities, and the consumption of disposable products. Effective waste management therefore contributes not only to environmental sustainability but also to resource efficiency and long-term organizational performance (Hoornweg & Bhada-Tata, 2012; UNEP, 2020).

Previous studies in the tourism literature have primarily focused on technical infrastructure, regulatory compliance, and environmental performance indicators such as waste generation, recycling rates, and resource consumption. However, studies examining the human dimension of zero-waste implementation remain relatively limited. Research conducted within the framework of the Theory of Planned Behavior indicates that positive environmental attitudes and behavioral intentions significantly influence environmentally responsible behaviors. In particular, behavioral intention plays a key role in transforming attitudes into actual behavior (Ajzen, 1991; Han et al., 2011).

Furthermore, a substantial proportion of existing studies have focused on hotel guests or consumers rather than employees. Comprehensive evaluations that simultaneously address employees' environmental knowledge, attitudes, intentions, and behavioral control within the context of zero-waste practices remain limited. Therefore, this study aims to examine hotel employees' zero-waste knowledge and environmental concerns through a literature-based perspective. It is expected that the findings will contribute to the existing literature and provide guidance for future research on sustainable waste management practices in the hospitality sector.

## 2. THE CONCEPT OF WASTE, ITS PRINCIPLES, AND TYPES OF WASTE

The concept of waste can be understood from two fundamental perspectives. First, a material becomes waste when it loses its primary function and value for its owner. Second, materials classified as waste may still possess value and can be reused, recycled, or recovered in alternative processes. In this sense, a substance regarded as waste by one individual or sector may serve as a resource or raw material for another. Therefore, waste should be viewed not merely as discarded material but also as a potential resource within the framework of circular economy and sustainable resource management (UNEP, 2020).

Modern environmental management promotes a systematic approach based on preventing, reducing, reusing, and recycling waste rather than relying solely on final disposal. This perspective considers waste not only as an environmental challenge but also as a potential economic resource that can contribute to sustainable production and consumption systems (Hoornweg & Bhada-Tata, 2012; UNEP, 2020). Accordingly, waste management is increasingly recognized as a strategic component of sustainable development and resource efficiency.

The fundamental principles of waste management are generally structured according to the waste management hierarchy, which prioritizes prevention, reduction, reuse, recycling, recovery, and final disposal. This hierarchy aims to minimize environmental impacts by preventing waste generation at its source and maximizing resource efficiency throughout the product life cycle. Therefore, waste management systems should support not only environmental sustainability but also economic efficiency and responsible resource utilization (UNEP, 2019).

### 3. DEFINITION AND PURPOSE OF ZERO WASTE MANAGEMENT

Zero waste management is a waste management system that focuses on environmental sustainability by preventing waste generation at the source, encouraging reuse, and increasing recycling rates. Rather than being limited to waste disposal activities, the zero-waste approach aims to reduce resource consumption and support the transition toward a circular economy (Hoorweg & Bhada-Tata, 2012; UNEP, 2020). Therefore, zero waste represents not only a technical waste management strategy but also a comprehensive transformation of production and consumption patterns.

This approach is considered a strategic transformation tool that requires changes in individual lifestyles, consumption habits, and institutional policies. In this context, the successful implementation of zero-waste practices depends on both individual environmental awareness and cooperation among different stakeholders (UNEP, 2020).

The primary objective of waste management is to prevent waste generation before it occurs and, when prevention is not possible, to minimize environmental impacts through reuse, recycling, recovery, and environmentally sound disposal methods. Contemporary waste management policies emphasize integrated approaches that support resource efficiency, environmental protection, and sustainable development (Hoorweg & Bhada-Tata, 2012; UNEP, 2020).

In Türkiye, the implementation of zero-waste practices has been institutionalized through the Zero Waste Regulation, which establishes principles for waste prevention, source separation, collection, temporary storage, recycling, and recovery processes. The regulation introduced implementation requirements for a wide range of institutions, including public organizations, educational institutions, private enterprises, and accommodation establishments (Republic of Türkiye Ministry of Environment, Urbanization and Climate Change, 2019).

In the tourism sector, zero-waste practices involve activities such as waste separation at the source, recycling programs, reduction of food waste, establishment of collection infrastructure, and employee awareness initiatives. The successful implementation of these practices requires organizational commitment, stakeholder participation, and continuous environmental management efforts (Mensah, 2006; UNEP, 2020).

The effectiveness of zero-waste systems depends largely on public participation, environmental awareness, institutional cooperation, and local governance capacity. Therefore, sustainable waste management should be supported through coordinated actions involving public institutions, private organizations, and local communities (UNEP, 2020).

The zero-waste approach is closely linked to the United Nations Sustainable Development Goal 12, which promotes responsible consumption and production. Previous studies have shown that zero-waste practices contribute not only to waste reduction but also to resource efficiency, environmental performance, and long-term economic benefits for organizations (UNEP, 2019).

### 4. THE IMPORTANCE OF ZERO WASTE MANAGEMENT

Zero waste management is considered not only a waste reduction policy but also a vital strategy in achieving environmental sustainability goals. This approach proposes a circular system based on reducing waste at the source, reusing it, and bringing it back into the economy through recycling.

In today's world, with increasing population, industrialization and changing consumption habits, the amount of waste is rapidly increasing; this creates serious pressures on the environment, economy and society. Zero waste practices offer a systematic and preventive solution that has the potential to reduce these pressures. When effectively implemented, this system not only reduces the amount of waste, but also saves energy, reduces greenhouse gas emissions and plays an important role in combating climate change. From an economic perspective, the zero-waste approach increases economic efficiency by enabling the production of secondary raw materials from waste, reduces dependence on imported inputs, and creates employment opportunities. This approach, which is compatible with the circular economy model, offers a significant opportunity for developing countries in achieving sustainable development goals (Hoorweg & Bhada-Tata, 2012; UNEP, 2020).

In conclusion, zero waste management is not only an effective tool in combating environmental threats, but also a multi-dimensional strategy that supports economic development and enables social transformation. The success of this strategy is possible not only through technical infrastructure investments, but also through commitment at the policy level, individual awareness, and the continuity of institutional collaborations.

## 5. HOTEL EMPLOYEES' ZERO WASTE KNOWLEDGE AND BEHAVIORAL INTENTIONS

The success of sustainable tourism practices depends not only on management policies but also directly on the level of environmental knowledge, awareness, and behavior of the employees implementing these policies. Components such as the attitudes of hotel employees, their perceived level of control over the environment, and their environmental awareness play a critical role in the dissemination of environmentally friendly practices (Yayla et al., 2021).

The employees' level of knowledge about zero-waste practices directly affects their active participation in these practices. The zero-waste system is a systematic approach that includes reducing, separating, reusing, and recycling waste at the source. Personnel who fully understand this process tend to implement the system more effectively.

Hotel employees' active participation in waste management processes is an operational element that directly affects the success of the system. Employee participation is influenced by factors such as individual motivation, organizational support, infrastructure adequacy, and environmental awareness. In addition, participation in environmental practices is not limited to waste sorting activities but also includes reducing waste generation, suggesting environmental improvements, and contributing to environmentally responsible guest practices (Ramus & Killmer, 2007).

In hotels participating in green practices, the active participation, suggestions, and individual environmental initiatives of employees form the basis of environmental management practices. Studies have shown that environmentally responsible behaviors of hotel staff directly influence tourists' perceptions of environmental quality. Furthermore, employees' environmental knowledge and positive attitudes can indirectly encourage guests to engage in environmentally responsible behaviors (Chou, 2014).

According to Stern (2000), environmentally significant behaviors are influenced by contextual, attitudinal, sociodemographic, and habitual factors. Similarly, Stern et al. (1999) argue that environmental values, beliefs, and personal norms play a decisive role in shaping pro-environmental behaviors. The literature also suggests that employees' ability to support organizational environmental initiatives depends on both individual motivations and the support provided by the organizational environment (Ramus and Killmer, 2007).

The Theory of Planned Behavior (TPB) provides a powerful framework for analyzing zero-waste behaviors among hotel employees. Employees' positive attitudes toward zero-waste practices, the support of their social environment (subjective norms), and their belief in their ability to perform environmentally responsible actions (perceived behavioral control) shape their behavioral intentions. According to Ajzen (1991), behavioral intention is one of the strongest predictors of actual behavior.

Assessments based on the Theory of Planned Behavior indicate that technical applications alone are not sufficient to increase zero-waste behaviors in hospitality businesses. Psychological, social, and cognitive dimensions must also be considered. Therefore, strategies such as environmental training programs, managerial support, employee participation, and organizational commitment can positively influence employees' attitudes, intentions, and environmental behaviors.

In conclusion, hotel employees' knowledge, attitudes, environmental values, and behavioral intentions constitute essential components of successful zero-waste management. Strengthening environmental awareness together with supportive organizational practices can significantly contribute to the sustainability of zero-waste initiatives in accommodation establishments.

## 6. EMPLOYEE PARTICIPATION IN WASTE SORTING AND ZERO WASTE PRACTICES IN ACCOMMODATION ESTABLISHMENTS

Accommodation establishments generate significant amounts of waste due to intensive consumption patterns, food service activities, housekeeping operations, and the continuous flow of guests. Therefore, effective waste management is essential not only for environmental sustainability but also for operational efficiency and resource conservation.

Within the scope of sustainable tourism practices, many accommodation establishments implement waste sorting systems and monitor their environmental performance through various sustainability programs and certification schemes. Waste separation at the source, recycling activities, and proper waste management practices contribute to reducing environmental impacts while supporting the efficient use of resources. Studies conducted in the hospitality sector indicate that the successful implementation of zero-waste

practices requires both appropriate infrastructure and active employee participation (Mensah, 2006; UNEP, 2020).

The effectiveness of waste sorting systems largely depends on employees' compliance with operational procedures. However, the long-term sustainability of these practices is influenced by several factors, including management commitment, employee motivation, continuous monitoring, and regular training activities. Seasonal employee turnover and increased workloads during peak tourism periods may negatively affect the continuity and effectiveness of waste management practices.

For employees to comply with waste sorting procedures, providing information alone is not sufficient. Environmental behaviors must be supported through organizational culture, managerial leadership, and continuous environmental education. Employees who understand the environmental significance of waste management are more likely to internalize environmentally responsible practices and contribute actively to sustainability initiatives (Ramus & Killmer, 2007).

Regular training programs, effective feedback mechanisms, and recognition of successful environmental practices can increase employee motivation and strengthen the continuity of waste management systems. Previous studies have emphasized that environmental management practices become more effective when employees actively participate in environmental initiatives and perceive organizational support for such activities (Mensah, 2006).

In conclusion, waste sorting and zero-waste practices in accommodation establishments depend on the integration of environmental responsibility into daily operational processes. The success of these practices is closely associated with employee participation, environmental awareness, and managerial support. Therefore, accommodation establishments seeking to achieve zero-waste goals should prioritize employee training, participation, and continuous improvement in environmental management practices.

## 7. CONCLUSION

This study has examined zero waste management within the framework of sustainability and evaluated the critical role of employee-related factors—particularly knowledge, attitudes, intentions, and perceived behavioral control—in the successful implementation of zero-waste practices in the accommodation sector. Environmental problems such as climate change, resource depletion, and increasing waste generation necessitate comprehensive and sustainable solutions. In this context, zero waste management emerges not only as an environmental strategy but also as an economic and social transformation tool aligned with sustainable development goals.

The findings of the study highlight that waste management should not be considered merely as a technical or operational process. Instead, it requires a holistic approach that integrates environmental awareness, institutional commitment, and individual behavioral change. The waste hierarchy—prevention, reduction, reuse, recycling, and disposal—provides a structured framework; however, the effectiveness of this framework largely depends on the people implementing it. Particularly in labor-intensive sectors such as tourism, employees play a central role in translating sustainability policies into daily practices.

Within this scope, the Theory of Planned Behavior offers a valuable lens for understanding employee behavior. The literature reviewed in this study suggests that employees' positive attitudes toward zero-waste practices, the influence of subjective norms, and their perceived behavioral control significantly shape their behavioral intentions.

Another important outcome of the study is the recognition that employee knowledge of zero-waste systems directly influences operational success. Employees who are well-informed about waste separation, recycling processes, and resource efficiency are more likely to actively participate in these practices. Moreover, their engagement extends beyond routine tasks to include proactive behaviors such as suggesting improvements and encouraging environmentally responsible practices among guests. This highlights the multiplier effect of employee behavior in achieving sustainability goals in hospitality businesses.

The literature further indicates that organizational factors such as management support, training programs, and institutional culture play a decisive role in shaping employee behavior. Despite its contributions, this study has certain limitations. It is primarily based on literature review and theoretical evaluation, which may limit the generalizability of its conclusions. Future research could benefit from empirical studies conducted in different regions and types of accommodation establishments, as well as comparative analyses that consider cultural and organizational differences. Additionally, incorporating variables such as environmental

identity, organizational commitment, and leadership styles may provide a deeper understanding of employee behavior in sustainability practices.

In conclusion, zero waste management in the accommodation sector cannot be achieved solely through technical infrastructure or regulatory compliance. Its success depends on the integration of human, organizational, and systemic factors. Employees, as key actors in this process, must be equipped with knowledge, motivated through supportive organizational practices, and empowered to act. Therefore, hotel businesses aiming to achieve sustainable and zero-waste goals should prioritize employee training, participation, and behavioral transformation as strategic components of their sustainability efforts.

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