



## Research note

# Waste minimization practices among tourism businesses: A multi-year comparison<sup>☆</sup>

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## ABSTRACT

To date, research on waste minimization practices within the tourism industry focuses primarily on the hospitality sector, is geographically limited, and addresses practices cross-sectionally. In contrast, this study tracked waste minimization practices in various tourism industry sectors over time in the U.S. state of Minnesota. Online questionnaires distributed to tourism entities throughout the state in 2007, 2010 and 2013 inquired about implementation of twelve waste minimization practices: six eco-intelligent purchasing practices, two waste reduction practices, one practice that procures reusables, and three recycling-related practices. Nine practices were implemented by a moderate to high percentage of respondents. Over time, implementation of six practices significantly differed, with increases in five practices and a decrease in one. Implementation changes over time may be explained by ease of implementation, businesses' increased awareness, and availability of waste minimization infrastructure. Future research needs to understand rationales behind implementation and consider case studies to illustrate best practices.

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## 1. Introduction

Researchers have identified sustainability as the defining issue for the tourism industry in 2015 and beyond (Deloitte, 2014). One part of sustainability is minimizing environmental impacts, such as waste minimization. Waste minimization involves “tactics that effectively can ease waste disposal needs by actually quelling the quantity and toxic nature of products used, waste produced, and waste requiring disposal” (Cummings, 1992, p. 256). Among the breadth of research on sustainable tourism, however, only a small number of studies examined waste minimization practices among tourism organizations (e.g., Bohdanowicz, 2005, 2006; Chen, Legrand, & Sloan, 2005; Knowles, Macmillan, Palmer, Grabowski, & Hashimoto, 1999; Mensah, 2006; Radwan, Jones, & Minoli, 2010, 2012).

Waste minimization, deemed a “proactive and recommended approach for environmentally responsible operations” (Cummings, 1992, p. 256), is important given its impact on guests, the environment, and economy. A clean environment is a significant factor behind a destination's attractiveness (Bohdanowicz, Zientara, & Novotna, 2011) and a basic component of quality services (Erdogan & Baris, 2007). Furthermore, a tourism entity's environmental footprint may be relatively

small (Carter, Whiley, & Knight, 2004), but collectively, the impact is significant (Nicholls & Kang, 2012a; The Travel Foundation & PwC, 2015).

Besides the cost of waste generated by tourism, researchers have also examined the benefits of waste minimization. Alvarez Gil, Burgos Jimenez, and Cespedes Lorente (2001) found that adopting environmental practices had positive influences on the financial performance of the Spanish hotels they studied. Todd and Hawkins (2002) reported that implementing waste minimization programs helps hotels reduce waste disposal costs by as much as 60%. Clearly, waste minimization aligns with both financial benefits of tourism industry and the need for environmental sustainability.

To date, a dearth of literature exists on waste minimization practices by the U.S. tourism industry (see Nicholls & Kang, 2012a, 2012b as exceptions). The majority of waste minimization studies focus on the hospitality sector in Europe (e.g., Bohdanowicz, 2005, 2006; Bruns-Smith, Choy, Chong, & Verma, 2015; Radwan et al., 2010, 2012), Asia (e.g., Chan & Lam, 2001), and Africa (Mensah, 2006). Nicholls and Kang (2012a) argued that studying sustainable practices among non-hospitality industry sectors would be “a valuable addition to the academic and industry literature” (p. 971) as would repeated-measure design.

Given the importance of waste minimization practices and the gaps in the literature, the purpose of this study was to track waste minimization practice implementation over time by various tourism industry sectors in the U.S. state of Minnesota.

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## 2. Theory

Cummings (1997) developed a solid waste management (SWM) model that includes five tiers of practices: 1) commit to waste minimization, 2) purchase with eco-intelligence, 3) use efficiently to generate less waste, 4) procure reusables and reuse them, and 5) procure recyclables and recycle them.

Previous research found some eco-intelligent purchasing practices had a moderate to high rate of implementation: buying products with longer lifespans (Radwan et al., 2012), purchasing fresh produce as opposed to convenience food, using environmentally friendly cleaning products, and bulk purchase to reduce packaging (Chen et al., 2005; Erdogan & Baris, 2007; Mensah, 2006; Nicholls & Kang, 2012a). The implementation rate of purchasing materials or goods with recyclable features, however, was low (Erdogan & Tosun, 2009; Knowles et al., 1999; Nicholls & Kang, 2012a).

In terms of efficient use of resources to reduce waste, implementation of three practices was found to be moderately high by some studies but low by others: reducing packaging waste (Bohdanowicz, 2006; Radwan et al., 2012), providing soap and shampoo in dispensers (Bohdanowicz, 2006; Chen et al., 2005; Nicholls & Kang, 2012a), and paper use reduction (Erdogan & Tosun, 2009; Radwan et al., 2012).

Tourism businesses have also taken measures to procure reusables (Chen et al., 2005; Knowles et al., 1999). Two practices, donating or reselling used furniture or equipment and donating good quality, leftover food, were found to have high rate of implementation in some cases but not others (Bohdanowicz, 2006; Nicholls & Kang, 2012a; Radwan et al., 2012).

Like other tiers in Cummings (1997) model, uneven recycling implementation has been found in extant research, including sorting waste (Bohdanowicz, 2006; Chen et al., 2005; Erdogan & Baris, 2007; Erdogan & Tosun, 2009; Nicholls & Kang, 2012a), proper waste disposal (Erdogan & Baris, 2007; Nicholls & Kang, 2012a), and recycling waste (Bruns-Smith et al., 2015; Knowles et al., 1999; Kuniyal, 2005; Mensah, 2006; The Travel Foundation & PwC, 2015).

Clearly, waste minimization practice implementation has been uneven across time and geography, with previous research mainly focused on one sector (i.e., lodging). Moreover, almost all the studies provided a “snapshot” of waste minimization practices and little is known about change across time. To date, only one study (Bohdanowicz et al., 2011) came close to tracking organizational change over time by analyzing how Hilton's *we care!* Program in continental Europe changed participating hotels' environmental practices over time. The researchers noted that the hotels had worked collectively on multiple sustainable practices, including sorting waste, but did not include any detailed information about decrease in waste generation or amount of waste sorted due to the Program.

To track implementation and to inform educational outreach, two research questions guided the current study: 1) what is the implementation level of various waste minimization practices by various tourism sectors and 2) how did implementation level of changed from 2007 to 2013?

## 3. Material and methods

### 3.1. Study site

Minnesota is located in the Midwestern United States and borders the largest of the five Great Lakes: Lake Superior. The Minnesota tourism industry contributes \$12.5 billion in gross annual sales and over 245,000 jobs to the state economy (Explore Minnesota, 2014). Since 2007, tourism businesses' attitudes toward and practices related to sustainable tourism have been tracked through an Internet-based survey administered in 2007, 2010, and 2013.

### 3.2. Questionnaire

In the questionnaires, a section focused on sustainability practice implementation including waste minimization: six eco-intelligent purchasing practices (e.g., purchase reusable and durable products), two efficient uses of resources (e.g., safely store chemical products), one procuring reusables (donate leftover guest amenities, old furniture, etc.), and three recycling-related practices (e.g., have a recycling program). Implementation was measured using an ordinal scale where 0 = No Attempt, 1 = Under Consideration, 2 = Just Beginning, 3 = Completed/Ongoing. Respondents were also given the choice of “Not Applicable.”

### 3.3. Data collection

The online questionnaire was distributed to a statewide tourism entity database maintained by the state in March 2007 ( $N = 2374$ ), 2010 ( $N = 3418$ ) and 2013 ( $N = 3550$ ). To increase the response rate, a modified tailored design method was used (Dillman, Smyth, & Christian, 2009). Response rates ranged from 12% to 19%, comparable to similar email-based studies in this topic area (Bohdanowicz, 2006; Nicholls & Kang, 2012a).

### 3.4. Data analysis

Survey responses were downloaded from the online platforms and analyzed using SPSS (version 21.0), each data file checked and cleaned for consistency. Analysis described the extent of implementation of the 12 waste minimization practices. If organizations indicated that a practice was “not applicable” to them, their data was excluded from analysis.

Chi-square tests detected significant changes in sample characteristics. Kruskal–Wallis tests assessed changes in adoption of the 12 waste minimization practices across the years, with Mann–Whitney tests as post-hoc tests when necessary.

## 4. Results

### 4.1. Sample characteristics

Overall, more respondents came from the lodging/camping sector of the industry than any other industry sector, followed by event/festivals and convention and visitor bureaus (Table 2). However, there was a significant difference in industry composition across the three questionnaires ( $\chi^2 = 60.80, p < 0.0005$ ), as the percentage of respondents from the lodging/camping sector decreased, and the percentage of respondents from the retail sector increased.

In all three questionnaires, the largest percentage of respondents had worked in the tourism industry for >20 years, followed by those having worked in the industry for 10–14 years. Respondents' tenure in the industry and with the current employer was consistent across surveys. Finally, the gender composition of the respondents was quite consistent with about 55% female respondents and 45% male respondents in all three surveys.

### 4.2. Implementation of waste minimization practices in 2007, 2010, and 2013

Among the 12 practices assessed, the three with the highest complete adoption rates included: 1) favoring repairable equipment with a long life, 2) safely storing chemical products, and 3) having a recycling program (Table 1). The least frequently implemented practices were: 1) consulting U.S. Green Building Council when constructing or remodeling, 2) using renewable building materials in facility construction, and 3) giving preference to organic, low-toxicity products.

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