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Perceptions vs. Practice: A Longitudinal Analysis of Energy-Efficient and Energy Conservation Practices in Minnesota's Tourism Industry

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Abstract: The importance of adopting sustainable practices in the tourism industry is well established. This project assessed tourism professionals' perceptions of constraints and benefits to sustainable practices as well as actual implementation of energy practices across time. Adopting a longitudinal approach, perceptions and practices were tracked through an Internet-based questionnaire administered among tourism professionals in 2007, 2010, and 2013 in a Midwestern U.S. state. Professionals consistently agreed that attracting new clientele, improving consumer perceptions, and organizational image were benefits of sustainable practices, while initial financial costs constrained implementation. The most frequently implemented energy practices were using daylight and compact fluorescent light bulbs (CFLs). Only the use of two energy practices increased across time: using CFLs and Energy Star equipment. Overall, the adoption of sustainable practices was varied, and implementation rates remained minimally changed between 2007 and 2013. Reasons for the varied adoption and lack of changes in practice implementation may be explained by perceived barriers to implementation, lack of perceived benefits, and socio-economic contextual factors. With consideration to institutional theory and organizational capacity, industry and organizational-level implications are presented.

Keywords: institutional theory; organizational capacity; constraints

1. Introduction

The relevance of sustainability in service industries, such as tourism, is well established [1]. Sustainability was identified as a defining issue for the tourism industry in 2015 [2] and a growth driver in 2019 [3]. As of 2020, it is now widely accepted and even expected that tourism businesses engage in sustainable practices, particularly energy conservation and efficiency [1,3].

Tourism uses significant energy across travel phases which contributes greenhouse gases to the environment [4]. Estimates suggest global tourism accounted for 8% of global greenhouse gas emissions from 2009 to 2013 [5] and, in that same time period, global tourism-related emissions increased from 3.9 to 4.5 billion tons of CO₂ annually [6]. To put this in context, the tourism industry accounts for 10% of the world's Gross domestic product (GDP) and 7% of global trade [7]. In 2017, tourism arrivals to

the Americas accounted for a 16% share of the global market [7]. Researchers claim tourism could become a key source of greenhouse gas emissions if it remains on a business-as-usual pathway [8]. Further, due to its relative importance in local and national economies [9,10], as well as the growing awareness of its impacts on the environment [11], both destination and tourism business managers are under mounting scrutiny to engage in sustainable practices [12]. Thus, improving energy efficiency in the tourism industry is of great importance [13] (p. 3) to individuals, individual companies, and international tourism overall [7].

Despite the urgency for and opportunities in energy-related tourism research, it is still a relatively small portion of the published literature, although increasingly researched [13,14]. Existing literature focuses heavily on the accommodation sectors [15]. Further, in a literature review of peer-reviewed articles focused on tourism and energy, most of the 92 articles published between 1974 and 2011 focused on the technology rather than organizational behavior [16]. Organizational behavior change, when understood as an important financial driver and taken on by company and facility managers, leads to increased potential for an overall industry change [17]. This industry change does not happen from macro institutional pressures alone. Instead, tourists need to help drive this expectation in order for managers of tourism companies and facilities to implement the change. In the early 2010s, calls for sustainable practice research were suggested [18] but remain scarce [15,19] even in 2020. Further, with few exceptions [19,20], published research typically assesses sustainable practices at one point in time, despite the recognition that repeated-measure designs provide valuable information to inform policies and assist programs [15,18,20].

To address this literature gap, and increase energy conservation and efficiency practices, as well as inform educational efforts, the purpose of this study was to assess and compare perceptions of and actual energy-efficient and energy conservation practice implementation over time among various tourism organizations in the U.S. state of Minnesota. The questions of interest included: (1) what are the perceived benefits and constraints to sustainable practices, and (2) whether and how do energy-related practices change across time in one U.S. state?

2. Literature Review

2.1. Benefits of and Constraints to Sustainable Practices in the Tourism Sector

Despite growing public expectations for sustainable practices [21] and tourists' willingness to participate in sustainable practices while traveling [3], progress toward an energy-efficient and carbon-neutral industry remains slow. To date, most of the improvements remain theoretical and supported at the macroeconomic level [22].

With regard to perceived benefits of sustainable practices, researchers have found that implementing sustainable practices improves environmental performance and carries benefits such as improved image and financial cost reductions or savings in the long term. Font, Garay and Jones [23] assessed perceived benefits for engaging in sustainable practices among European tourism managers and found protection of the environment (87%) and improved society (47%) were most important. These represent considerations for the well-being of the environment and society writ-large, dissociated from business pursuits. The second category of perceived benefits, classified as 'business case' reasons, included cost savings (29%), image and marketing benefits (19%), customer demand (10%), and meeting legal requirements (8%; [23]). In a separate study, among guest houses in Eden Prairie Municipality of South Africa [24], more than half of respondents (56.3%) identified environmental protection as a benefit of sustainable practices, while 43.4% cited potential improvements in customer perceptions and improved image, and nearly the same percent (43.3%) pointed to benefits of new clientele. Financial benefits were less important (39.3%) compared to other reasons, with more than half of respondents (56%) thinking that sustainable practices would produce no financial advantages. Clearly multiple perceived benefits of implementing sustainable practices exist, but implementation rates remain low in

the tourism industry. Subsequently, it is important to consider implementation benefits and constraints in tandem.

Constraints to sustainable practices exist and impede businesses' progress toward sustainability goals. Researchers explain the slow pace toward sustainable tourism in several ways: industry uniqueness, organizational constraints, and policy and political constraints. For example, Pace [25] examined the capacity of Maltese hotels to implement sustainability practices and concluded that the unique combination of firm capabilities (e.g., knowledge of energy systems, relationships to engineering firms, etc.) determined progress or stagnation toward sustainability goals. Scott, Peeters and Gossling [26] assessed tourism sector goals to reduce greenhouse gas emissions and found that a lack of knowledge, financial costs, and policy contexts (e.g., international air travel policies) were the most likely reasons for stagnation toward sustainability goals. Both Castellani and Sala [27] and Lonsdale, Kretser, Chetkiewicz and Cross [28] explored the role of policy and political support for sustainable tourism practices and found that each are important predictors of successful implementation.

Based on previous research, it is clear that both exogenous factors (e.g., policy support, relationships to other firms) and internal factors (e.g., knowledge of energy systems, managerial capabilities, available funding) influence sustainable practice implementation. In this study, we use institutional theory to understand the perceived benefits of implementing energy practices, and organizational capacity to assess factors that may slow or impede implementation.

2.2. Theoretical Framework

2.2.1. Institutional Theory

Institutional theory has been invoked to explain external pressures that drive organizations to change or implement such practices [29–33]. Institutional theory proposes the business environment exerts pressure on organizations to perform or behave in certain ways consistent with the rest of their environment. Given that organizations are reliant on their business environment for resources (e.g., revenues, supply chain) and legitimacy (e.g., image, reputation), these pressures can be a powerful motive for change [30]. The business environment includes all direct stakeholders, such as suppliers, consumers and potential future consumers, regulatory agencies, and competing organizations [30,33]. To understand why an organization behaves the way it does, one must look to the entities from which it derives legitimacy and understand the beliefs, norms, expectations, and assumptions held by this field [32,34].

Legitimacy refers to the 'generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions' [35] (p. 574). In seeking legitimacy, organizations assess the desirability and appropriateness of their actions to determine the possible benefits of implementation. If organizations perceive their actions will elicit positive responses from their stakeholders, for example higher demand, improved image or reputation, or increased revenues, they are more likely to act. Consequently, when the legislative environment, consumer behavior, and public opinion on a particular practice are positive, organizations tend to view the practice more positively. Organizations in the tourism industry, therefore, are more likely to adopt energy efficiency and conservation practices if both levels of pressure are felt. The "adoption response is comprised of behavioral and attitudinal components—the actual implementation of the practice and the internalized belief in the value of the practice" [36] (p. 216). This premise has been consistently upheld in research examining sustainability and sustainable practices through the lens of institutional theory [31,37,38].

In Minnesota, the environment pointed toward positive consumer perceptions and a seemingly supportive legislative climate. Per the Yale Climate Communication Centre's annual Climate Opinions Report [6], in 2017, 58% of Minnesotans were worried about climate change, 86% supported funding research into renewable energy, 65% supported requiring utilities to produce some electricity from renewable sources, and 82% supported providing tax rebates for energy-efficient vehicles and

solar panels. These findings indicate broad positive public attitudes toward the environment and energy-related practices. In 2007, the state was legislatively mandated to assess the interest in and potential adoption of a ‘travel green’ program among its industry and other stakeholders [39]. In 2010, the State of Minnesota adopted an energy efficiency resource standard where investor-owned electric and natural gas utilities were directed and incentivized to: (1) reduce retail energy sales by 1.5% each year, and (2) spend a percentage of their annual operating revenues on advancing energy efficiency, demand-side management, and renewable energy. Throughout and beyond the 2007–2013 period covered by this investigation, the Minnesota Commerce Department’s Division of Energy Resources has served as a resource for citizens and organizations interested in learning about and implementing energy conservation practices. Funded through a grant from the U.S. Department of Energy, the Division of Energy Resources participated in a multi-year effort that culminated in 2016, with Minnesota’s 2025 Energy Action Plan detailing energy strategies and documenting historical energy consumption and progress toward meeting goals. Thus, a variety of sources and external pressures were in action to raise awareness of and opportunities for energy-related practices in the state. Based on institutional theory and the business environment of Minnesota, we hypothesize:

Hypothesis 1. *Over time, perceptions of sustainable practice would become more positive to align with environmental attitudes in the Minnesota business environment.*

However, while legitimacy may be a strong motivator for organizations to adopt responsible practices, other plausible explanations should be considered. For instance, it may not be within the scope of an organization’s capacities to execute change and implement the practice. To explain this, we turn to organizational capacity.

2.2.2. Organizational Capacity

Organizational capacity is the ability of an organization to meet its mission and perform all operations over the long term [40]. Capacity was initially introduced to the management literature in the 1950s [41,42] and has been invoked to explain capacities of schools [43,44], health care systems [45,46], sport organizations [47–49], and private businesses [50]. Organizational capacity is multidimensional, multidisciplinary, and context-relative [51]. As such, the capacity of each tourism organization to implement and affect energy-related changes will be different as each organization is managed differently. Because an organization’s internal capacity to change and become more sustainable hinges on its resources, resources are discussed next as an essential element of energy practice implementation.

Based on the resource-based view (RBV) of the firm, organizational capacity is based on the organization’s ability to bundle and leverage its resources in such a way that promotes optimal performance [52]. Resources include human resources, financial resources, hard and soft infrastructure, and planning and development capacities [47,48]. Resource use will differ according to an organization’s understanding of these and the perceived barriers.

Hypothesis 2. *Over time, the perceived barriers to sustainable energy practices will decrease.*

Research reveals that when organizations are pressured by their business environment to act (institutional theory; [37,38]), and capacities are sufficient (organizational capacity; [41,42]), it becomes more likely that organizations will implement practices. Though the application of these two theories in tandem is relatively new in this application [31], their combined value for predicting sustainable practices has been evidenced theoretically [53,54] and empirically [31,55,56]. As a result, our final hypothesis is:

Hypothesis 3. *Over time, implementation of sustainable energy practices will increase.*

Critical, therefore, to this industry change over time is the individual organization's perception, understanding, and willingness to change. Sorrel [53] suggests "effective change requires a focus on the collective influences on individual choice and the systems that both enable and constrain those choices. ... as energy-related decisions are structured by the systems that provide energy services such as heating and personal mobility. These systems are termed 'sociotechnical' since they involve interlinked social and technical elements that co-evolve over many decades. ..., it is important to understand how these systems function, how they can change and how these changes can be directed and accelerated by public policy" (p. 80). This highlights the need for continued external pressure and continued internal resources through knowledge sharing, for real change to be enacted within these organizations.

Given the gap in longitudinal research and urgent need for energy conservation and efficient practices [57], this study explored energy-related practices in the U.S. state of Minnesota and compared perceptions and implementation trends over time. Attention focused on: (1) perceived benefits and constraints to sustainable practices, and (2) whether and how energy-related practices changed across time, specifically 2007 through 2013 in one U.S. state.

3. Materials and Methods

3.1. Study Site

In the upper central Midwestern United States, Minnesota hosts a population of 5.6 million, with 3.5 million residents within the 14 county Minneapolis–St. Paul metropolitan area [58]. Minnesota is home to five National Park Service units, two National Forests, the headwaters of the Mississippi River, and borders both Lake Superior and Canada. Visitors frequent Minnesota most in the summer but across all seasons to visit friends and family, explore its natural and cultural resources, shop at the Mall of America and sight see. Tourism is a significant industry in Minnesota which generated \$15.3 billion in gross annual sales and over 270,000 jobs in 2017 [59].

In response to the 2007 'travel green' mandate, a survey was sent to Minnesota tourism organizations regarding interests in and implementation of sustainable practices. A partnership between the state tourism office and University of Minnesota continued beyond the mandated survey and tracked perceptions of benefits and constraints, and implementation of sustainable practices across several time periods: 2007, 2010 and 2013 [60–62].

3.2. Questionnaire

To understand perceptions of the benefits and constraints, and actual implementation of energy conservation, energy efficiency, and other energy-related sustainable practices, a four-part online questionnaire was developed based on past sustainability research and industry interest.

Six questions focused on the perceived benefits of sustainable practices. Given the institutional theory proposal that organizations are pressured to act by their business environment [32,33], the perceived benefits are based on possible positive responses among stakeholders to sustainable practices. Eight questions focused on perceived constraints to implementation, which were written based on resources and organizational capacity [15]. Each perceived benefit and each perceived constraint were measured using a scale, where 1 = Strongly disagree, 2 = Disagree, 3 = Neither, 4 = Agree, and 5 = Strongly agree. Beyond perceptions about sustainable practices, the stage of implementing eleven energy practices was assessed using an ordinal scale, where 0 = No Attempt, 1 = Under Consideration, 2 = Just Beginning, and 3 = Completed/Ongoing. Respondents could also choose "Not Applicable." Energy conservation practices included: using daylight to the greatest extent possible, installing window film, and using occupancy sensors. Energy efficiency measures included using Energy Star equipment, using compact fluorescent light bulbs (CFLs), replacing package terminal air conditioner (PTAC) units and light-emitting diode (LED) exit signs. In addition, other items of research interest were included such as using renewable energy sources, providing customers with

energy-saving ideas, using energy audits and energy management systems. For descriptive purposes, respondents shared the sector they worked in, the number of years they had worked in the tourism industry, and their gender.

In partnership with the state tourism office, the online questionnaire was distributed to the state's tourism database in March 2007 ($N = 2374$), 2010 ($N = 3418$) and 2013 ($N = 3550$). Questionnaire recipients were located across the state in various tourism industry sectors including lodging, event/festival, retail, convention and visitor bureau, government and attractions. To increase the response rate, the researchers used a modified tailored design [63], which included an electronic pre-invitation notice, a personalized invitation to complete the questionnaire, and a reminder to complete the questionnaire. Response and completion rates declined with each survey iteration, ranging from 16% to 26% for responses and from 12% to 19% for completion (Table 1). Given the increase in online questionnaires, the decline in response and completion rates is not unexpected. The response rate was comparable to similar email-based studies in this topic area. For example, Bohdanowicz [64] reported response rates of 13% and 14% in her study, while Nicholls and Kang [18] reported 22%.

Table 1. Usable responses, response and completion rates for State of Sustainable Tourism questionnaires in 2007, 2010, and 2013.

	Usable Responses	Response Rate (%)	Completion Rate (%)
2007	451	26	19
2010	581	22	17
2013	426	16	12

3.3. Analysis

Following data cleaning, descriptive analysis assessed the level of agreement with the perceived benefits and constraints of sustainable practice implementation as well as the extent of implementing eleven energy practices. If organizations indicated that a practice was “not applicable” to them, their data was excluded from analysis.

To assess changes in perceptions across survey periods, Analysis of Variance (ANOVA) was performed on the benefits and constraint items. Kruskal–Wallis tests assessed changes in energy practice implementation across the years and, for each significant test result, a series of Mann–Whitney tests assessed which pairs of years significantly differed.

4. Results

4.1. Sample Characteristics

The sample represented a variety of tourism industry sectors, including respondents with varied work experience history, and was fairly evenly split between male and female respondents. Industry composition significantly differed across the three survey response periods, with fewer lodging/camping sector respondents across time and more respondents from the retail and “other” sectors ($\chi^2 = 60.80$, $p < 0.0005$). In all three response periods, the largest percentage of respondents worked in the lodging sector and had worked in the tourism industry for more than 20 years. The gender composition of the respondents was consistent across all three surveys, with about 55% of respondents identifying as female and 45% as male.

4.2. Perceived Benefits of and Constraints to Implementing Sustainable Practices across Survey Periods

Throughout the three survey periods, respondents consistently agreed that implementing sustainable practices was beneficial as doing so would attract new clientele, improve customer perceptions and improve the organization's image (benefit identified as items with an average of 4 or higher, with 4 representing “agree”; Table 2). Meanwhile, respondents to all three surveys were least likely to perceive economic savings as a benefit of sustainable practice implementation.

Table 2. Comparing agreement with perceived benefits of sustainable practice implementation across survey periods (2007, 2010, and 2013).

	Mean (Standard Deviation) ¹			F
	2007 (N = 451)	2010 (N = 581)	2013 (N = 426)	
Attracting new clientele	4.20 (0.79)	4.08 (0.83)	4.13 (0.89)	2.76
Improved customer perceptions	4.13 (0.75)	4.06 (0.79)	4.16 (0.82)	2.09
Improved organizational image	4.10 _a (0.77)	3.97 _a (0.83)	4.08 (0.82)	3.57 *
Improved consumer prospects	3.99 (0.77)	3.90 (0.79)	3.98 (0.80)	2.04
Increased environmental protection	3.98 (0.94)	3.87 _a (0.97)	4.06 _a (0.93)	5.13 *
Economic savings	3.67 (0.91)	3.64 (0.90)	3.72 (0.94)	0.90

Note: _a means with pairing subscripts within rows are significantly different at the $p < 0.05$ based on Bonferroni post hoc paired comparisons. ¹ All items rated on a scale, where 1 = Strongly disagree, 2 = Disagree, 3 = Neither, 4 = Agree, and 5 = Strongly agree. Standard deviations appear in parentheses next to means. * $p < 0.05$.

Respondents' perceptions of an improved organizational image ($F = 3.57$, $p < 0.05$; Table 2) and increased environmental protection changed significantly over time ($F = 5.13$, $p < 0.05$). Specifically, respondents agreed significantly less that improved organizational image was a benefit in 2010 than in 2007. Meanwhile, respondents were significantly more likely to agree that increased environmental protection was a benefit in 2013 than in 2010.

Across the three survey periods, participants consistently agreed that initial financial costs constrained sustainable practice implementation (Table 3). Meanwhile, respondents were least likely to agree that customer opposition and staff opposition constrained sustainable practice implementation. Between 2007 and 2013, two of the perceived constraints significantly changed: respondents disagreed more in 2013 than in 2007 that a lack of information ($F = 3.34$, $p < 0.05$; Table 3) and a lack of interest in the consumer base ($F = 4.34$, $p < 0.05$) constrained sustainable practice implementation (Table 3).

Table 3. Comparing agreement with perceived constraints to sustainable practice implementation across survey periods (2007, 2010, and 2013).

	Mean (Standard Deviation) ¹			F
	2007 (N = 451)	2010 (N = 581)	2013 (N = 426)	
Initial financial costs	3.95 (0.78)	4.05 (0.77)	4.00 (0.82)	2.23
Time and energy	3.87 (0.84)	3.89 (0.82)	3.91 (0.86)	0.30
Lack of information	3.67 _a (0.86)	3.56 (0.92)	3.52 _a (0.94)	3.34 *
External restrictions on operations	3.64 (0.89)	3.56 (0.93)	3.52 (0.97)	2.07
Lack of interest in the concept of sustainability within the consumer base	3.25 _a (1.00)	3.15 (1.00)	3.05 _a (0.98)	4.34 *
Lack of interest in the concept of sustainability within the organization	3.08 (1.08)	3.02 (1.09)	2.95 (0.97)	1.68
Customer opposition	2.74 (0.95)	2.73 (0.99)	2.69 (0.93)	0.33
Staff opposition	2.74 (0.94)	2.71 (0.96)	2.71 (0.90)	0.13

Note: _a means with pairing subscripts within rows are significantly different at the $p < 0.05$ based on Bonferroni post hoc paired comparisons. ¹ All items rated on a scale, where 1 = Strongly disagree, 2 = Disagree, 3 = Neither, 4 = Agree, and 5 = Strongly agree. Standard deviations appear in parentheses next to means. * $p < 0.05$.

4.3. Implementation of Energy Conservation and Efficiency Practices across Survey Periods

Among the 11 practices assessed, those with the highest implementation rates included both using daylight and compact fluorescent light bulbs (Table 4). The least frequently implemented practices were: (1) replacing package terminal air conditioner (PTAC) units with more efficient heat pump technologies and (2) including an energy audit in their operation schedules.

Table 4. Implementation stage of 11 energy practices across survey periods 2007 ($N = 384$), 2010 ($N = 511$), and 2013 ($N = 366$).

		Stage of Implementation			
		No Attempt (%)	Under Consideration (%)	Just Begun (%)	Completed (%)
Energy efficiency practices					
Use compact fluorescent light bulbs	2007	8.6	15.1	34.1	42.2
	2010	6.1	6.5	29	58.5
	2013	6.5	7.4	21.1	64.9
Use Energy Star equipment	2007	21.1	16.9	26.6	35.4
	2010	16.4	15.2	29.9	38.5
	2013	12.1	13.9	26.9	47.1
Use light-emitting diode (LED) exit signs	2007	37.3	23	12.4	27.2
	2010	41.5	22.7	11.5	24.3
	2013	39.2	25.6	11.6	23.6
Replaced package terminal air conditioner (PTAC) units with more efficient heat pump technologies	2007	56.2	22.7	10.0	11.2
	2010	60.6	18.3	10.2	10.8
	2013	52.4	20.4	8.8	18.4
Energy conservation practices					
Use daylight to the greatest possible extent	2007	9.2	4.9	12.7	73.2
	2010	12.1	7.7	14.3	65.9
	2013	15.8	6.0	6.8	71.4
Use occupancy sensors or timers	2007	43.1	16.0	12.6	28.3
	2010	45.8	17.6	14.7	21.9
	2013	51.3	12.1	13.8	22.9
Installed window film	2007	52.2	18.3	8.1	21.4
	2010	53.6	17.2	8.7	20.5
	2013	57.4	15.5	7.9	19.1
Combo/other practices					
Use energy management system	2007	36.6	22.5	15.4	25.8
	2010	41.9	19.4	13.2	25.6
	2013	39.7	14.8	13.7	31.8
Provide customers with energy-saving ideas	2007	40.0	18.0	18.3	23.7
	2010	37.4	15.6	21.8	25.2
	2013	43.3	15.1	14.4	27.1
Include energy audit in operation schedules	2007	57.7	18.4	12.1	11.8
	2010	52.5	21.6	11.4	14.5
	2013	58.8	14.1	9	18.1
Use renewable energy sources	2007	61.2	23.6	10.5	4.7
	2010	61.0	23.9	7.9	7.2
	2013	63.1	20.8	5.8	10.2

Only two of the 11 practices significantly changed across survey periods. Both were in the efficiency category and both increased: using CFL bulbs ($\chi^2 = 41.46$, $p < 0.0005$) and Energy Star equipment ($\chi^2 = 14.41$, $p < 0.005$; Table 5).

There was no significant change in implementation among the other nine practices (Tables 4 and 5). Across the three surveys, approximately 40% of respondents had begun or completed implementation of energy management systems as well as provided customers with energy-saving ideas. Approximately 35% of respondents had begun or completed implementation of occupancy sensors/timers and LED exit signs. Fewer than 30% of respondents, across all three surveys, had at least begun installing window film or included energy audits in operation schedules. Lastly, no more than 20% had at least begun replacing PTAC units with more efficient heat pump technologies or using renewable energy sources.

Table 5. Change in 11 energy efficiency practice implementations across survey periods 2007 ($N = 384$), 2010 ($N = 511$), and 2013 ($N = 366$).

	Mean Ranks			Chi-Square
	2007	2010	2013	
Efficient practices				
Use compact fluorescent light bulbs	531	643	672	41.46 **
Use Energy Star equipment	539	577	632	14.41 *
Use LED exit signs	377	358	362	1.15
Replaced PTAC units	435	420	463	5.53
Conservation practices				
Use daylight to the greatest possible extent	626	581	602	5.37
Use occupancy sensors or timers	523	496	481	3.53
Installed window film	559	552	531	1.58
Combo/other				
Use energy management system	471	452	480	2.11
Provide customers with energy-saving ideas	534	555	531	1.44
Include energy audit in operation schedules	489	515	531	1.84
Use renewable energy sources	540	543	537	0.07

Note: All items rated on a scale, where 1 = No attempt, 2 = Under consideration, 3 = Just beginning, and 4 = Completed/Ongoing. * $p < 0.005$, ** $p < 0.0005$.

5. Discussion

Moving beyond a single point-in-time assessment, this project surveyed tourism professionals across three periods to understand whether and how perceptions of benefits and constraints of energy practices changed as well as whether and how energy conservation and energy efficiency practice implementation evolved. Results indicate that, contrary to expectations, significant changes occurred in only one-third of the perceived benefits and constraints of sustainable practices between survey periods. Similarly, only two of the eleven practices monitored were further along in implementation across the 6 year period. As such, none of the hypotheses are supported. While limited variation was found among respondents' perceptions of sustainable practices, energy practice implementation clearly varied and significant opportunity exists to improve and enhance both perceptions and performance of sustainable practices. Such changes are important as, according to Sorrell [53], "improving energy efficiency and reducing energy demand are widely considered as the most promising, fastest, cheapest and safest means to mitigate climate change" (p. 74), with little or possibly negative cost.

This study was also the first to integrate institutional theory and organizational capacity into the same study in tourism research, building on the work of Barman and MacIndoe [65], who suggested the theories are complementary, not competing. Institutional theory is used to frame the macro institutional expectations of increased sustainable practices by organizations, which has become a common expectation by stakeholders [66]. However, the tourism industry continues to face challenges on sustainable perception and implementation. "Travel and tourism continues to face many challenges, including those of sustainability, security and technology [7] (p. 5). Critical to understanding this divergence between general stakeholder expectations and the lack of implementation by tourism organizations is the RBV. The RBV helps explain the limited understanding on how to implement sustainable practices by organizations. Because capabilities are built from resources, if tourism organizations do not have the knowledge, understanding, or informational resources needed to change their behavior to become more sustainable, they will never develop the capability. Resource gaps are evident in some of the results of this study, including knowing what and how to implement sustainable practices such as increased energy efficiency or energy conservation. In 2013, there was more agreement that environmental protection was important, but less than half (45.5%) of respondents had begun implementing energy management systems. Coles et al. [1] asserted that "the most important issue is not necessarily the number of pro-environmental measures... but rather how energy consumption and

generation are related within businesses and across the sector more widely” (p.23), which makes clear the importance of considering benefits and constraints in connection with the business, social, and legislative contexts of the organization.

Tourism organizations have the potential to develop key capabilities such as awareness, knowledge, and the proper application of energy efficiency and conservation practices for their organization. However, these capabilities will never be realized without first obtaining basic resources that they can build from. The United Nations World Tourism Organization (UNWTO) can be a resource for these organizations at the institutional level. Further, the government’s Energy Star program could assist these organizations at the micro level—meeting them where they are [67]. Taking a closer look at our respondents’ replies, we further connect our theory to application.

5.1. *Perceived Benefits and Constraints*

Respondents indicated both benefits and constraints to practice implementation. Consistent with previous research [31,32] and institutional theory, externally-oriented benefit items (attracting new clientele, improved customer perceptions, and improved organizational image) scored higher than internal benefits (economic savings). This finding suggests the respondents perceived interest for sustainability among stakeholders in their business environment and translated this interest to potential benefits for the firm.

Another interesting finding was the increase in agreement over time for improved environmental conservation as a perceived benefit. This may be a byproduct of increasing focus on sustainability within the state, but it is also possible that awareness and interest in environmental conservation was spurred by statewide tourism conferences, or perhaps the survey itself prompted increased awareness initially.

In 2010, agreement for all perceived benefits dropped compared to 2007, though only one significantly differed (improved organizational image). Based on institutional theory, which supposes that the business environment pressures the firm to act, there are several possible explanations for this trend. In the three years that elapsed between the first and second survey, the 2008 economic crash devastated the American tourism industry [68,69]. In that economic environment, it is possible that organizations focused their efforts on other priorities. An alternative, or perhaps additional explanation, is the change in state leadership on energy. In 2007, the then-Governor of Minnesota signed the Next Generation Energy Act and agreed to the Midwestern Greenhouse Gas Accord. By 2010, the Governor had changed his mind on the importance of energy and addressing climate change, famously stating in an interview with the Miami Herald that “the weight of the evidence is that most of [climate change], maybe all of it, is because of natural causes” [70]. Organizations may have interpreted the Governor’s change of attitude and associated policy changes with diminishing importance of implementing sustainable practices. Interestingly, by 2013, agreement for the perceived benefit of all items increased to levels similar to 2007. Between 2010 and 2013, the economy had begun recovering [68,69], a new Governor was elected who supported green energy, and statewide public support for sustainable solutions was high [71]. The data collected provides information as to what happened but not why or how the precise contextual factors influenced the shifts in perceived benefits. Future qualitative research through interviews with managers, or motivation-based survey research, may provide further insight.

Similar to Scott, Peters and Gössling [26], Minnesota respondents noted financial costs as a consistent barrier to energy-related practice implementation. In light of past research which reveals concerns of costs and lack of savings associated with the low adoption of sustainable practices in tourism [23], it is not surprising that energy-related practices implementation was slow in Minnesota’s industry. Like Coles et al.’s [1] Small and medium-size enterprise (SME) respondents who had low levels of knowledge and understanding about energy use and billing, Minnesota’s SME-dominated industry may benefit from additional educational efforts to expand information and education efforts for long term cost-benefits. For example, Schuweiler [72] developed a guide for resort operators

to elucidate short- and long-term economic benefits from select energy-efficiency and conservation options. Clearly, perceptions of those benefits remain unchanged.

Results are heartening in that lack of information was less of a constraint through the course of data collection. While specific information sources were not identified, both local and global information on sustainable practices increased in this time. In Minnesota, the ‘Travel Green Report’ [39] recommended industry education, which manifested through several ‘sustainable tourism conferences’, development of a ‘sustainable tourism in MN web repository’, the development of non-profit programs to increase education and exposure to sustainable tourism (i.e. ‘Green Routes’, ‘Local Flavor’). More broadly, certainly general information about sustainable business practices also grew throughout the survey data collection periods. These results differ from Scott et al. and the advantage of the multi-year data collection may shine through here. Industry associations ought to continue promoting the importance of sustainable energy practice to increase awareness and developing trainings on how to implement sustainable practices.

5.2. Addressing the Lack of Practice Implementation

Unlike Lopez-Gamero et al. [11], who found that environmental management is “increasingly attractive as a strategy to managers” (p. 949), throughout time, the Minnesota tourism industry respondents appear unmoved regarding energy-related practices. Overall, respondents agreed with only a few benefits of sustainable practice implementation and this uncertainty or apathy carried into a lack of action, demonstrated by even low-cost, low-time commitment actions remaining undone by the majority.

Institutional theory would posit that increased public awareness of energy issues and concern for the environment, coupled with legislative pressure in the early (2007) and late (2013) data collection periods, should have pressured organizations to implement practices. However, results from this study did not bear this out. Reasons for this may include the unique but significant economic situation between survey periods 2007 and 2010 that negatively impacted the tourism industry [68,69] and the fact that, as Melissen et al. [73] identified, sustainability is “not yet institutionalized” (p. 232) as an industry-wide priority or standard. Combined, these reasons offer organizations an excuse to not implement changes. With the economy regaining strength by 2010 [68], the first excuse no longer applied. To advance the institutionalization of sustainable practices in the tourism industry, it may be fruitful to host industry-wide conferences and meetings to set standards for energy practices, aligned with those of the Minnesota government as each must apply it to their particular set of constraints, and consider the value of these changes now and in the future.

Some energy practices, specifically the use of LED lighting and Energy Star equipment, were widely adopted during the survey period and have a very short (good) financial return with a very small entry fee. This result is similar to previous research [74] that found the implementation of LED lighting was widespread in Dutch and Romanian tourism organizations. This may be explained by the low cost of implementation or the direct savings in energy billing [75], but also awareness of these practices is high [76] and their use is promoted by energy corporations across the United States [77]. Overall, this survey finds sufficient institutional knowledge, support and pressure for tourism organizations to make changes, but limited applied resources.

5.3. Limitations and Future Research

As with any research, there are both gaps and opportunities. In this project, gaps include: (1) entities regardless of size or ownership were treated the same, (2) results reflect trends rather than implementation changes within the same organizations, and (3) the study focused on broad reasons for and against practice implementation rather than a focus on energy conservation specifically.

Subsequently, future research opportunities could compare practices across small and larger firms as well as within the same businesses [15,20] and with focused attention to energy practices in particular. Such focus and segmentation would enable targeted messaging and potential opportunities to increase

implementation. Looking beyond a state border would be important as well, as Fassin et al. [78] found adoption varied across European countries. In addition, case studies in varied contexts are necessary to establish trends [15]. Further, given the importance of both policy and politics [27,28], adding constraint items which address those more directly and specifically would shed light on their importance across time.

This research addresses important literature gaps. Specifically, this work advances knowledge with respect to the adoption of sustainable practices over time. Considering that previous research only offered information at one point in time, this work offers original insight into how the adoption of sustainable practices differs over time and the pace of change. Further, given the importance of energy for reducing the carbon footprint [1,10,12,13], the focus on energy practices is particularly salient and should be a focus of continued research. Repeating this research in Minnesota, and beyond, would be useful to understand whether and how adoption is proceeding and at what pace.

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