DISSERTATION

DIFFUSION OF SUSTAINABILITY INNOVATION AMONG COLORADO SKI

RESORTS: A MIXED METHODS APPROACH

Submitted by

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ABSTRACT

DIFFUSION OF SUSTAINABILITY INNOVATION AMONG COLORADO SKI RESORTS:

A MIXED METHODS APPROACH

As the world faces an increasing array of environmental, social and economic challenges, businesses must lead the way to a transformative paradigm shift towards sustainability. Tourism as an industry is expanding rapidly, bringing a number of positive economic benefits, but also potential negative impacts on the natural environment, society, and culture, among others. The ski industry specifically, is found to be an important sector to examine in this context because it creates significant environmental impacts and is also dependent on the natural environment to maintain profitability. As a result of allegations related to the negative impacts of the sector and/or of concern for its dependence on the natural environment for maintaining profitability and the future of successful business operations, ski resorts are also concerned with the idea of sustainability innovations. One way for any business to respond to the constant changes in the natural and business environment is through innovations. Yet, a number of factors both – internal, such as staff turnover, top managements support, environmental training, and employee empowerment, and external - e.g. environmental regulations set by governments and pressures from customers and the community, pose challenges for corporate leaders, but also an opportunity, in fostering sustainability within the companies. The interplay between the changing external environment and the internal worlds leads to the need for continual alterations. The ability of organizations to respond swiftly and timely to these changing realities will be the differentiating factor between competitive organizations in complex markets with declining profit margins. Therefore, the challenge is how to manage and balance the internal and external

drivers and stimuli, so that the company can become more proactive in helping societies become more sustainable. Nevertheless, the factors affecting companies' sustainability vary, particularly among the different industries. Hence, the first step in the process of change towards corporate sustainability is identifying those factors playing the role of drivers or barriers to the diffusion of sustainability innovations.

This dissertation explores factors affecting the diffusion of sustainability among Colorado ski resorts. Furthermore, I attempt to assess whether ski companies can internally affect their corporate sustainability (through changes at an organizational institutional level), or rather external factors, such as customer demands, industry competition, and government regulations (which ski resorts cannot directly control) play a more important role in affecting the resort's overall sustainability. Diffusion of Innovations theory and the Prism of Sustainability were utilized in the conceptual framework guiding this investigation. I utilized Diffusion of Innovations theory to examine the relationship of the three main independent variables - characteristics of the innovation (sustainability), characteristics of the external environment and characteristics of the organization as predictors of resorts' sustainability through the four dimensions of sustainability (environmental, socio-cultural, institutional, and economic). The study was conducted between November 2014 and May 2015 and employed mixed research methods to explore ski resort employees' perceptions on factors affecting the diffusion of sustainability innovations. Sources of the case study data included eight semi-structured interviews with sustainability managers from six Colorado ski areas and survey questionnaires (N=264) distributed to employees from five ski resorts in the state. The research data analysis included thematic analysis for the qualitative data and multiple regression analysis for the

quantitative research data. Additionally, the findings from the two datasets were combined and contrasted through mixed methods techniques and analysis.

Study findings are presented in the form of three dissertation articles summarizing results from each of the three research methods (i.e. qualitative, quantitative, and mixed-method). Findings in the first article highlight that internal factors play a more significant role in the shift towards sustainability. Moreover, the most prominent driver of sustainability innovation identified was a devoted, open-minded, innovative leader(s), capable of triggering systemic change at an organizational level. In the second article, ski resort employees highlighted that perceived compatibility, observability and trialability of the innovation were significant predictors of several of the sustainability dimensions. Additionally, from the external environment, government regulation and the resort guests' demand were found to predict environmental and socio-cultural sustainability, respectively. Yet, the strongest predictor of sustainability among Colorado ski resorts was innovativeness, particularly related to leadership. Finally, article three compared the perceptions of ski areas sustainability managers and those of the broader group of employees in the resorts. Differences were found between sustainability ski resort managers and the general ski staff for most of the characteristics of the innovation. In contrast, there was a general agreement between the two study groups in regards to the key role of leadership and general innovativeness or the ski resorts. Accordingly, this study shows that the perceptions of front line employees does not completely mirror those of sustainability managers. Thus, gaps in communication, knowledge distribution and/or the role of differences in personal values and attitudes between the two study groups were highlighted. Additionally, the study findings reveal that more activism from the public is necessary in order to instigate the social movement towards sustainability. One way to accelerate this process is through regulations. This

study also confirm the significance of Diffusion of Innovation theory as the results indicate that the theory attributes were found to explain seventy percent of the variance in environmental and socio-cultural sustainability, 46 percent of the variance in institutional sustainability, and 24 percent of the variance in economic sustainability of Colorado ski resorts.

To summarize, considering the scarce literature on diffusion of sustainability innovation in tourism and the significance of the ski industry in the corporate battle towards a more sustainable future, I consider the developed framework for this dissertation to explore factors affecting the change process towards sustainability a valuable contribution to theory and practice. This study confirms the applicability of Diffusion of Innovation theory and the Prism of Sustainability framework in a tourism context, providing important insight regarding change towards sustainability for ski resort leadership, government agencies, and the general public. By exploring existing drivers and barriers in the diffusion of sustainability among ski resorts, this study provides resort managers with ideas on how to stimulate change towards sustainability in their organizations. Moreover, identifying institutional mechanisms facilitating the process of change towards sustainability can make resort management better equipped to refine or establish policies, mitigate potential conflicts among its main stakeholders, as well as plan effective implementation strategies for the future success of the organization in the long term. Lastly, this dissertation shows that considering the complexity and controversial interpretations of the idea of sustainability, mixed methods may provide an avenue to understand the multifaceted transition process towards corporate sustainability for tourism businesses.

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LIST OF ACRONYMS

CEO	Chief Executive Officer
CFO	Chief Financial Officer
CS	Corporate Sustainability
CSR	Corporate Social Responsibility
DoI	Diffusion of Innovation
EFP	Environmentally Friendly Practices
IISD	The International Institute for Sustainable Development.
LOA	Likelihood of Adoption
NGO	Non-governmental Organization
NSAA	National Ski Area Association
PoS	Prism of Sustainability
UNGC	United Nations Global Compact
USEPA	United Stated Environmental Protection Agency
WCED	World Commission on Environment and Development
WTO	World Tourism Organization

CHAPTER I

INTRODUCTION

Global air and water pollution, climate change, migration, financial instability, technological and knowledge revolutions, political upheaval and human rights movements are just a few of the challenges corporate executives face today. And considering the significant impacts each of these aspects has on society's well-being as a whole, the question now is not "whether," but "how" to integrate changes at corporate level in order to contribute to sustainability in the long run (Epstein, 2008); how the current model of the corporations can be modified to contribute to continuing health of the planet, survival of human and other species, development of a just and humane society, and creating a work environment that brings dignity and self-fulfillment (Dunphy, Griffiths & Benn 2007). Thus, as the world faces an increasing array of environmental, social and economic challenges, businesses must lead the way to a transformative paradigm shift towards sustainability.

Corporate sustainability (CS) is viewed as a new management paradigm, alternative to the traditional growth and profit-maximization model. While CS recognizes that corporate growth and profitability are important, it also requires the corporation to pursue societal goals, specifically those relating to sustainable development - environmental protection, social justice and equity, and economic development at an organizational level (Wilson, 2003). It is further argued that a sustainable company focuses not only on efficiency, but also mechanisms to encourage "meritocracy, diversity, innovation and long-term planning" (Dill, 2015). And debates should be focused not on the depth of practices but rather on the factors that drive companies to generate sustainability innovations (Chassagnon & Haned, 2015). Hence, the first step in the shift towards corporate sustainability is understanding what factors affect the process and

identifying the drivers and barriers among them. Next, the company can look for ways of affecting those factors at an organizational or institutional level.

Tourism as an industry is expanding rapidly, bringing a number of positive economic benefits, but also potential negative impacts on the natural environment, society, and culture (Dabphet, Scott, & Ruhanen, 2012). The ski industry specifically, is found to be an important sector to examine in this context because it creates significant environmental impacts and is also dependent on the natural environment to maintain profitability (World Tourism Organization and United Nations Environment Program, 2008). Studies suggest factors external to the organization such as environmental regulations set by governments and pressures from customers and the community being primary drivers behind adoption of corporate sustainability practices (e.g. Howard-Grenville, 2006). Yet, others consider internal organizational pressures such as staff turnover, top managements support, environmental training, employee empowerment, etc. as key motivators for achieving corporate sustainability (Wilkinson, Hill, & Gollan, 2001). It is further argued that external factors tend to result in reactive measures, being less likely to help move towards sustainability (DeSimone & Popoff, 2000), while internal factors are more proactive (Lozano, 2013). The numerous factors affecting corporate sustainability pose a challenge for corporate leaders and champions, but also an opportunity, in fostering sustainability within the companies. The interplay between the changing external environment and the internal worlds leads to the need for continual alterations. The ability of the individual, the team and, ultimately, the organization to respond swiftly and timely to these changing realities will be the differentiating factor between competitive organizations in complex markets with declining profit margins (Senge, 2003). Therefore, the challenge is how to manage and balance the internal and external drivers and stimuli, so that the company can respond quickly to external stimuli, and

promote and reward the internal drivers, so that the organization can become more proactive in helping societies become more sustainable (Lozano, 2013). One way for any business to respond to the constant changes in the natural and business environment is through innovations.

Rogers' (2003) Diffusion of Innovations theory (DoI) which is considered a leading model for understanding the adoption of innovations, has been applied in numerous studies worldwide in a variety of fields including agriculture, communications, mass media, public health, and sociology (Smerecnik & Andersen, 2011). This study utilizes DoI to examine perceptions about sustainability as an innovation. I further explore whether the characteristics of the innovation (sustainability), characteristics of the external environment, and the characteristics of the organization affect ski resorts' sustainability through the perspective of ski resort employees. The idea of sustainability is understood through the lens of its four dimensions - environmental, socio-cultural, institutional, and economic sustainability (Spangenberg & Valentin, 1999). Only few prior studies have investigated sustainability in the resort industry as an innovation process utilizing DoI theory. They found the DoI variables to be highly predictive in terms of diffusion of sustainability in the resort industry (Le et al., 2006; Smerecnik & Andersen, 2011).

Hence, the intent of this study is to expand on this literature, applying DoI theory in a tourism context (Colorado ski resorts) by empirically examining employees' perspectives on sustainability as an innovation and its diffusion through the organizations. I specifically seek to answer the question, "What factors affect the diffusion of sustainability among Colorado ski resorts?" and to understand whether internal or external factors play a more important role in affecting corporate sustainability. I further attempt to identify what institutional mechanisms at an organizational level can facilitate the change process and assess the value of a mixed-methods

approach for sustainability research in the tourism industry. I use ski resorts in Colorado as a case study for understanding the phenomenon in its context and accomplish the research goals.

This study is important in bringing new insights into the under-researched, yet relevant field of sustainability and innovation; applying DoI theory into tourism context. Understanding why some resorts move towards sustainability while others decide to just adapt to the changing environment (e.g. buying more snow guns, offering more summer activities, etc.) offers new insights for ski company management making them better equipped on ways to refine or establish policies and plan effective strategies for long-term business success and corporate sustainability. Additionally, government agencies can also utilize the findings for identifying new paths for policies and regulations assisting in the transformation towards sustainability. Lastly, the general public can also benefit from this study as I highlight how consumers can influence the corporate transformation towards sustainability.

From a theoretical standpoint, this dissertation aims at confirming the applicability of DoI theory in the tourism field. Furthermore, the study expands on sustainability literature, looking through the lens of the four dimensions of sustainability (PoS) - highlighting factors affecting the diffusion of corporate sustainability and connecting the DoI and PoS into a conceptual framework for a holistic understanding of the sustainability concept.

Purpose Statement

This dissertation explores the relationship between various factors from the internal and external environment of ski resorts as predictors of ski resort's sustainability. With my dissertation, I investigate the multifaceted concept of sustainability in a tourism context, specifically focusing on ski areas in Colorado, utilizing a mixed-methods approach. Furthermore,

this study raises questions about why some ski areas adopt sustainability-related initiatives while others continue their operations without concern for long-term sustainability; what the drivers behind the changes are and what some of the barriers in the journey towards sustainability are. Thus, the central aim of this dissertation is to explore different factors affecting ski resort sustainability, identifying both – internal and external drivers and barriers to change towards sustainability, as well as highlighting institutional mechanisms that facilitate the adoption of sustainability among Colorado ski areas. The various factors affecting sustainability are examined through Diffusion of Innovations theory and its main components – characteristics of the innovation (sustainability), characteristics of the external environment, and characteristics of the adopter – ski resort. Each component of the framework adds to a theoretical discussion throughout the study separately, as well as in interaction with the other components. The empirical investigations follow the theoretical discussion framed by the conceptual framework of the study (Figure 1.1), exploring relationships between the diffusion of innovations variables and the notion of sustainability, understood through its four dimensions. Explanations of the various components of the framework are covered in Chapter II.

By exploring existing drivers and barriers in the diffusion of sustainability among the ski resorts, this study aims to provide resort managers with ideas on how to stimulate change towards sustainability in their organizations. Moreover, identifying factors affecting the diffusion of innovation and institutional mechanisms facilitating the process of change, and will make resort management better equipped to refine or establish policies, mitigate potential conflicts among the resorts' main stakeholders, as well as plan effective implementation strategies for the future success of the organizations.

Conceptual Framework

      The conceptual framework for this dissertation was inspired by Rogers' (1968) Diffusion of Innovations theory and the Prism of Sustainability (Spangenberg & Valentin, 1999). The framework is adapted from two empirical studies on diffusion of innovations in tourism – Le, Hollenhorst, Harris, McLaughlin, and Shook (2006) and Smerecnik and Andersen (2011), yet adding and updating the various components, thus offering an enriched framework for a more holistic understanding of sustainability. While Le et al. (2006) measured how the DoI variables affected the likelihood of adoption (through a binary response), Smerecnik and Andersen (2011) focused on measuring environmental sustainability only. This dissertation, on the other hand, utilizes DoI variables while looking through the lens of the Prism of Sustainability, including not only environmental, but socio-cultural, institutional, and economic dimensions when operationalizing the concept of sustainability. Within the framework, sustainability is affected by three main components: a) characteristics of the sustainability as innovation, b) characteristics of the external environment, and c) characteristics of the organization – adopter of innovations. The diffusion of sustainability innovations framework for tourism is shown in Figure 1.1 and is the conceptual lens for this study.
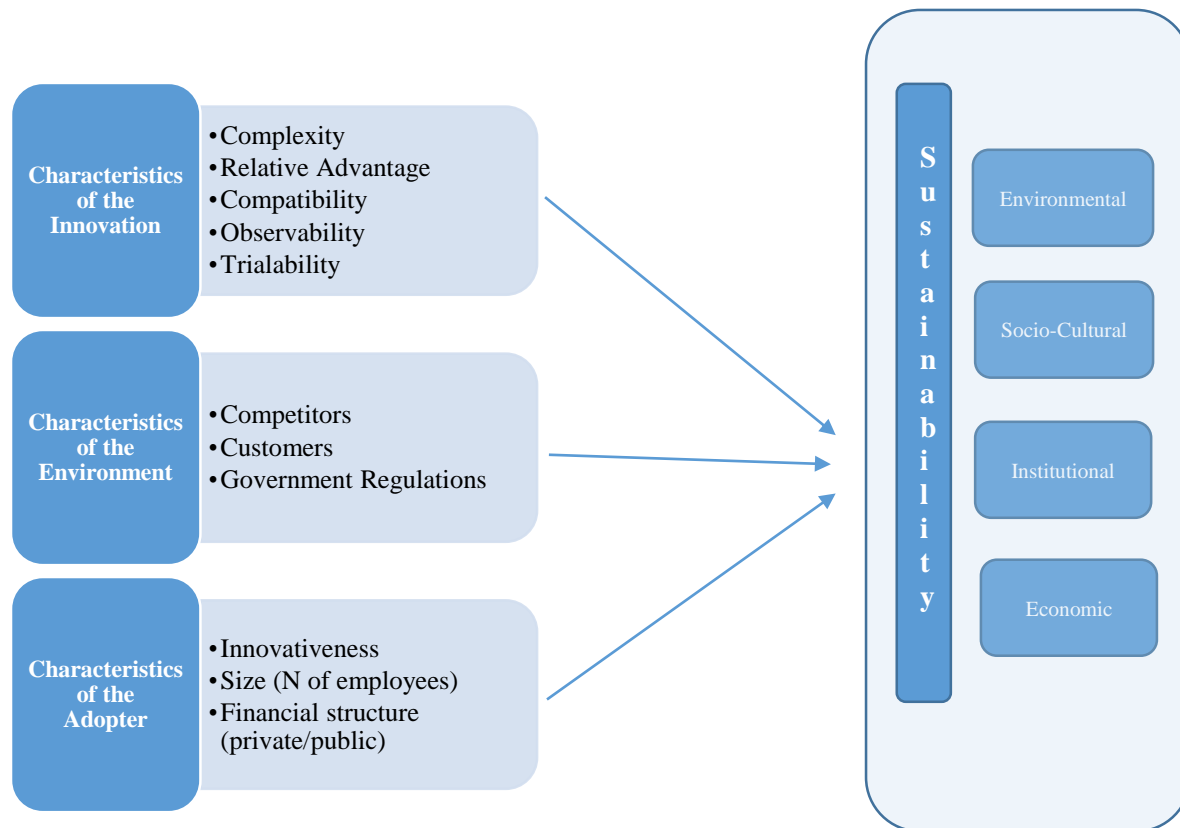
Figure 1.1.
Conceptual Framework
Adapted from Le, Hollenhorst, Harris, McLaughlin, & Shook (2006) and Smerecnik & Andersen (2011).

Research Questions

The overall aim of this dissertation is to identify drivers and barriers to sustainability among Colorado ski resorts and highlight institutional mechanisms that facilitate the process of change towards sustainability at an organizational level. The primary research questions guiding this dissertation are:

RQ1. What factors affect the diffusion of sustainability among Colorado ski resorts?

RQ2. Are internal or external factors stronger predictors of sustainability (among Colorado ski resorts)?

RQ3. What institutional mechanisms at an organizational level can facilitate the change process towards sustainability?

RQ4. What are the major differences in the two study groups' perceptions regarding factors affecting the diffusion of sustainability innovations among Colorado ski resorts?

RQ5. Is there value in a mixed-methods approach assessing ski resort employees perceptions on the diffusion of sustainability innovations among Colorado ski resorts?

Figure 1.2 offers a visual presentation of the dissertation research design highlighting the research goals, research questions, conceptual framework, methods, and validity.

GOALS

-Explore factors affecting the diffusion of sustainability innovations
-Identify drivers and barriers to sustainability to inform ski areas management
-Apply/Advance DoI theory and PoS framework

CONCEPTUAL FRAMEWORK

-Diffusion of Innovations Theory (characteristics of the innovation, external environment, and the adopter)
-Prism of Sustainability (environmental, socio-cultural, institutional, economic) sustainability)

RESEARCH QUESTIONS

-What factors affect the diffusion of sustainability among Colorado ski resorts?
-Are internal or external factors stronger predictors of?
-What institutional mechanisms facilitate the change process?
-What are the major differences in the two study groups' perceptions regarding factors affecting the diffusion of sustainability innovations among Colorado ski resorts?
-Is there value in a mixed-methods approach exploring ski resort employees perceptions on the DoI?

METHODS

-Qualitative - Semi-structured interviews
-Quantitative – Survey
-Mixed Methods – Exploratory Design/ Development

VALIDITY

Qualitative Data:
-Transferability
-Dependability/ Confirmability
-Trustworthiness (Peer-debriefing)

Quantitative Data:
-Construct Validity (Reliability)

-Triangulation of data collection methods

Figure .1.2.
Dissertation Research Design

Structure of the Dissertation

This dissertation is divided into seven chapters. Chapter II continues with the theoretical background (review of the literature) related to ski resorts, tourism, innovations, and sustainability. Next, Chapter III explains the research methods applied in this dissertation. Then, the subsequent three chapters are presented as three articles exploring factors affecting the diffusion of sustainability innovations through qualitative research methods – interviews with resort sustainability managers (Chapter IV), quantitative research methods – a survey questionnaire completed by ski areas employees (Chapter V), and a third article utilizing mixed-methods research - combining and contrasting the findings from the first two studies, and providing a discussion of the value of mixed-methods research in tourism (Chapter VI). Finally, a conclusion is presented in Chapter VII to provide closing thoughts on this research, study limitations, its practical and theoretical significance, and potential future studies.

Conclusion

Dunphy, Griffiths and Benn (2007) argue that the fundamental question to address today is how the current model of the corporations need to be modified to contribute to global sustainability. But no change can take place without identifying the major factors affecting corporations' leadership decisions in terms of sustainability. This study answers this question by revealing the drivers and barriers to the transformational process of diffusion of sustainability innovations among Colorado ski resorts. The following chapter offers a review of literature related to diffusion of innovation and sustainability, utilized to develop the conceptual framework of this dissertation.

CHAPTER II

THEORETICAL FRAMEWORK

Global Sustainability and Sustainable Development

The corporate sustainability idea originates from the broader concept of sustainability, which has been shaped by a number of political, public and academic influences over a long period of time (Linneluecke & Griffiths, 2010). The concept of sustainability became known on a global level through the report Our Common Future by the World Commission on Environment and Development (WCED) (WCED, 1987), also known as the Brundtland Commission. The WCED related sustainability to environmental integrity and social equity, but also to corporations and economic prosperity by defining the term sustainable development as ''development that meets the needs of the present without compromising the ability of future generations to meet their own needs'' (WCED, 1987, p. 43). Furthermore, the 1992 Earth Summit in Rio de Janeiro resulted in widespread acceptance of this definition by business leaders, politicians and NGOs (Dyllick & Hockerts, 2002). For organizations around the world, it implied the challenge to simultaneously improve social and human welfare while reducing their ecological impact and ensuring the effective achievement of organizational objectives (Sharma, 2003). For the purposes of this dissertation the terms (ski resort) sustainability and corporate sustainability, and the terms global sustainability and sustainable development are used interchangeably.

Corporate Social Responsibility and Corporate Sustainability

From the business perspective, the sustainability concept has been applied through the idea of corporate social responsibility (CSR). According to Lozano (2013) no clear consensus in

the literature exists as to when and where the concept originated. While some authors argue that CSR practices can be traced back almost as far as the French Revolution (Frankental, 2001), the origins of the 'modern' form of CSR are still subject to debate. Nevertheless, several common elements of CSR based on existing literature are: it is voluntary by nature, yet, it goes beyond legal expectations and compliance, it integrates social and environmental concerns (including ethics), and stakeholders' interactions into business' operations, and it concerns the long-term prosperity of the corporation (Lozano, 2013). Some of the limitations of the concept include the fact that it has been defined and interpreted so many times that it is perceived as confusing and contradictory. Moreover, it is often understood as synonymous to philanthropy as pointed out earlier, which is not what the business world is always concerned with. As a consequence, the term corporate sustainability (CS) has emerged as "an alternative" to CSR. Corporate sustainability (CS) is viewed as a new management paradigm, alternative to the traditional growth and profit-maximization model. While CS recognizes that corporate growth and profitability are important, it also requires the corporation to pursue societal goals, specifically those relating to sustainable development — environmental protection, social justice and equity, and economic development at a global and organizational levels (Wilson, 2003). Additionally, the International Institute for Sustainable Development defines sustainability for the business enterprise as "adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future" (IISD, 1992). The last definition of CS embraces both ideas – sustainability at a company level contributing to the long-term success of the business, but also making a contribution to global sustainable development.

Increasingly, the corporate sector shows interest in sustainability. For instance, over 8000 companies and 4000 non-businesses (UNGC, 2015) signed the United Nations Global Compact (UNGC) (Lozano, 2012b). The UNGC is a strategic policy initiative for businesses that are committed to aligning their operations and strategies with ten universally accepted principles in the areas of human rights, labor, environment and anti-corruption. It is argued that by doing so, businesses, as primary drivers of globalization, can help ensure that markets, commerce, technology and finance advance in ways that benefit economies and societies everywhere (UN Global Compact, 2014). Another indication of corporate interest in sustainability has been the number of voluntary initiatives (such as tools, approaches, and standards), developed by and for corporations, to foster sustainability practice by companies (Dunphy et al., 2003; Lozano, 2012; Ny, 2009; Ny, MacDonald, Broman, Yamamoto, & Robert, 2006) - the Global Code of Ethics, OECD's Guidelines for Multinational Enterprises, and the Global Reporting Initiative.

Nevertheless, embedding the actual principles of sustainability into company's systems represents significant challenges, mainly due to the complexity and multi-dimensionality of the sustainability concept (Langer & Schon, 2003; Lozano, 2012b). Additionally, a debate exists whether factors external to the organization or internal organizational pressures play a more important role in the journey towards sustainability. Nevertheless, understanding that sustainability is based on holistic thinking and approaches, including the company system and its internal and external stakeholders is key (Lozano, 2013).

Sustainability and Tourism

The challenges with the sustainability philosophy and implementations are present in a tourism context as well. Bramwell and Lane (2012) note that the idea of sustainable tourism

began as a negative and reactive concept in response to issues in the tourism industry in the 1970s such as environmental damage and negative impacts on society and cultures. Yet, over forty years later, sustainable tourism has become "a central focus" of tourism destinations (McGehee et al., 2013). Similarly, in regards to tourism and innovations, Hall and Williams (2008) reveal that sustainability was one of the first topics related to innovations in the industry - two of the earliest papers on tourism innovations were concerned with tourism and the environment, and sustainable tourism (Hjalager, 1996, 1997). The main drivers of tourism innovation were found to be competition, economic performance, demand-led innovation, technology, firm-level strategy and resources, individual entrepreneurship, and the role of the state (Hall & Williams, 2008). Likewise, at a resort level particularly, some of the pressures for sustainability stem from consumer demands, government regulations and environmental organizations (Erdogan & Baris, 2007; Goodman, 2000). As a result, more hotels and resorts, including ski areas and resorts, are adopting environmental sustainability innovations such as minimizing energy and water use and managing waste and greenhouse gas emissions (Erdogan & Baris, 2007; Honey, 2008; Trung & Kumar, 2005 as cited in Smerecnik & Anderson, 2011). While, some of the literature reveals positive impacts of sustainability on customer satisfaction, as well as loyalty, which is believed to improve overall resort performance (Kassinis & Soteriou, 2003), other studies have found no conclusive evidence of a correlation with performance (Claver-Cortes, Molina-Azorin, Pereira-Moliner & Lopez-Gamero, 2007 as cited in Smerecnik & Anderson, 2011). Hence, the reasons for adoption of sustainability practices vary.

More generally speaking, in regards to CSR and tourism, Coles, Fenclova, and Dinan (2013) summarizes research in the field. The authors identified six main categories including tour operators (Miller, 2001; Kalisch, 2002; Van Wijk & Persoon, 2006; Gurney & Humphreys,

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2006; Dodds & Joppe, 2009; Graci & Dodds, 2009; Dodds & Kuehnel, 2010; Van de Mosselaer et al., 2012), accommodations (Kasim, 2004a,b, 2007, 2010; Bohdanowicz, 2007; Bohdanowicz & Zientara, 2008, 2009, 2012; Bohdanowicz et al., 2011; Deery et al., 2007; Holcomb et al., 2007; Manaktola & Jauhari, 2007; Lee & Park, 2009; McGehee, Wattanakamolchai, Perdue, & Calvert, 2009; and de Grosbois, 2012), airlines (Phillips, 2006; Ravinder, 2007; Lynes and Andrachuk, 2008, Tsai & Hsu, 2008, Coles, Dinan & Fenclova, 2009; Coles, Fenclova, and Dinan, 2011; Cowper-Smith & de Grosbois, 2010; Lee & Park, 2010, and Fenclova & Coles, 2011), casinos (Lee & Park, 2009), pub operations (Jones, Comfort, & Hillier, 2006), and multiple sectors (Kang et al., 2010; Sheldon & Park, 2011). It can be argued that the ski resort industry should also be included as a separate category as an economically important sector, especially for the communities surrounding the resorts (Del Matto, 2007).

Sustainability and the Ski Industry

According to National Ski Area Association (NSAA) data for 2014/2015, the ski industry brought in $7.3 billion to the US economy (direct spending in US resorts) (NSSA, 2016). Based on the amount of participants in snow sports and revenue generated by resorts, ski areas are an important sector of the tourism industry in the US. Ski resorts also have a major impact on local economies by bringing in customers for area business and providing employment for residents of ski towns (Prentergast, 2011). At the state level, Colorado typically ranks as the top state in the U.S. for total skier visits. Overall, Colorado's ski industry generates more than $1.5 billion in revenues per year (Colorado Tourism Office, 2015; HVC, 2014) with Colorado skier visits numbers at 12.6 million in the 2013/2014 season (Blevins, 2014). Hence, the significance of the ski industry in the state is one of the main reasons for selecting Colorado as the study site.

Nevertheless, the ski sector has generally been cast in the same light as timber and mining in the United States and is being called "the next extractive industry", rather than a socially beneficial form of recreation (Tonge, 2008 as cited in Call, 2012). As a result of such allegations and/or of concern for its dependence on the natural environment for maintaining profitability and the future of successful business operations, ski resorts are another segment of the tourism industry, which is concerned with the idea of sustainability (WTO, 2008). Yet, currently, U.S. ski resorts operate under voluntary environmental regulations.

The primary sustainability-related initiative is the Sustainable Slopes Program, established by the National Ski Areas Association, in partnership with the U.S. Environmental Protection Agency, the U.S. Forest Service, and other federal agencies and organizations participating. The program provides a framework for ski areas on sustainability and enhanced environmental performance (NSAA, 2015). Over 75 percent of US ski resorts signed the Sustainable Slopes Charter in 2000 (Smerecnik & Andersen, 2011), while currently about 196 ski areas (approximately 50 percent of the ski areas in US) are endorsing the Environmental Charter of the program (NSAA, 2016). Similarly, on the demand side, organizations such as the Ski Area Citizens' Coalition indicate that customers themselves are concerned with ski resorts' sustainability initiatives and demand accountability and transparency from businesses (through its ski areas score card) (Ski Area Citizens' Coalition, 2014). Hence, it is important to research factors affecting ski resort decisions to adopt sustainability-related practices and understanding who plays a major role in affecting the diffusion of sustainability innovation among ski resorts.

Most of the research related to ski resorts and sustainability focuses on studying the impact the ski industry has on the environment – e.g. effects of snowmaking to the environment and for the resorts (Fahey and Wardle, 1998, Leao & Tecle, 2003; Prentergast, 2011; Scott et al.,

2003; Smith, 2010, Steiger & Mayer, 2008), chairlifts and trail maintenance environmental

impacts (Hadley & Wilson, 2004; Martin, Pohl, Alewell, Korener, & Rixen, 2010; Patthey,

Wirthner, Signorell, & Arlettaz, 2008; Rolando, Caprio, Rinaldi, & Ellana, 2007; Wipf, Rixen,

Fischer, Schmid, & Stoeckli, 2005), impacts from resort development (Gill & Williams, 2011;

Prentergas, 2011; Rivera & de Leon, 2004, Tenenbaum, 2001, Williams & Todd, 1997). On the

other hand, a large number of studies examined how climate change impacts the industry while

discussing implications for the resorts' future (e.g. Moen & Fredman, 2007; Hopkins, 2014;

Morrison & Pickering, 2013; Nolin & Daly, 2006; Pickering, 2011; Smerecnik & Anderson,

2011; Weaver, 2011; Whetton, Haylock, & Galloway, 1996).

On another note related to impacts, research shows that ski resorts that are more

innovative tend to be more environmentally proactive (Sharma, Aragon-Correa, & Rueda-

Manzanares, 2007) and that climate change effects might create a competitive advantage for

resorts that naturally receive more snowfall and will require improved snowmaking

infrastructures for the others (Scott, McBoyle, Minogue, & Mills, 2006). While one study created

a model for improved strategic performance in ski resorts specifically, incorporating elements of

sustainability supported by the World Tourism Organization (Flagestad & Hope, 2001), other

research has found that the voluntary adoption of the Sustainable Slopes program, created by US

National Ski Area Association, did little to improve ski resorts' environmental performance

(Rivera & de Leon, 2004; Rivera, de Leon, & Koerber, 2006). Hence, further research is

necessary to explain which factors influence the diffusion of sustainability practices in the ski

resort industry (Sharma et al., 2007; Smerecnik & Andersen, 2011).

After a systemic review on innovation practices in the last twenty years Klewitz and

Hansen (2014) pointed out that research is still strong on eco-innovation rather than on

innovation from a triple bottom line perspective (economic, social, and environmental dimension), or including the fourth – institutional aspect. Likewise, only few studies (Smerecnik & Anderson, 2011 and Le et al., 2006) explored factors affecting resorts' likelihood to adopt sustainable practices as innovations. Moreover, they studied sustainability through the triple bottom line perspective while I apply the Prism of Sustainability framework, including the fourth dimension – institutional aspects. Several studies had evaluated and confirmed the role of the institutional dimension (Cottrell, Vaske, & Roemer, 2013; Eden, Falkheden, & Malbert, 2000; Puhakka, Sarkki, Cottrell, & Siikamäki, 2009; Spangenberg, 2002; Spangenberg & Valentin, 1999). Thus, it can be argued that the PoS framework offers a more holistic lens for assessing sustainability as an innovative idea and philosophy.

Prism of Sustainability

Traditionally, the sustainable development paradigm includes three dimensions - economic, socio-cultural, and environmental (also known as people, profit, planet) (Dijks, 1995; Spangenberg 2002). Most businesses focus on those three aspects when addressing corporate sustainability. However, achieving a balance among these three classic dimensions is difficult without an institutional perspective to manage, mediate and facilitate growth (Cottrell, Vaske, & Roemer, 2013; Eden, Falkheden, & Malbert, 2000; Puhakka, Sarkki, Cottrell, & Siikamäki, 2009; Spangenberg, 2002; Spangenberg & Valentin, 1999). The PoS model provides a relatively holistic framework to think, understand, and analyze sustainability (Spangenberg & Valentin, 1999). This study utilizes the PoS model as a guide to assess predictors of corporate sustainability among ski resorts in Colorado. From the socio-cultural aspect, the companies approach towards resort guests and company employees was considered; from an economic standpoint the role the company plays in the local economy was evaluated; environmentally,

focus was placed on natural resource protection and use of sustainable products. According to

Valentin and Spangenberg (2000), institutional sustainability refers to human interaction and the

rules by which they are guided or the institutions of the society. Kets de Vries (2009) further

argues that no organization can function without a set of clearly outlined rules and procedures.

Thus, the institutional imperative in this study focused on ski resort rules, norms and policies

concerning sustainability, as well how those were communicated within the companies. A study

conducted by Cottrell, Vaske, and Roemer (2013) looking at resident satisfaction with

sustainable tourism in Frankenwald Nature Park, Germany is one of few studies identified

applying the PoS framework in a tourism context. Puhakka, Sarkki, Cottrell, & Siikamäki,

(2009) also utilized the PoS model while exploring how local stakeholders perceive the

sociocultural sustainability of tourism in Oulanka National Park in Finland. The study also

highlights the role of the institutional dimension as a facilitator of sustainability (also see Cottrell

& Cutumisu, 2006; Cottrell & Raadik, 2008; Cottrell, & Vaske, 2006; Cottrell, Vaske, & Shen,

2007; Shen & Cottrell, 2008; and Shen, Cottrell, Morrison, & Hughey, 2009).

Businesses and Innovations

"The only hope for sustainability is to change forms of consumption. To do so, we must

innovate" (World Business Council for Sustainable Development, 2002 in Esty & Winston,

2006). Senge (1990) also states that the only sustainable source of competitive advantage over

time is the ability of an organization to learn more quickly than its competition, or to innovate. In

today's dynamic markets and environments one increasingly important way for companies to

contribute to global sustainability is through sustainability-driven innovation practices (Klewitz

& Hansen, 2014). Innovations allow companies to adapt their strategy to market changes, and are

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thus of critical importance for creating organizational value (Stieglitz & Heine, 2007). Jun, Wu, and Chow (2008) argue that some of the factors that can stimulate organizational innovation include leadership (Amabile, 1998; Mumford & Gustafson, 1998), intra-organizational networks and learning capability (Tsai, 2001), CEO pay (Balkin, Markman, & Gomez-Mejia, 2000), a creativity-conducive work environment (Amabile, 1998), job complexity and type of supervision (Oldham & Cummings, 1996), and organizational culture and climate (Mumford & Gustafson, 1998). Furthermore, it is pointed out that among those factors, managers' leadership behavior is one of the most, if not the most, important (Amabile, 1998; Jung, 2001; Mumford, Scott, Gaddis, & Strange, 2002). At an organizational level, it is argued that the capacity of firms to innovate and adapt to market developments is crucial to their success, but research-based knowledge on innovation strategies in tourism remains scarce (Alsos, Eide, & Madsen, 2014). Throughout history the tourism sector has been a phenomenon characterized by immense innovativeness. Yet, the classical innovation literature has until recently primarily been concerned with the manufacturing industry (Hjalager, 2010). Smerecnik and Andersen (2011) point out that although DoI theory has been widely utilized in various disciplines, with over thirty nations using the theory and over 6000 published studies (Rogers, 2003), it has been scarcely applied in the service sector. Moreover, the authors highlight that studies on sustainability innovations have primarily investigated topics related to diffusion of environmental sustainability policies (Bergstrom & Dobers, 2000; Foxon & Pearson, 2008; Kern, Jorgens, & Janicke, 2001; Tsoutsos & Stamboulis, 2005), sustainability innovations adopted in geographical regions (Geltz, 2008; McEachern, & Hanson, 2008; Vasi, 2007) and consumer adoption of sustainability innovations (Labay & Kinnear, 1981). Hence, the diffusion of sustainability as an innovation in the resort industry has not been systematically investigated.

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Rogers (2003) defines an innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p.12). It is important to point out that the newness may be considered in terms of knowledge, persuasion, or a decision to adopt. Diffusion, on the other hand, is defined as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003, p.5); it is a special type of communication and it focuses on messages concerned with new ideas. Additionally, Rogers (2003) suggests that the diffusion of innovations is a kind of social change, including a process by which alterations occur in the structure and function of a social system.

In terms of sustainability innovations in particular, two studies applying DoI theory in tourism have been identified. The first one by Le et al. (2006) looked at factors influencing the intentions of Vietnamese hotel businesses to adopt environmentally friendly practices (EFP) (considered the innovation). The authors researched the three main categories of a firm's motivation to adopt EFPs as Rogers (2003) suggested: the characteristics of the innovation (including four of the five main characteristics of innovation in their framework (i.e. complexity, compatibility, observability, and relative advantage; characteristics of the organization (firm size, location, "greenness", and attitude towards change), and the characteristics of the environment (level of competition, customer demand, and government/regulation). Their results confirmed Rogers (2003) proposition that innovation characteristics are the most influential, particularly in regards to EFP, with complexity and observability most significantly correlated with likelihood of adoption (LOA). Another interesting finding from the study was that perceived competition was most strongly correlated with LOA. Their findings support Rogers' argument that diffusion occurs within a social system and this social system plays a key role in the innovation-diffusion process. Considering the competition-intensive nature of tourism, these results are not surprising.

Smerecnik and Anderson (2011) also conducted a study on diffusion of environmental sustainability innovations in North American hotels and ski resorts. Their study utilized a few characteristics of an innovation – relative advantage, simplicity (complexity), and triability (Rogers, 2003), together with innovativeness, cautiousness, and environmental opinion leadership. The most interesting finding was that simplicity was the most predictive variable for the adoption of sustainability innovations and actually the only variable in the regression analysis the authors conducted, that predicted the overall resort sustainability innovation. This result is consistent with what was found in the Vietnamese Hotels study. Smerecnik and Anderson (2011) concluded that resorts must not look solely to customer demand for a reason to adopt sustainability initiatives but rather understand the holistic long-term benefits from the adoption of sustainable practices and policies. Yet, this study and its conclusion confirm that the complexity of the idea of sustainability is a barrier in adoption among tourism entities. Thus, considering the scarce literature on diffusion of sustainability innovation in tourism and the significance of the ski industry in the corporate battle towards a more sustainable future, it can be argued that more research in the field is necessary.

Diffusion of Innovations Theory

Rogers distinguishes three main components affecting the diffusion of innovations – characteristics of the innovation, characteristics of the external environment, and characteristics of adopter.

Characteristics of the innovation. The first component of the proposed framework concerns the characteristics of the innovation itself, or characteristics of sustainability as a new idea in this study. Rogers suggests that there are five main "perceived" characteristics of an innovation.

Complexity. The first characteristic of the innovation is complexity. It is the degree to which an innovation is perceived as difficult to understand or use. Complexity "is used to reflect the number of customized components, the breadth of knowledge and skills required and the degree of new knowledge involved in product" (Hobday, 1998, p. 690). Research has shown a negative relationship between the complexity of an innovation and its rate of adoption (Hobday, 1998). Yet, some exceptions have been found (Wonglimpiyarat, 2005). More importantly, it is argued that sustainability, especially in the era of multinational corporations and globalization, has become a complex issue for corporations (van Marrewijk & Hardjono, 2003). One problem stems from difficulties with measuring progress. It is argued that there are too many metrics measuring sustainability, which are often confusing (Laughland, Bansal, & Bansal, 2011).

Relative advantage. The second characteristic of the innovation is relative advantage. It concerns the degree to which an innovation is perceived as better than the idea it supersedes. Rogers (2003) argues that it can be measured in economic terms, brand image, convenience, satisfaction, etc. He also states that the greater perceived relative advantage - the more rapid the rate of adoption usually is. Yet, studies also show that companies that try to lead the sustainability frontier are often losing (Laughland, Bansal, &Bansal, 2011).

Compatibility. The third main characteristic of an innovation is compatibility. It is the degree to which an innovation is perceived as being consistent with the existing values, as well as past experiences and needs of the potential adopters (organization). Rogers (2003) also points out that the adoption of an incompatible innovation often requires the prior adoption of a new value system, which is usually a relatively slow process.

Observability. Rogers defines the fourth main characteristic of an innovation as observability, which it is the degree to which the results of an innovation are visible to others.

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This is probably the most challenging one, considering that the result and/or benefits from sustainability innovations take years to "become visible," while business people usually want to see the immediate or at least short-term benefits, cost savings, etc.

Trialability. The last characteristic is trialability, which is the degree to which an innovation may be experimented with on a limited basis; or basically whether the new idea can be tried out (before the actual implementation). Commonly, if an innovation can be tested in advance or on a small scale, the rate of diffusion is higher (Rogers, 2003).

Rogers has found that between 49 and 87 percent of variance in adoption is explained by these five attributes. Rogers (2003) also argues that the easier it is for individuals to see the results of an innovation, the more likely they are to adopt it.

Characteristics of the external environment. Rogers (2003) highlights that studies show that most individuals/organizations do not evaluate an innovation on the basis of scientific studies but rather based on a subjective evaluation of an innovation that is conveyed to them from other individuals/organizations (who have already adopted the innovation) or media. This idea can be further linked to institutional theory which suggests that organizations adopt sustainability practices not because they guarantee an increase in efficiency, but rather because they are deemed "appropriate and legitimate" (Trendafilova , Baiak, & Heinze, 2013). Moreover, according to this approach, there are three main forces driving organizational actions: coercive (codified rules, norms, laws that assign legitimacy to certain organizational practices), mimetic (imitating other organizations perceived as successful), and normative pressures (coming from educational and professional authorities, media, etc. who set standards for "legitimate" organizational practices (Campbell, 2007). The coercive pressures include formal and informal pressures exerted by other organizations on which the company may depend on in the form of

persuasion, force, or an invitation to change or adopt a new plan (Slack & Hinings, 1994 as cited in Trendafilova, Baiak & Heinze, 2013). Although formal rules and regulations are considered the main coercive force, the media, for example can also impose coercive pressures through scrutiny and communicating about other regulatory and monitoring groups and forces. Other key stakeholders might include competitors and customers. In regards to mimetic or imitating forces DiMaggio & Powell (1983) highlight that when an organization is faced with uncertainty and ambiguity (which are very relevant at today's dynamic times), it looks at other organizations that have adopted successful practices. Thus, the main stakeholders under this force would constitute competitors and partners. Finally, normative pressures usually come from educational and professional authorities who set the standards for "legitimate" organizational practices, as well as from the media, who not only communicates but also often reinforces desired and expected practices (Campbell, 2007).

Consequently, a key point in Roger's theory, also supported by institutional theory, is that diffusion of an innovation is "a very social process that involves interpersonal communication relationship." (Rogers, 2003, p. 19). Hence, the second main component in my proposed framework concerns factors from the external environment, or the social system. Rogers (2003) defines a social system as "a set of interrelated units that are engaged in joint problem solving to accomplish a common goal" (p. 23); it constitutes the boundary within which an innovation diffuses" (p. 24). Rogers (2003) argues that a system's norms can be a barrier to change. These factors represent social pressures on a firm as a motivation to adopt sustainability innovations (Le et al., 2006). Similarly, Esty & Winston (2006) suggest that in the new world, companies face two major pressures - the limits of the natural world which can constrain business operations, realign markets, and possibly even threaten well-being on the planet, and the growing

spectrum of stakeholders who are concerned about the environment. Thus, effectively integrating sustainability into companies' strategies requires action that exceeds organizational boundaries. With increasing interconnectedness of the world, single organizations or even industries cannot tackle sustainability challenges on their own (Seuring & Gold, 2013). It is becoming increasingly accepted that stakeholders affect the organizational plans and that ineffective stakeholder involvement in sustainability initiatives can hinder the achievement of business objectives (Waligo, Clark & Hawkins, 2013). Generally, companies have limited ability to overcome external barriers to change, which include pressure from competitors, regulation and legislation, lack of knowledge and interest from consumers or investors. (Lozano, 2013).

Competition. Commonly, those attributes are measured in terms of perceived certainty levels, meaning the extent to which changes can confidently be predicted (Downs & Mohr, 1976). Literature suggests that firms perceiving a higher level of competition are more proactive in adopting environmentally – related practices in order to sustain their competitive advantages (Veliyath & Fitzerald, 2000). Moreover, other studies found that being "green'' has become a common practice to gain competitive advantage in highly competitive environments (Appiah-Adu & Singh 1998; Hurley & Hult, 1998; Rangel, 2000 as cited in Le et al., 2006). Schendler (2010) also talks about the importance of marketing and "self-promotion" considering experiences from Aspen Skiing Company. He reminded us of Plato's saying that "those who tell the stories rule society." One thing Aspen is currently doing, Schendler states, is always keeping the press updated on green projects and accomplishments because they "believe the public and other businesses need to know what is possible. Thus, in some ways Aspen Skiing Company is forcing the rest of the industry to change (Schendler, 2010). Hence, companies are motivated to

embrace sustainability not only by possible cost savings and government regulations, but also through their stakeholders.

     Customers. Another stakeholder in the journey towards sustainability are the customers or ski resorts' guests who can also affect the diffusion of sustainability innovations. Although some studies indicate that customers do not consistently factor sustainability into their purchase decisions (Laughland, Bansal, & Bansal, 2011), the existence of groups such as Ski Area Citizens' Coalition, and Protect Our Winters, for example, indicate that customers themselves are concerned how sustainable ski resorts' practices are and increasingly demand accountability. Similarly, research has shown that poorly rated firms in terms of sustainability respond by improving their performance (Schendler, 2011). Thus, it can be argued that customers, have the power to assist in the process of corporate change towards sustainability.

     Government regulations. The last factor from the external environment affecting ski resorts sustainability included in my framework concerns government regulations. It is argued that government policies need to incent outcomes and be more clearly connected to sustainability (Laughland, Bensel, & Bensel, 2011). Similarly, Schendler (2011) points out that when taking into consideration the scope and scale of the climate crisis (which ultimately affects sustainability), there is a pressing need for broad policy solutions. Moreover, focusing exclusively on voluntary operational greening including carbon neutrality distracts from the more pressing need for climate regulation to achieve the necessary overall reductions called for by climate scientists. Thus, it can be argued that government regulations in terms of sustainability (e.g. CO2 emissions) are necessary. Yet, literature on this matter is limited.

Characteristics of the adopter. The third core component of an innovation concerns the characteristics of the adopters (ski resorts). The main ski resorts' characteristics included in the study are innovativeness, size, and financial structure.

Innovativeness. The first component from the characteristics of the adopter is the innovativeness of the resort. Rogers (2003) explains that innovativeness is the degree to which an individual or an organization is relatively earlier in adopting new ideas than the other members of a system. Innovativeness has often been shown as one of the most important strategic orientations required for firms to achieve long-term success (Calantone, Cavusgil, & Zhao, 2002; Noble, Sinha, & Kumar, 2002). Dobni (2008) suggests that organizational managers and leaders play a key role in determining the innovativeness of a company. Similarly, Ireland and Hitt (1999) identify top management support and involvement as a key requirement for promoting innovation. Moreover, Ryan and Tipu (2013) argued that leaders create organizational capability and disposition through sharing an innovation-promoting vision with the members of the organization (Hansen & Kahnweiler, 1997; Papadakis & Bourantas, 1998), hiring and supporting champions of innovation-orientated change (Kanter, 1985), and instilling a sense of strong innovation culture that rewards productive work. In short, followers are more likely to innovate if leaders provide support (Basu & Green, 1997). More specifically, innovation leadership is defined as the process of creating the context for innovation to occur; creating and implementing the roles, decision-making structures, physical space, partnerships, networks, and equipment that support innovative thinking and testing (Mallock & Porter-O'Grady, 2009). The literature distinguishes different stages in the innovation process which suggests that for organizations to succeed in the development of innovations, they must initially foster an organizational climate that is oriented toward innovation, and open to changes (Van de Ven,

1986). Thus, many authors use the term "innovativeness" to refer to organizational cultures that encourage the acceptance of changes and new routines, the assumption of a certain degree of risk, and the identification of internal and external opportunities (Hurley & Hult, 1998; Tajeddini, 2010).

Size. Literature suggests that generally large firms are assumed to have more financial and human resources to adopt sustainability practices (Le et al., 2006). Sponseller (2015) also pointed out that leaders of many small companies believe innovation is just for big companies that employ scientists and have large research and development departments. Stating that this is probably a false belief, Sponseller (2015) reminded us of Richard Branson who has said, "small businesses are nimble and bold and can often teach much larger companies a thing or two about innovations that can change entire industries." Moreover, the same author (2015) offers a list of five ways small companies can innovate better than much larger organizations, including speed of execution (small businesses can position themselves to make decisions quickly, allowing them to be first to market with innovative ideas), fast access to business resources (a smaller company is able to temporarily reallocate significant resources to the innovative idea that is critical to the growth of the company), team environment (small businesses can develop a team culture that encourages everyone to get involved in the innovation process more easily); company-wide innovation support (to successfully cultivate a team of people who are actively identifying and developing innovative ideas, a company's leaders must openly support innovation activities), and measure innovation (start measuring and emphasizing innovation to stress the importance of creative thinking to everyone in the organization). Thus, it can be implied that more research on the role of a company's size in regards to sustainability is necessary.

Financial Structure. The third main component from the characteristics of the adopter is the financial structure of the organization. It is often found that sustainability policies and practices are adopted easier among private firms as public companies have their first priority of bringing maximum financial return to its stakeholders, everything else comes second (personal communication, December 18, 2014). On the other hand, Shai Bernstein of Stanford University compared companies that went public with similar companies that stayed private. His report revealed that when companies went public the quality of internal innovation declined and firms experienced both a decrease in the number of skilled inventors as well as decline in the productivity of the remaining inventors. However, Bernstein also found that public firms could more easily attract new human capital and acquire external innovations. In terms of companies' financial structure and sustainability in particular, Mazzacurati (2013), providing highlights from the CERES 2013 conference, revealed that the three key drivers for private equity firms to engage their portfolio companies on sustainability issues are competitiveness (private equity firms are very competitive and seeing that one of their peers is engaging and performing on the issue really helps get the other companies on board), operational improvement and cost savings, and the fact that institutional investors are putting pressure on private equity companies to pay more attention to sustainability. It was also pointed out that in a context where competition for capital is stiff, having a good sustainability strategy to show for could be a decisive advantage for a private equity company in securing support from large investors (Mazzacurati, 2013).

Conclusion

New environmental regulations, along with increasing demands from diverse stakeholders, such as customers or non-profit organizations, have increased firms' interest in

reducing their ecological footprint (Sharma & Vredenburg, 1998). However, not all

organizations have reacted in a similar way. Managerial approaches toward environmental issues

are heterogeneous because they depend on many determinants, such as managerial values,

organizational resources, or market and industry conditions (Aragon-Correa & Sharma, 2003;

Delmas et al., 2011). Lozano (2013) states that internally, one of the main drivers in large

corporations has been ethical leadership (Szekely & Knirsch, 2005), as well as risk management

and protection of business reputation (Lantos, 2001), improvements in economic values (Lantos,

2001), and enhancements in corporate image (Frehs, 2003). Moreover, a shift in business models

and leadership strategies is necessary. Organizations dominated by control, compliance, and

compartmentalization (the three Cs) will be outpaced by organizations that focus on ideas,

information, and interaction (the three Is); this new mindset should be predicated on continuous

change, has global orientation, is customer driven, and subscribed to authoritative (respect-

based) leadership (Kets de Vries, 2009). The same author (2009) offers a list of characteristics

pertinent to successful business organizations in any industry. Those include a focused portfolio,

sensitive to the environment they operate in (especially to subtle shifts in customer demands),

have a strong company (learning) culture and employ systems thinking, have leaders in

mentoring and coaching roles, foster upbeat employee morale, and last but not least, are

characterized by constant innovation. A few of those characteristics are explored in this study.

Trends in the industry show that tourism will continue to grow (WTO, 2016). With the

growing benefits for tourists, local residents and economies, a number of negative aspects related

to harm on the environment, cultures, and more also exist. One way to address these problems is

through innovations and changes at a corporate level (CS), also contributing to global

sustainability. By presenting the relationship between diffusion of innovation variables and

sustainability as an innovation, this research is to fill a conceptual and theoretical gap related to these topics. The hope for this study is that ski resort managers can gain a better understanding of the factors affecting the long-term success and sustainability of their businesses, which can also offer ideas for leaders from other industries and organizations. The next chapter describes the reasoning for the methodological approach I used and the processes I followed to operationalize the framework in this study.

CHAPTER III

METHODOLOGY

This chapter provides an overview of the methods used in this study. A brief overview of each of the research methodology used is provided, followed by a discussion of how those methods have been applied in the study.

The choice of a framework to address the research questions is based on several criteria including the type of questions asked, the amount of control the researcher has over actual events at the time of the study and whether the research focuses on contemporary or historical events (Creswell, 2003). For this study, I utilized mixed research methods to explore drivers and barriers to the diffusion of sustainability innovations among Colorado ski resorts. I drew ideas and insight from qualitative and quantitative approaches to represent various views on sustainability in the ski industry. The choice of methods is directed by the objectives of the research, especially the types of generalizations the researcher wishes to make (Glesne, 2011). I used a case study approach with mixed methods due to the need to investigate the phenomenon in a particular socio-cultural and institutional context. I approached the study through an interpretivist paradigm, portraying reality as socially constructed, complex, and ever-changing (Glesne, 2011). The main concept of the study – sustainability (as an innovation) is very complex, understood and measured in many different ways, depending on the context of the study and researcher and participant background (socially-constructed), and is certainly dynamic. The factors affecting sustainability of an organization are even more so ever-changing, possibly consistent with changes in consumer needs, company strategies, and government policies and regulations, among others.

For data collection, I employed two main methods - in-depth semi-structured interviews and survey questionnaires in an attempt to gain a broad understanding of the phenomenon with the time and resources allotted for the research. In this chapter, I begin with a brief background of qualitative, quantitative, and mixed-method research, while also situating them in a tourism context. I introduce the methodological framework of the study – case study research, and the utilized data collection methods (interviews and surveys), and discuss how my methods for data analysis and written representation of the data collected were chosen. A section on data analysis outlines the process of how I converted the data collected into written representation. I also discuss issues associated with validity and reliability of the findings, including trustworthiness, credibility, and generalizability in mixed-methods research.

Research Design and Rationale

I have chosen to utilize mixed-methods research, including both - qualitative and quantitative methods due to the complexity of the topic of sustainability, the need to access personal perspectives and opinions, yet also capture perceptions of a wide audience as an attempt to contribute to theory and practice. Moreover, it is with hopes that utilizing mixed research methods may provide a better understanding of the research problem, deliver more comprehensive findings and increased confidence in results, increased conclusion validity, and more insightful understanding of the underlying phenomenon of sustainability (Johnson & Christensen, 2004).

Qualitative Research

Dictionaries define research as a careful and diligent search. Qualitative researchers study things in their natural settings and attempt to "make sense of, or interpret, phenomena in terms of

the meanings people bring to them" (Denzin & Lincoln, 2005, p. 2). Research informed by a qualitative methodology has a research design that is study-specific and the data collected by a qualitative method is represented as textual units rather than numeric representations. Data analysis focuses on eliciting key themes and ideas associated with the participants being studied. The representation of the findings is usually in narrative form (Jennings, 2001). Qualitative research is generally multi- and inter-disciplinary and cuts across philosophical boundaries. It employs a wide variety of interconnected empirical methods attempting to make meaning of people's experiences in order to better understand the phenomena of interest to the researcher (Denzin & Lincoln, 2005).

Another important point in the research process concerns the philosophical paradigm of the researcher. A paradigm is "a framework or philosophy of science that makes assumptions about the nature of reality and truth, the kinds of questions to explore, and how to go about doing so" (Glesne, 2011, p. 5). The two opposing paradigms have been described as positivists and constructivists, with the constructivist paradigm advocating qualitative methods and the positivist paradigm supporting quantitative research methods (Tashakkori & Teddlie, 1998). The constructivist paradigm rests on the philosophical assumption that "knowledge is in the meanings people make of it," and "is gained through people talking about their meanings" (Creswell, 1998, p. 19). On the other hand, the positivist paradigm assumes that the world is external and objective and the researcher should focus on facts and look for causality, and preferred research methods should reduce phenomena to measurable operationalizations (Mangan, Lalwani, & Gardner, 2004). In the paradigm debates, these two world views were described as incommensurable (Golicic & Davis, 2012). Glesne (2011) further classifies the main "higher-level" theories and philosophies that guide the work of social scientists into four groups:

positivisms, interpretivism, critical theory, and poststructuralism. It is also pointed out that those

four are not rigid categories, they are rather fluid and not strictly defined. Those who work

within the positivism paradigm believe in "fixed reality" external to people that can be measured

and apprehended to some degree of accuracy (generally data collected is reduced to numerical

indices and quantifiable information analyzed statistically). The interpretivist approach portrays

a world in which reality is socially-constructed, complex, and dynamic – ever changing; the

study design tends to focus on in-depth, long-term interactions with relevant people. Researchers

embracing the critical theory paradigm go beyond describing "what is," to "what could be,"

believing that life is a 'virtual reality shaped by social, political, cultural, economic, ethnic, and

gender values crystallized over time" (Lincoln & Guba, 2000, p. 168). Lastly, poststructuralism

"does not allow us to place the blame elsewhere, outside our own daily activities, but demands

that we examine our own complicity in the maintenance of social injustice" (St. Pierre, 2000, p.

484 as cited in Glesne, 2011). Although the various paradigms are not strictly-defined and there

is no agreement among social scientists how many paradigms are out there and how associated

methodologies should be divided, every researcher should figure out what philosophical and

theoretical perspectives inform their work (Glesne, 2011).

In regards to qualitative research in the tourism sector, although qualitative research has

undergone incredible advancement in fields such as sociology, anthropology, and education over

the past few decades, tourism researchers only began to question the shortcomings of a

quantitative approach in the field since the 1990s (e.g. Hollinshead, 1996; Riley, 1996; Walle,

1997). In an analysis of articles published in twelve peer reviewed tourism research journals

from 1994 to 2004, 59 percent of the articles took a quantitative approach. Only nineteen percent

took a qualitative research approach (Ballantyne, Packer, & Axelson, 2009). The remainder of

the articles took a mixed methods approach or were theoretical or review based. Yet, in a more recent content analysis of papers published in the Journal of Sustainable Tourism over 10 years (2004-2014) Molina-Azorin and Font (2015) found that qualitative articles had a slight dominance among the empirical studies published in the journal (46 % qualitative, 40 % - quantitative, and 14 % mixed-methods). Thus, it can be argued that the application of qualitative research methods in tourism is growing.

One general concern in regards to qualitative research methods is its validity. Guhn, Zumbo, Janus, and Hertzman (2011) explain that validation is a process that is shaped by the (social) context in which a measure is used, by the purposes for which it is used, and by the theoretical or conceptual framework within which it is used. Moreover, validity is not the property of a measure, but of the interpretations, explanations, decisions, and consequences that are being made. While validity in quantitative research can be described in terms of the overall validity of the study and the validity of the measurement (Vaske, 2008), one way to ensure validity in qualitative research can be achieved through triangulation (Decrop, 1999). "Triangulation means looking at the same phenomenon, or research question, from more than one source of data" (Decrop, 1999, p. 158). Moreover, triangulation limits personal and methodological biases and increases generalizability (Decrop, 1999). Denzin (1978) proposes four types of triangulation: data, methods, investigators and theoretical triangulation. For data triangulation, multiple data sources are proposed as well as keeping field notes. Multidisciplinary approach is one way to address theoretical triangulation. Method triangulation suggests the use of multiple methods to overcome their individual weaknesses. To warrant method triangulation, this study utilized both qualitative and quantitative research methods.

Quantitative Research

Quantitative research involves the scientific investigation of quantitative properties and phenomena and their associated relationships. Falling within the positivist paradigm, quantitative methodology closely follows the scientific methods involving objectivity, reliability, validity representation, generalization; it is both deductive and inductive (Vaske, 2008). The objective of quantitative research is to develop and utilize mathematical models, theories, and/or hypotheses that pertain to the phenomena under investigation (Creswell, 2003). Survey research is a predominant method used in quantitative studies in the social sciences and is also widely used in the human dimensions of natural resources and tourism studies. Data from survey questionnaires can be collected onsite, over the telephone, and online (see Vaske, 2008 for a complete overview of survey methodology). Quantitative techniques involve numbers and generally the information collected and conclusions drawn are subject to statistical analysis.

Mixed Methods Research

Mixed methods research (the combination of qualitative and quantitative methods within a single study) has developed rapidly in recent years (Denscombe, 2008). This approach is becoming increasingly articulated as the third methodological movement, alongside each of its component methods, qualitative and quantitative research (Tashakkori & Teddlie, 2003). Mixed methods research combines qualitative and quantitative data collection and data analysis within a single study (Johnson & Onwuegbuzie, 2004; Plano Clark, 2005; Teddlie & Tashakkori, 2003 as cited in Molina Azorin 2012). While some (e.g. Johnson & Onwuegbuzie, 2004) argue that a key feature of mixed methods research is its methodological pluralism, which frequently results in superior research compared with that of mono method designs, others point out that mixed

methods research is not intrinsically superior to research that relies on a single method (Molina-Azorin & Font, 2015). Nevertheless, the overall purpose and central premise of mixed methods is that the use of quantitative and qualitative approaches in combination may provide a better understanding of research problems than either approach alone (Creswell & Plano Clark, 2007). Although there is a conventional idea that mixed methods papers are desirable to do and valuable, we do not know if they really have a greater impact.

Teddlie and Tashakkori (2003) pointed out that a major advantage of mixed methods research is that it enables the researcher to simultaneously generate and verify theory in the same study. Additionally, mixed methods research provides stronger inferences and in some cases using mixed methods can offset the disadvantages that certain methods have by themselves. Some other potential benefits of mixed methods research include more comprehensive findings, increased confidence in results, increased conclusion validity, and more insightful understanding of the underlying phenomenon (Johnson & Christensen, 2004). Moreover, mixed methods studies have several purposes that can also be considered as advantages of this approach (Creswell & Plano Clark, 2007; Greene, Caracelli, &Graham., 1989; Tashakkori & Teddlie, 1998): triangulation (seeking convergence and corroboration of findings from different methods that examine the same phenomenon), development (using the results from one method to help develop or inform the other method), expansion (using different methods to assess different facets of a phenomenon, yielding an enriched, elaborated understanding of that phenomenon), and complementarity (clarifying, enhancing, or illustrating the results from one method with the results from the other method) (Molina-Azorin & Font, 2015). Johnson and Turner (2003) highlight that the fundamental principle of mixed methods research is that methods should be mixed in a way that have complementary strengths and non-overlapping weaknesses (Molina-

Azorin, 2012). Moreover**,** Hollinshead and Jamal (2007) suggest that mixed-methods approaches provide a "fuller field of vision" than the traditional singular lines of inquiry.

The value of mixed methods approaches, particularly in the tourism field, was highlighted almost fifteen years ago by Oppermann (2000), who stated that: "Tourism is strategically placed at the interface of so many disciplines that inherently tourism is an interdisciplinary field. This should stimulate interdisciplinary approaches using multiple methods as well as using different data sets and investigators in the quest for truth" (p.145) (McGehee, Boley, Hallo, McGee, Norman, Oh, & Goetcheus, 2013). Similarly, when discussing the application of mixed-methods in the field of sustainable tourism more specifically, Molina-Azorin and Font (2015) pointed out that mixed methods were a good choice for sustainability studies by encouraging teamwork, ideally cross-disciplinary, which facilitated reflection and the advancement of ideas. In summary, the overall purpose and central premise of mixed methods studies is that the use of quantitative and qualitative approaches in combination may provide a better understanding of research problems and complex phenomena than either approach alone provides (Creswell & Plano Clark, 2007; Johnson & Onwuegbuzie, 2004), incorporating the strengths of both methodologies and reducing some of the problems associated with singular methods (Molina-Azorin & Font, 2015).

Nevertheless, while a number of advantages of using mixed-methods in tourism studies in particular have been identified, in a content analysis of the Journal of Sustainable Tourism conducted by Lu and Nepal (2009) between 1995 and 2007 and a review of tourism articles in twelve key journals between 1994 and 2005 (Ballantyne, Packer, & Axelsen, 2009), both found that only six percent of the papers utilized mixed methods approaches (McGehee et al., 2013). Similarly, Puhakka, Cottrell, and Siikamäki (2013) pointed out that while mixed methods

represent a step forward in the evolution of research methodology as it combines the strengths of both approaches (Creswell, 2009), a gap in its usage in tourism research exists (Decrop, 1999). However, the use of mixed methods in tourism research might be growing. In a content analysis of empirical studies published in the Journal of Sustainable Tourism Molina-Azorin & Font (2015) found that fourteen percent of the papers published in the journal utilized mixed-method approaches. Yet, there remains a general perception that mixed methods studies are rarely put into practice in tourism (McGehee et al., 2013). Thus, the advancement of tourism research requires improved understanding of the application of a variety of research methods. In this regard, mixed methods research may play an important role in the use of diverse methods. Mixed methods research shows great promise, but only if researchers understand the purposes and design options of this methodological choice (Molina-Azorin & Font, 2015).

Case Study

Yin (1994, p. 13) proposes: that case study research is "an empirical inquiry that investigates a contemporary phenomenon within its real life context." The phenomenon I studied – (corporate) sustainability, has gained growing attention over the past several years, not only in the global corporate sector, but also in the tourism sector specifically. There are three major types of case study designs – exploratory, explanatory, and descriptive (Yin, 2003). The exploratory design seeks to define research questions of a subsequent study or to determine the feasibility or research procedures. Hancook and Algozzine (2011) point out that those designs are often a prelude to additional research efforts. The explanatory designs on the other hand, seek to establish cause-and-effect relationships. Their primary purpose is to determine how the events occur and which ones of them might influence the outcomes. Lastly, the descriptive designs attempt to present a complete description of a phenomenon within its context (Yin, 2003). Thus,

I deem this study explanatory in nature as I look for relationships between the DoI variables and sustainability - understanding what factors affect sustainability as an innovation in the ski resort industry specifically. Yet, I was also interested in verifying DoI theory and its applicability in a tourism context. Stake (1995) suggested that case study research designs can be also classified as intrinsic, instrumental, and collective. While the intrinsic case study focuses on knowing more about a particular individual, group, or organization, the goal of the instrumental case study is to better understand a theoretical question or problem. Lastly, the collective case study research attempts to address an issue while also adding to the literature base in an attempt to better conceptualize a theory (Hancook and Algozzine, 2011). Hence, the current study is collective in nature – addressing the contemporary phenomenon of sustainability of the ski industry, diversifying across its four dimensions, while also adding to the literature and applications of DoI theory.

Interview

An interview is an interaction between two (or more) individuals, where an inter change of views about a theme of mutual interest is taking place, and knowledge is constructed (Kvale & Brinkmann, 2009). A qualitative research interview seeks to cover both a factual and a meaning understanding of the study phenomenon. Kvale & Brinkmann (2009) offer a list of characteristics of qualitative interviews. First, qualitative interviews seek qualitative knowledge as expressed in normal language; not aiming at quantification. Second, the qualitative interview is descriptive – the interviewer encourages the subjects to describe as precisely as possible their experiences and ideas. Third, qualitative interviews seek specificity – descriptions of specific situations and actions are elicited, no general opinions. Similarly, the interviewer usually exhibits openness to new ideas, rather than having readymade categories and schemes of interpretation.

Qualitative interviews are also focused on particular theme; yet they are not strictly structured with standard questions, nor are entirely "nondirective." Additionally, the interviewer's answers are often ambiguous, leaving several possibilities for interpretation. Moreover, it is important to keep in mind that the interviewer can give contradictory statements, and/or change their descriptions and attitudes towards a theme. Lastly, the interviewer themselves play a very important role the research process, due to varying levels of knowledge and sensitivity, among others.

Fielding (2003) distinguishes between modes of interviewing and types of interviews. An interview mode is the format in which it is conducted (e.g. face-to-face, telephone, email, online, etc.), while the type is the form of organization (e.g. structured, semi-structured, unstructured) (Gibson & Brown, 2009). Structured interviews involve formulating the precise questions to be asked prior to interviews, including the order in which they are asked, and potentially even the wording of the questions. Semi-structured interviews, on the other hand, involve specifying the key themes of the interview which are then formulated as key questions. With this type of interviewing researchers are more flexible in the way the interview schedule is used. Lastly, the unstructured interviews involve asking questions without any or with very little preparation of the topical concerns of the interview. This approach is often used in long-term ethnographic research or as a form of pilot to try to find out what might be of interest in a given setting (Gobson & Brown, 2009).

Interviews are often applied in case studies, which focus on a specific person, situation, or institution. Interviews can also serve as an auxiliary method in conjunction with other methods (Kvale & Brinkmann, 2009). Hancook and Algozzine (2011) argue that semi-structured interviews are particularly well suited for case study research as the researcher asks

predetermined but flexibly worded questions; allowing for follow-up clarifying questions. The same authors (2011) also stress that the most important consideration in this phase is identifying persons in the research setting who may have the best information with which to address the study's research questions. Therefore, sustainability managers from the studied corporations were identified as interviewees. Yet, conducting interviews with leaders or experts in certain communities brings a number of challenges. It is important to consider that obtaining access to the interviewees is a key problem. Additionally, as most elites are used to being interviewed, they may have prepared "talk tracks" to promote the viewpoints they want to communicate, which requires considerable skill from the interviewer to get beyond (Kvale & Brinkmann, 2009).

Survey

Surveys are a method for gathering information from individuals. Survey researchers typically have more than one goal for conducting a study (e.g. exploration, description, explanation). Exploratory surveys are utilized when the researcher does not have a basic understanding of the topic-related concerns for the individuals in the population, and when the researcher is interested in exploring the feasibility of a larger study, or wants to develop a methodology that is broader in scope (Vaske, 2008). Descriptive surveys on the other hand, seek to describe the characteristics and reported behavior of a sample or population of individuals. Lastly, explanatory surveys address the question of why things happen and are undertaken to identify possible causal variables of a given situation, thus contributing to understanding (Vaske, 2008).

The design of a survey research project generally involves three major sequential steps. First, the researcher specifies the questions or hypotheses that will be examined. Second, the

methodology for the survey is defined (concepts and variables to be included, variables measurement, survey method selection, sampling design). Finally, once the survey has been collected, the information is analyzed via statistical procedures and software (Vaske, 2008).

Survey research has a number of advantages and disadvantages. In regards to benefits of using surveys – they are useful for describing characteristics of a larger population in a relatively short period of time. Moreover, they use standardized questions, so comparisons among groups can be facilitated and numerous questions can be asked in a single survey. Yet, on the negative side – survey research requires that all questions must be understandable to all potential respondents as questionnaires are not flexible. Additionally, surveys research sometimes may seem artificial to respondents and may not always provide data that is within the context of social life (Vaske, 2008).

Similarly, the various types of surveys offer advantages and disadvantages to the research. While on-site surveys offer control of the survey, including success with screening and open-ended questions, their allowable length to complete is shorter, and the cost is relatively high. Mail surveys on the other hand, allow longer time for survey completion, and are more cost-effective, yet they have lower success rates with open-ended questions, and data collection takes a longer time. Similarly, telephone surveys have high success with open ended and screening questions, and control of the survey once developed, but do not allow for more complex questions to be asked and have relatively low response rates (Vaske, 2008). Finally, online surveys are gaining popularity in recent years and that trend will likely continue in the future (Vaske, Jacobs, Sijitsma, & Beamani, 2011). While online surveys allow relatively high complexity of the questionnaire, and have a low cost, representativeness and low response rates are key concerns for this type of survey research (Vaske, 2008).

Data Collection

      Interviews. Hancook and Algozzine (2011) argue that the most important consideration in this phase is identifying persons in the research setting who may have the best information with which to address the study's research questions. Considering the complexity of the sustainability idea, I wanted to speak with people who have professional knowledge on the subject. Thus, ski resort managers holding sustainability-related positions were selected as interviewees. They were identified and recruited from public records (position and contact information from each ski resort website). If no contact information of a sustainability manager was available, I contacted human resources or other contact person who would then refer me to the appropriate person. Although, not every resort has a specific position on sustainability, all of the resorts who agreed to participate were able to refer me to at least one individual whose job responsibilities were related to sustainability of the ski resort. Thus, eight semi-structured interviews with individuals holding positions related to sustainability were conducted. The six companies those eight individuals work for manage twelve ski areas in Colorado (out of twenty-five ski areas in total). In order to better understand managers' perspectives on diffusion of sustainability innovations, it was important to speak with managers from resorts of different sizes and with different financial structures. Therefore, managers from public and private, smaller and larger ski resorts were targeted for the interviews. Table 4.1 (Chapter IV) offers a summary of the characteristics of the participating resorts and interviewees. It is important to point out that due to the non-random sampling techniques (Huberman & Miles, 2002) the sample possesses internal rather than external generalizability.

      The interview schedule addressed topics related to company background information, personal definition of sustainability, company innovations in relation to sustainability,

sustainability integration in the resort (diffusion of sustainability innovations and reasons for it), opportunities and barriers for sustainability, entities/individuals initiating changes towards sustainability, motivation/obstacles for sustainability (internal and external), and ideas on the future of the ski industry and sustainability (see Table 3.2. in Chapter III for sample questions and Appendix C for a full interview protocol and questions). Potential participants were first contacted via e-mail explaining the study and requesting their participation. I contacted twenty out of the twenty-five ski areas in Colorado. About forty percent of them either declined to participate on the grounds that they did not have time, or I was never able to establish contact with them. In most cases, I spoke with one person in the organization (for four out of the six resorts) unless the primary contact wished to include another knowledgeable participant in the interview (e.g., their replacement or someone with whom they worked closely in environmental sustainability matters). While this creates a limitation related to single respondent bias, I was studying participants' perceptions of companies' actions with respect to sustainability. Although interviewing multiple respondents may have yielded additional perceptions, many of the responses were based on reporting actual company activity or policy, which is more objective in nature. Similarly, most ski areas have only one devoted position to sustainability (if any). Thus, data for this study is based on eight semi-structured interviews conducted between November 2014 and January 2015. Interview recordings ranged from 35 to 65 minutes. Three of the interviews were conducted face-to-face while the other five were conducted over the phone.

Surveys. An online survey was used as the instrument for the second phase of this research study. An online survey method was selected in order to reach a larger population of ski resort employees in a relatively short period of time, considering limited time and funding for the research project. Survey questions were developed based on two main sources – 1) DoI theory

and the PoS framework (including empirical studies applying the two frameworks) and 2) key themes identified from the qualitative phase of the project (interviews). The survey included an introductory page describing the objectives of the study, the nature of the questions, its anonymity, as well as providing contact information of the research team members for questions or concerns. Additionally, the survey included demographic questions as a final section, ending with a page thanking the participant. Cognitive interviewing methods (Collins, 2003; Willis, 1999) were utilized for pilot testing the instrument among three individuals (a graduate student and two non-academics). More specifically, the "think-aloud" method was applied where the interviewer reads each question to the subject, and notes the processes that the subject uses in arriving at an answer to the question. The interviewer interjects only to say "tell me what you're thinking" when the subject pauses (Collins, 2003). The advantages of this method include freedom from interviewer-imposed bias because the interviewer contributes little other than the reading of the survey question. Similarly because the subject's response is guided very minimally, she may provide information that is unanticipated by the interviewer. Hence, Collins (2003) argues that cognitive testing should be a standard part of the development process of any survey instrument. After the pilot testing, two questions were removed from the survey and four questions were reworded to address pilot test participants' comments.

In regards to the participants in the survey phase, literature suggests that the effectiveness of planned change is often related to the participation of members, at all levels of an organization, in assessing and diagnosing needed changes, and in formulating its goals and objectives (Benne and Birnbaum, 1969 as cited in Lozano, 2013). It is argued that corporate responsibility can be managed through compliance alone, yet companies achieve much greater success if they foster a strong commitment from staff (Lyon, 2004). Thus, participants in the

survey were a sample of all employees from five Colorado ski resorts. Participants accessed the survey online through Survey Monkey.com between March 2015 and May 2015. A web link to the survey instrument was sent to a contact person (manager) at each of the resorts who then sent out the survey link to the resort's employees. After the survey had been sent, the contact person provided the research team with an approximate number of email accounts the survey was sent to (allowing calculation of the approximate study response rate). The respondents held varying positions, including both – full-time and part-time employees, front-line staff (24 %), as well as supervisors (19 %), managers (25 %) and directors (7 %) from various departments at the ski resorts, including operations (53 %) and administration (46 %). Twenty-two percent of the participants were seasonal employees, while 78 percent were full-time (year around) employees. Forty-seven percent of the respondents were male and 53 percent female. Their age varied from early twenties to seventies. Fourteen percent of the respondents have worked for their company for less than one year, 21 percent for one to three years, sixteen percent for four to five years, fifteen percent for six to ten years, 34 percent for more than ten years. The majority of the survey participants held a four-year college degree (56 %) or an advanced degree (e.g. Master's or PhD) (16 %), followed by a two-year degree college (e.g. Associate's degree) (15 %), and a high-school diploma or GED (13 %).

The study sample consisted of 322 respondents from five ski areas in Colorado with an approximate response rate of fifteen percent. Yet, 58 of the respondents did not complete all questions of the survey. As a result, the number of responses included in the analyses dropped to 264, with an approximate response rate of twelve percent. The five companies included in this study own and manage twelve of the twenty-five ski areas in Colorado. Thus, it can be argued that the survey participants represent a convenience sample of about fifty percent of the

employees of Colorado ski resorts. The number of participants for each of the ski areas varied. All survey responses were anonymous – the research team did not have any information about the respondents besides information from their survey responses. All survey responses were recorded on Survey Monkey software and then downloaded into SPSS files.

Measures

Several indices and modified measures from previously published literature were developed to test the predictive power of DoI variables on ski resorts' sustainability. Four sustainability indices representing environmental, socio-cultural, institutional, and economic sustainability were created. Similarly, several scales were created to measure three of the DoI variables. The majority of the indices were based on a seven-point Likert-type scale (strongly disagree to strongly agree). All indices were constructed through a combination of exploratory factor analysis and reliability analysis to ensure and create optimally reliable scales. Cronbach's alpha coefficient was used to determine the internal consistency of the measurement scale items used to operationalize the constructs. Principal components factor analysis results are presented in Table 3.1. Table 3.2., Table 3.3, and Table 3.4.

Table 3.1.
Characteristics of the Innovation Factor Analysis Results

Scale/Item*	Factor 1	Factor 2	Factor 3	Cronbach's Alpha
Complexity				0.598
Sustainability is difficult to implement in everyday operations			0.786	
It is difficult to measure sustainability progress			0.725	
Relative Advantage				0.825
Sustainability will add market advantage to my resort	0.829			
…will improve guest satisfaction	0.829			
…will improve employee satisfaction	0.837			
will bring financial savings	0.663			
Compatibility				0.88
Sustainability practices are compatible with existing employees practices		0.827		
...with existing company culture		0.896		
…with existing organizational structure		0.888		
Triability				
Before deciding to adopt sustainability, the resort would need to test…			0.620	
Observability				
The company is able to forecast the overall effects of sustainability practices	0.401			
Eigenvalue	3.89	1.57	1.39	
Percent of Total Variance	35.4	14.33	12.65	

*Complexity scale adopted from Le et al, 2006; McCabe, 1987; Smerecnik & Andersen, 2011; Relative advantage scale adopted from Smerecnik and Andersen, 2011; Compatibility scale adopted from Kocis, 1986; Le et al, 2006; Smerecnik & Andersen, 2011; Trialability and Observability items adopted from Le et al, 2006; McCabe, 1987; Moore & Benbasat, 1991; Smerecnik & Andersen, 2011.

Table 3.2.

Characteristics of the External Environment Factor Analysis Results

Scale/Item*	Factor 1	Cronbach's Alpha
Competitors		.532
Colorado ski resorts are highly competitive in terms of adopting sustainability practices	0.764	
Other resorts are "pushing" my company to adopt sustainability initiatives	0.658	
Customers		N/A
Guests are looking for sustainability practices when selecting a resort	0.437	
Government Regulations		N/A
Regulations concerning sustainability have become stricter in the last 5 years	0.630	

*Scale and items adopted from Le et al, 2006 and Smerecnik & Andersen, 2011.

Table 3.3.

Innovativeness Factor Analysis Results

Scale/Item	Factor 1 Innovativeness	Cronbach's Alpha
Innovativeness		.927
My resort leads the way in adopting sustainability initiatives	0.916	
My resort tries to adopt practices that go beyond regulatory requirements	0.831	
My resort has a leadership team which is proactive in terms of adopting sustainability initiatives	0.881	
My resort is likely to be consulted by other resorts regarding sustainability practices	0.889	
My resort will often adopt new sustainability practices before other resorts in the industry	0.883	

Table 3.4.
Sustainability Scales Reliability Analysis Results

Scale/Item*	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Cronbach's Alpha
Economic Sustainability						0.862
My resort brings income to the local economy	0.828					
…creates job opportunities for local people	0.865					
…creates markets for local products	0.669					
…is a strong economic contributor to the local community	0.835					
…creates more jobs for women and minorities	0.665					
…supports maintenance of local museums, sights, events	0.598					
Institutional Sustainability						0.79
…has written CSR policy/report				0.766		
…creates an environmental impact assessment report annually				0.477		
…sends representatives to sustainability-related conferences			0.466			
…communicates about sustainability through employee training		0.618				
…communicates about sustainability through staff meetings		0.759				
…communicates about sustainability through emails		0.796				
…communicates about sustainability through events		0.738				
Socio-Cultural Sustainability						0.873
…educates guests about sustainability			0.607			
…positively influences cultural values in the area			0.522			
…encourages its employees to recycle			0.628			
…allows its employees to participate in decision-making			0.583			
Environmental Sustainability						0.785
…is taking measures to minimize pollution				0.574		
…puts efforts in maintaining local habitat				0.467		
…invests in sustainable technology/processes				0.62		
…purchases products that reduce environmental impacts			0.721			
…offsets its CO_2 emissions				0.737		
Eigenvalue	8.51	2.51	1.6	1.2	1.1	
Percent of Total Variance	35.5	10.5	6.66	5.01	4.57	

* Scales adopted from Cottrell, Vaske, and Roemer, 2013; Cottrell & Cutumisu, 2006; Cottrell & Vaske, 2006; Cottrell, Vaske, & Shen, 2007; Cottrell & Raadik, 2008; Cottrell, & Siikamäki, 2009; Le et al., 2006; Puhakka, Sarkki, Shen & Cottrell, 2008; Shen, Cottrell, Morrison, & Hughey, 2009; Smerecnik & Andersen, 2011.

The first exploratory first factor analysis confirmed the operationalized variables that measure the innovation characteristics with three factors emerging from the varimax rotation. These explained 62 percent of the total variance. Most loaded in a pattern consistent with the study's theoretical assumptions. For example, all indicators related to benefits from sustainability innovations loaded on factor one, which represents the relative advantage of innovation characteristics, as shown in Table 3.1. The Kaiser-Meyer-Olkin measure of sampling adequacy was .80, above the commonly recommended value of .5 (Hinton, McMurray, & Brownlow, 2014), and Bartlett's test of sphericity was significant with $p < .001$. Finally, the communalities were all above .4 further confirming that each item shared some common variance with other items. Yet, two items were separated from factor one and three respectively, as the two items conceptually represented two additional characteristics of the innovation - trialability and observability (measured through one questionnaire item each) as per Roger's DoI theory. Additionally, the reliability of the scales improved as those two items were removed from the two factor groups.

Secondly, Table 3.2 reveals the principal components factor analysis for the variables from the external environment. Varimax rotation revealed only one factor, consistent with the theory that all of the items relate the external environment of the ski resort. The four items had an Eigen value of 89.6, indicating that they explained almost ninety percent of the variance. The Kaiser-Meyer-Olkin measure of sampling adequacy was .589 and Bartlett's test of sphericity was significant at $p < .001$. The communalities were also all above .4. Nevertheless, the four items were divided into three variables as conceptually they represented three separate entities from the external environment – competitors, customers and government regulations (measured through one questionnaire item each). Those items were also measured separately in other empirical

studies (e.g. Le et al., 2006; Smerecnik & Andersen, 2011). Additionally, once again, the reliability of the competitors scale improved as the other two items were removed.

To explore and confirm the communality between the items in the last component of the conceptual framework of the study – innovativeness as a characteristic of the adopter (ski resort), I conducted principal component factor analysis on those five times. Table 3.3 reveals that based on Varimax rotation all items loaded on one single factor, consistent with the conceptual framework of the study. The five items had an Eigen value explained 78 percent of the variance. The Kaiser-Meyer-Olkin measure of sampling adequacy was .895 and Bartlett's test of sphericity was significant at $p < .001$. Additionally, the communalities were all above .4. Two variables, ski resort size and financial structure, which are also characteristics of the adopter as per the study conceptual framework, are not included in Table 4 because they were not measured by scale items but by other proxies.

The last (fourth) factor analysis was used to determine the operationalized variables that represent the construct of sustainability. Varimax rotation revealed five factors that were consistent with the theoretical construct (except the institutional dimension was split into two factors) and explained 67 percent of total variance. For example, all items concerning economic effects loaded on factor one representing the economic dimension of sustainability. The other factors were also consistent with the theoretical framework. The Kaiser-Meyer-Olkin measure of sampling adequacy was .91 and Bartlett's test of sphericity was significant at $p < .001$. Similarly, the communalities were all above .4. The two factors representing the institutional dimension were combined in one scale, adding one item (sends representatives to sustainability-related conferences) from factor four (environmental sustainability). Additionally, one item from factor three (the resort purchases products that reduce environmental impact) was moved into the scale

for Factor one (environmental sustainability). The changes were made as the items made sense conceptually and had a higher reliability score in the new factor groups. Several items had a cross-loading above .4, however in all cases they had a stronger primary loading.

Consequently, five scales were created to measure the DoI variables. Similarly, four indices were created to measure the four dimensions of sustainability. Internal consistency for each of the scales was examined using Cronbach's alpha. The alphas were from low .532 for Competition (two items) and .598 for Complexity (two items) to high of .927 for Innovativeness (five items). According to Vaske (2006) and DeVellis (1991) Cronbach's coefficient alpha levels below .60 are unacceptable and indicate a problem with the internal consistency of the questionnaire items. Yet, Nunnally (1978) argued that in the early stages of research, reliabilities of .50 to .60 are acceptable. Moreover, previous research had identified complexity (reverse coded simplicity) and competition as strong predictors to sustainability (e.g. Smerecnik & Andersen, 2011). Hence, the indices were deemed important from a theoretical standpoint to be included in the analysis. No substantial increases in alpha for any of the scales could have been achieved by eliminating more items. It is also important to note that due to the non-random sampling techniques (Huberman & Miles, 2002) the sample possesses internal rather than external generalizability.

Table 3.5

Reliability Analysis of Diffusion of Innovation Scales

Domains and Composing Scale Items	Item Total Correlation	Alpha if Item Deleted	Cronbach's Alpha
Characteristics of the Innovation			
Complexity			0.598
Sustainability is difficult to implement in everyday operations	0.427		
It is difficult to measure sustainability progress	0.427		
Relative Advantage			0.833
Sustainability will add market advantage to my resort	0.670	0.770	
…will improve guest satisfaction	0.721	0.748	
...will improve employee satisfaction	0.720	0.752	
...will bring financial savings	0.522	0.847	
Compatibility			0.881
Sustainability practices are compatible with existing employees practices	0.722	0.521	
...with existing company culture	0.787	0.635	
…with existing organizational structure	0.799	0.650	
Observability			
The resort is able to forecast the overall effect related to the adoption of sustainability practices			N/A*
Trialability			
The resort would need to test the adoption on a smaller scale			N/A*
Characteristics of the External Environment			
Competition			0.532
Colorado ski resorts are highly competitive in terms of sustainability	0.362		
Other resorts are "pushing" my resort to adopt sustainable initiatives	0.362		
Customers			
Guests are looking for sustainability practices when selecting a resort			N/A*
Government Regulations			
Regulations concerning sustainability have become stricter in the last five years			N/A*
Characteristics of the Adopter (ski resort)			
Innovativeness			0.927
My resort leads the way in adopting sustainability initiatives	0.861	0.900	
…tries to adopt practices beyond regulatory requirements	0.743	0.923	
…has a leadership team which is proactive about sustainability	0.811	0.910	
…is likely to be consulted by other resorts regarding sustainability	0.821	0.908	
…will often adopt new sustainability practices before other resorts	0.813	0.910	
Size			N/A*
Financial Structure			N/A*

*Items measured by one question only, thus no scale reliability available

Table 3.6.
Reliability Analysis of Sustainability Scales

Domains and Composing Scale Items	Item Total Correlation	Alpha if Item Deleted	Cronbach's Alpha
Environmental Sustainability			0.785
The resort is taking measures to minimize pollution	0.791	0.695	
…puts efforts in maintaining local habitat	0.739	0.715	
…invests in sustainable technology/processes	0.768	0.705	
…purchases products that reduce environmental impacts	0.392	0.819	
…offsets its CO2 emissions	0.298	0.836	
Economic Sustainability			0.862
My resort brings income to the local economy	0.673	0.819	
...creates job opportunities for local people	0.773	0.800	
...creates markets for local products	0.603	0.834	
...is a strong economic contributor to the local community	0.741	0.808	
...creates more jobs for women and minorities	0.564	0.841	
...supports maintenance of local museums, sights, events	0.538	0.842	
Socio-Cultural Sustainability			0.873
My resort educates guests about sustainability	0.725	0.831	
...positively influences cultural values in the area	0.809	0.803	
...encourages its employees to recycle	0.669	0.852	
...allows its employees to participate in decision-making	0.706	0.844	
Institutional Sustainability			0.790
Has written CSR policy/report	0.267	0.785	
Creates an environmental impact assessment report annually	0.417	0.773	
Sends representatives to sustainability-related conferences	0.458	0.769	
Communicates about sustainability through employee training	0.580	0.731	
Communicates about sustainability through staff meetings	0.641	0.724	
Communicates about sustainability through emails	0.639	0.717	
Communicates about sustainability through events	0.683	0.704	

Sustainability. Sustainability, as a dependent variable in this study, is measured through its four components as per the PoS framework (Spangenberg & Valentin, 1999). Those include environmental, socio-cultural, institutional, and economic dimensions. The environmental sustainability measure (α = .785) was assessed from responses to five questions. The socio-cultural dimension of sustainability was represented by four items (α = .873). Similarly, the institutional sustainability scale included seven items (α = .862). Lastly, six items were combined to measure the economic dimension of sustainability (α = .862). The items in the indices were adopted from previous literature studying local perceptions of sustainable tourism development and predictors of sustainability (e.g. Cottrell, Vaske, and Roemer, 2013; Cottrell & Cutumisu, 2006; Cottrell & Vaske, 2006; Cottrell, Vaske, & Shen, 2007; Cottrell & Raadik, 2008; Cottrell, & Siikamäki, 2009; Le et al., 2006; Puhakka, Sarkki, Shen & Cottrell, 2008; Shen, Cottrell, Morrison, & Hughey, 2009; Smerecnik & Andersen, 2011).

Diffusion of innovation. The Diffusion of Innovation variables are grouped into three main categories – characteristics of the innovation (sustainability), characteristics of the external environment, and characteristics of the adopter. The first variable from the DoI measures in the characteristics of the innovation group is complexity. It is measured through a scale including two items (α = .598), which were adopted from previous literature (Le et al, 2006; McCabe, 1987; Smerecnik & Andersen, 2011).

The second characteristic of the innovation - relative advantage was also measured through a scale, consisting of four questions with a reliability of .833 (survey items adopted from Smerecnik and Andersen, 2011). The compatibility index included three items from previous literature (Kocis, 1986; Le et al, 2006; Smerecnik & Andersen, 2011) with Cronbach's alpha of .881. The last two characteristics of the innovation as per the conceptual model of the study and

Roger's (2003) theory are trialability and observability. These characteristics were measured by one questionnaire item each (Le et al, 2006; McCabe, 1987; Moore & Benbasat, 1991; Smerecnik & Andersen, 2011).

The second component in the model concerns the characteristics of the external environment. Those include competitors, customers (guests), and government regulations. The perceived competition scale consists of two items (α = .532), while the role of the customers and government regulations is measured through a single questionnaire item for each. Questions for this measure were adopted from previous studies measuring likelihood to adopt sustainability practices (Le et al., 2006).

Lastly, the characteristics of the adopter (ski resort organization) include innovativeness, size (measured in terms of employees number), and financial structure (public or private). I define a public company as "a limited company whose shares may be purchased by the public and traded freely on the open market," while a private company is "a limited company that does not issue shares for public subscription and whose owners do not enjoy an unrestricted right to transfer their shareholdings" (Collins English Dictionary, 2015, n.p.). Resorts' innovativeness was measured through a scale consisting of five items (α = .532). The questionnaire items were adopted from Le et al. (2007) and Smerecnik and Andersen (2011).

Data Analysis

Interviews. All interviews were transcribed verbatim for analyses and grouped by cases (ski resorts). Qualitative analysis tools and procedures were used to reveal patterns and themes in the data, which involved several steps (Patterson, Watson, Williams, & Roggenbuck, 1998). The first level of analysis was open coding of the interview data on a line-by-line basis. The codes included a priori categories that stemmed from the interview questions as well as additional

categories that emerged during the coding process, also related to the conceptual framework of the study (Lyles & Mitroff 1980; Miles & Huberman 1994). Most of the a priori codes were descriptive in nature, thus requiring little interpretation of data (Miles & Huberman 1994). I then began to look for the presence of similar patterns through interpretative coding. Finally, as a third level of coding, pattern matching occurred as I started to analyze the data. Consequently responses were sorted under relevant themes (thematic analysis) (Krueger & Casey, 2000; Stewart & Shamasani, 1990), all themes were confirmed and cross-case synthesis created (Yin, 2014). Subsequently, evidence in the form of summaries, charts, and selected examples was compiled and linked back to the research questions and conceptual framework.

The quality of the data analysis and interpretations was ensured using well-accepted criteria for qualitative research. First, data consisted of multiple sources of evidence for triangulation (websites, interviews, and surveys). Initially, public data (i.e., from the ski resort website) on the company background, policies, initiatives related to sustainability, and sustainability reports when available were reviewed, followed by semi-structured interviews. Additionally, practices supporting transferability and dependability/confirmability were applied (Miles & Huberman 1994; Wallendorf & Belk 1989). The establishment of correct operational measures for the concepts being studied (i.e., construct validity) was demonstrated through the convergence of patterns from multiple data sources (i.e., interviews and company and public documents) to provide triangulation, as well as through the chain of evidence linking the research questions to the protocol to the data results. Additionally, the variation in the sample resorts (small/large, public/private) was specifically chosen to introduce variation in the dependent variables to support internal validity. Internal validity of the research findings was further supported through pattern matching within and across cases and addressing rival

explanations. Similarly, the consistent use of methods to collect and analyze – e.g. using a

standard research protocol, leads, to dependability and confirmability of the data. Additionally,

the trustworthiness of the data was strengthened by a peer debriefing technique (Lincoln &

Guba, 1985), which involved discussing, reviewing, and testing emerging thoughts, hypotheses,

and findings against a disinterested peer (a non-academic) to help ensure that researchers'

conclusions are reasonable from others' perspective.

Surveys. To assess the relative contribution of each predictor variable identified in

Figure 1.1, I used multiple regression analysis, regressing the DoI variables on each of the four

dimensions of sustainability. All statistical tests were performed with the Statistical Package for

the Social Sciences (SPSS), Version 23.0.

Mixed-Methods. In regards to the design and implementation of mixed-methods

research, Creswell and Plano Clark (2007) explain that the mixing of two data sets can be done

in three different ways – merging or converging the two datasets by actually bringing them

together, connecting the two datasets by having one build on the other, or embedding one dataset

within the other so that one type of data provides a supporting role for the other dataset. Taking

that into consideration, there are four types of mixed-methods designs – triangulation design, the

embedded design, the explanatory design, and the exploratory design (Creswell & Plano Clark,

2007). The triangulation design is a one-phase design in which researchers implement the

qualitative and quantitative methods during the same timeframe and with equal weight. The

embedded design mixes the different datasets at the design level, with one type of data being

embedded within a methodology framed by the other type. The explanatory design is a two-

phase mixed methods design whose overall purpose is that qualitative data helps explain or build

upon initial quantitative results. Finally, the exploratory design is also a two-phase design whose

aim is that the results of the first method (qualitative) can help develop or inform the second

method (quantitative) (Creswell & Plano Clark, 2007). Creswell (1998) argues that when the

phenomenon of interest is new, dynamic, or complex, relevant variables are not easily identified

and extant theories are not available to explain the phenomenon. In this situation, a qualitative

approach is often the preferred starting point in order to build an understanding grounded in a

detailed description of the phenomenon generated by collecting field data (Golicic & Davis,

2012). Moreover, Creswell and Plano Clark (2007) propose that the two fundamental design

decisions in mixed-methods research are the "weight" or relative level of reliance assigned to

each method (equal or unequal) and the "timing" or temporal order of the use of methods

(sequential or concurrent). Figure 3.1 combines the two design decisions and four research

purposes in a matrix that displays the basic mixed methods research designs (Golicic & Davis,

2012).
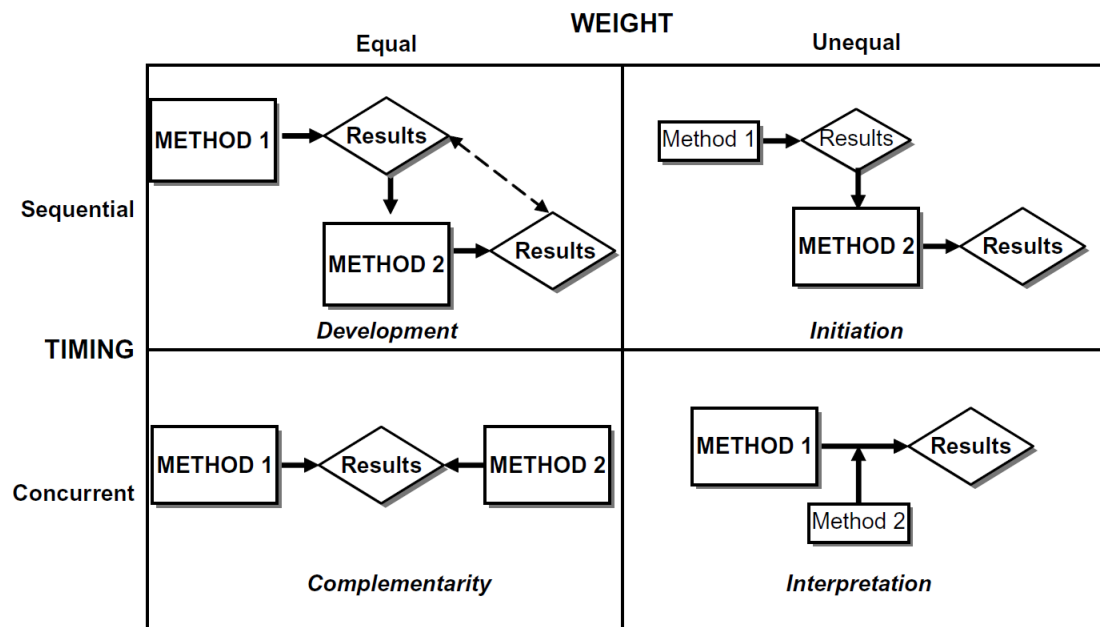
Figure 3.1.
Mixed-Methods Design
Source: Davis, Golicic, and Boerstler (2011).

This study follows the Complimentarity research purpose, where equally weighted methods are utilized, data is analyzed and interpreted sequentially, while merging the findings in a single report. With this design, the results achieved from the first method (qualitative in this case) do not inform the design or implementation of the subsequent (quantitative) method, yet the results from the second method clarify and/or enhance the results from the first method. The research data may be collected concurrently (e.g. experiments and interviews) or sequentially (i.e. case study followed by surveys), which was adopted in this study. Yet, the data are analyzed and interpreted in a single report of results (Golicic & Davis, 2012).

Hence, the third phase of this dissertation research applies mixed research method with a sequential-design (QUAL → QUAN) (Creswell, 2003), indicating equivalent status of the two data collection methods, yet, sequential (complimentarity) design (Johnson & Onwuegbuzie, 2004).

Writing up Mixed-Methods Research

Three articles utilizing each of the research methods, aiming at answering the research questions are presented in the following three chapters. Chapter IV presents findings from phase one of the research project – a case study on factors affecting the diffusion of sustainability innovations among Colorado ski resorts through the perspective of sustainability managers. Chapter V presents results from the second phase of the project – a survey questionnaire distributed to the broad range of all ski resorts' staff. Lastly, Chapter VI offers a mixed-methods perspective, combining and comparing the results from the qualitative and quantitative studies, and presenting conclusions and implications from the overall research project.

CHAPTER IV

FACTORS AFFECTING THE DIFFUSION OF SUSTAINABILITY INNOVATION AMONG

COLORADO SKI RESORTS. SUSTAINABILITY MANAGERS' PERSPECTIVES

Introduction

Business activity congruent with sustainability principles has become an important
concern for companies and their stakeholders worldwide (Sheldon & Park, 2011). The question
now is not "whether," but "how" to integrate changes at the corporate level in order to contribute
to sustainability in the long run (Epstein, 2008). With an increasing array of environmental,
social and economic challenges, businesses must lead the way to a transformative paradigm shift
towards sustainability. Tourism as an industry is expanding rapidly, bringing a number of
positive economic benefits, but also potential negative impacts on the natural environment,
society, and culture, among others (Dabphet, Scott, & Ruhanen, 2012). Similarly, the ski
industry is an important sector to examine in this context because ski resorts create significant
environmental impacts and are dependent on the natural environment to maintain profitability
(World Tourism Organization and United Nations Environment Program, 2008). Literature
suggests factors external to the organization such as environmental regulations set by
governments and pressures from customers and the community are primary drivers behind
adoption of corporate sustainability practices (Howard-Grenville, 2006). This idea can be further
linked to institutional theory which suggests that organizations adopt sustainability practices not
because they guarantee an increase in efficiency, but rather because they are deemed
"appropriate and legitimate" from external entities (Trendafilova , Baiak, & Heinze, 2013). Yet,

others consider internal organizational pressures such as staff turnover, top managements support, environmental training, employee empowerment, etc. as key motivators for achieving corporate sustainability (Wilkinson, Hill, & Gollan, 2001). Thus, the interplay between the changing external environment and the internal worlds leads to the need for continual alterations. The ability of the individual, the team and, ultimately, the organization to respond swiftly and timely to these changing realities will be the differentiating factor between competitive organizations in complex markets with declining profit margins (Senge, 2003). Therefore, the challenge is how to manage and balance the internal and external drivers and stimuli, so that the company can respond quickly to external stimuli, and promote and reward the internal drivers, so that the organization can become more proactive in helping societies become more sustainable (Lozano, 2013). One way for any business to respond to the constant changes in the natural and business environment is through innovations.

Rogers' (2003) Diffusion of Innovations theory (DoI), a leading model for understanding the adoption of innovations (Smerecnik & Andersen, 2011), has been applied in numerous studies in a variety of fields including agriculture, communications, mass media, public health, and sociology. This study utilizes DoI to examine whether the characteristics of the innovation (sustainability), the characteristics of the external environment, and the characteristics of the organization affect ski resorts' sustainability through the perspective of ski resort sustainability managers. The idea of sustainability as an innovation is understood through the lens of its four dimensions - environmental, socio-cultural, institutional, and economic sustainability (Spangenberg & Valentin, 1999). Only few prior studies have investigated sustainability in the resort industry as an innovation process utilizing DoI theory. They found the DoI variables to be

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highly predictive in terms of diffusion of sustainability in the resort industry (Le et al., 2006;

Smerecnik & Andersen, 2011).

Hence, the intent of this study is to apply DoI theory in a tourism context - Colorado ski

resorts - by empirically examining managers' perspectives on diffusion of sustainability as an

innovation throughout the organizations. I specifically seek to address the following research

questions:

(R1) What factors affect the diffusion of sustainability among Colorado ski resorts?

(R2) Are internal or external factors stronger predictors of sustainability (among

Colorado ski resorts)?

(R3) What institutional mechanisms at an organizational level can facilitate the change

process?

I use ski resorts in Colorado as a case study for understanding the phenomenon in its

context and accomplish the study research goals. This study brings new insights into the under-

researched, yet relevant field of sustainability and innovation, applying DoI theory in a tourism

context and highlighting implications for resort managers and leaders.

Literature Review

Sustainability and Ski Resorts. The corporate sustainability idea originates from the

broader concept of sustainability, which has been shaped by a number of political, public and

academic influences over a long period of time (Linneluecke & Griffiths, 2010). WCED defined

the term sustainable development as ''development that meets the needs of the present without

compromising the ability of future generations to meet their own needs'' (WCED, 1987, p. 43).

From the business perspective, the sustainability concept has been applied through the idea of

corporate social responsibility (CSR). Although debates about its definition are still present,

some of the common elements of CSR based on existent literature are: it is voluntary by nature, yet, it goes beyond legal expectations and compliance, it integrates social and environmental concerns (including ethics), and stakeholders' interactions into business' operations, and it concerns the long-term prosperity of the corporation (Lozano, 2013). Similarly, the term corporate sustainability (CS) has emerged as "an alternative" to CSR. CS is viewed as a new management paradigm, alternative to the traditional growth and profit-maximization model. While CS recognizes that corporate growth and profitability are important, it also requires the corporation to pursue societal goals, specifically those relating to sustainable development — environmental protection, social justice and equity, and economic development at an organizational level (Wilson, 2003); a sustainable company focuses not only on efficiency, but also mechanisms to encourage "meritocracy, diversity, innovation and long-term planning" (Dill, 2015). Yet, a lack of clarity on how to best implement corporate sustainability in the organizational practice still exists (Daily & Huang, 2001). Considering that sustainability is based on holistic thinking and approaches, including the company system and its internal and external stakeholders (Lozano, 2013), there is a present debate about the external and internal organizational pressures in the company's journey towards sustainability. Hence, this dissertation reveals factors affecting corporate sustainability as an innovation through ski resort sustainability managers' perspective and highlight whether external or internal factors play a more significant role in orchestrating corporate sustainability.

Increasingly, businesses around the globe are showing interest in sustainability – through the number of voluntary initiatives (such as tools, approaches, and standards), developed by and for corporations (Dunphy et al., 2003; Lozano, 2012; Ny, 2009; Ny et al., 2006), as well as the growing number of participants in initiatives such as the United Nations Global Compact

(UNGC), the Global Code of Ethics, OECD's Guidelines for Multinational Enterprises, and the Global Reporting Initiative). Nevertheless, embedding the actual principles of sustainability into a company's systems represents significant challenges, mainly due to the complexity and multi-dimensionality of the sustainability concept (Langer & Schon, 2003; Lozano, 2012b).

These challenges are present in a tourism context as well. Bramwell and Lane (2012) note the idea of sustainable tourism began as a negative and reactive concept in response to issues in the tourism industry in the 1970s such as environmental damage and negative impacts on society and cultures. Yet, forty years later, sustainable tourism has become "a central focus" of tourism destinations (McGehee et al., 2013). At a resort level, some of the pressure for sustainable tourism operations stem from consumer demands, government regulations and environmental organizations (Erdogan & Baris, 2007; Goodman, 2000). As a result, more hotels and resorts, including ski areas and resorts, are adopting environmental sustainability innovations such as minimizing energy and water use and managing waste and greenhouse gas emissions (Erdogan & Baris, 2007; Honey, 2008; Trung & Kumar, 2005 as cited in Smerecnik & Anderson, 2011). While, some of the literature reveals positive impacts of sustainability on customer satisfaction, as well as loyalty, which is believed to improve overall resort performance (Kassinis & Soteriou, 2003), other studies have found no conclusive evidence of a correlation with performance (Claver-Cortes, Molina-Azorin, Pereira-Moliner & Lopez-Gamero, 2007 as cited in Smerecnik & Anderson, 2011). Hence, the reasons for adoption of sustainability practices vary.

In regards to the ski industry specifically, according to National Ski Area Association (NSAA) data for 2014/2015, the ski industry brought in $7.3 billion to the US economy (direct spending in US resorts) (NSSA, 2016). Based on the amount of participants in snow sports and

revenue generated by resorts, ski areas are an important sector of the tourism industry in the US.

Ski resorts also have a major impact on local economies by bringing in customers for area

business and providing employment for residents of ski towns (Prentergast, 2011). At the state

level, Colorado typically ranks as the top state in the U.S. for total skier visits. Overall,

Colorado's ski industry generates more than $1.5 billion in revenues per year (Colorado Tourism

Office, 2015; HVC, 2014) with Colorado skier visits numbers at 12.6 million in the 2013/2014

season (Blevins, 2014). Hence, the significance of the ski industry in the state is one of the main

reasons for selecting Colorado as the study site.

Nevertheless, the ski sector has generally been cast in the same light as timber and

mining in the United States and is being called "the next extractive industry", rather than a

socially beneficial form of recreation (Tonge, 2008 as cited in Call, 2012). As a result of such

allegations and/or of concern for its dependence on the natural environment for maintaining

profitability and the future of successful business operations, ski resorts are another segment of

the tourism industry, which is concerned with the idea of sustainability (WTO, 2008). Yet,

currently, U.S. ski resorts operate under voluntary environmental regulations. The primary

sustainability-related initiative is the Sustainable Slopes Program, established by the National Ski

Areas Association, in partnership with the U.S. Environmental Protection Agency, the U.S.

Forest Service, and other federal agencies and organizations participating. The program provides

a framework for ski areas on sustainability and enhanced environmental performance (NSAA,

2015). Over 75 percent of US ski resorts signed the Sustainable Slopes Charter in 2000

(Smerecnik & Andersen, 2011), while currently about 196 ski areas (approximately 50 percent of

the ski areas in US) are endorsing the Environmental Charter of the program. Similarly, on the

demand side, organizations such as the Ski Area Citizens' Coalition indicate that customers

themselves are concerned with ski resorts' sustainability initiatives and demand accountability and transparency from businesses (through its ski areas score card) (Ski Area Citizens' Coalition, 2014). Hence, it is important to research factors affecting ski resort decisions to adopt sustainability-related practices and understand who plays a major role in affecting the diffusion of sustainability innovation among ski resorts.

Most of the research related to ski resorts and sustainability focuses on studying the impact the ski industry has on the environment – e.g. effects of snowmaking to the environment and for the resorts (Fahey and Wardle, 1998, Leao & Tecle, 2003; Prentergas, 2011; Scott et al., 2003; Smith, 2010, Steiger & Mayer, 2008), chairlifts and trail maintenance environmental impacts (Hadley & Wilson, 2004; Martin, et al. 2010, Patthey et al., 2008, Rolando et al., 2007, Wipf, et al., 2005), impacts from resort development (Gill & Williams, 2011; Prentergas, 2011; Rivera & de Leon, 2004, Tenenbaum, 2001, Williams & Todd, 1997). On the other hand, a large number of studies examined how climate change impacts the industry while discussing implications for the resorts' future (e.g. Moen & Fredman, 2007; Hopkins, 2014; Morrison & Pickering, 2013; Nolin & Daly, 2006; Pickering, 2011; Smerecnik & Anderson, 2011; Weaver, 2011; Whetton, Haylock, & Galloway, 1996).

On another note related to impacts, research shows that ski resorts that are more innovative tend to be more environmentally proactive (Sharma, Aragon-Correa, & Rueda-Manzanares, 2007) and that climate change effects might create a competitive advantage for resorts that naturally receive more snowfall and will require improved snowmaking infrastructures for the others (Scott, McBoyle, Minogue, & Mills, 2006). While one study created a model for improved strategic performance in ski resorts specifically, incorporating elements of sustainability supported by the World Tourism Organization (Flagestad & Hope, 2001), other

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research has found that the voluntary adoption of the Sustainable Slopes program, created by US National Ski Area Association, did little to improve ski resorts' environmental performance (Rivera & de Leon, 2004; Rivera, de Leon, & Koerber, 2006). Therefore, further research is necessary to explain which factors influence the diffusion of sustainability practices in the ski resort industry (Sharma et al., 2007; Smerecnik & Andersen, 2011).

Diffusion of Innovation. In today's dynamic markets and environments one increasingly important way for companies to contribute to global sustainability is through sustainability-driven innovation practices (Klewitz & Hansen, 2014). Innovations allow companies to adapt their strategies to market changes, and are thus of critical importance for creating organizational value (Stieglitz & Heine, 2007). Throughout history the tourism sector has been a phenomenon characterized by immense innovativeness. Yet, the classical innovation literature has until recently primarily been concerned with the manufacturing industry (Hjalager, 2010). Smerecnik and Andersen (2011) point out that although DoI theory has been widely utilized in various disciplines, with over thirty nations using the theory and over 6000 published studies (Rogers, 2003), it has been scarcely applied in the service sector. Moreover, the authors highlight that studies on sustainability innovations have primarily investigated topics related to diffusion of environmental sustainability policies (Bergstrom & Dobers, 2000; Foxon & Pearson, 2008; Kern, Jorgens, & Janicke, 2001; Tsoutsos & Stamboulis, 2005), sustainability innovations adopted in geographical regions (Geltz, 2008; McEachern, & Hanson, 2008; Vasi, 2007) and consumer adoption of sustainability innovations (Labay & Kinnear, 1981). Hence, the diffusion of sustainability innovation in the resort industry has not been systematically investigated.

Rogers (2003) defines an innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p.12). It is important to point out that the

newness may be considered in terms of knowledge, persuasion, or a decision to adopt. Diffusion, on the other hand, is defined as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003, p.5); it is a special type of communication and it focuses on messages concerned with new ideas. Additionally, Rogers (2003) suggests that the diffusion of innovations is a kind of social change, including a process by which alterations occur in the structure and function of a social system.

Rogers distinguishes three main components affecting the diffusion of innovations – characteristics of innovation, characteristics of the external environment, and characteristics of adopter.

Characteristics of the innovation. Rogers suggests that there are five main "perceived" characteristics of an innovation. The first characteristic of the innovation is complexity. It is the degree to which an innovation is perceived as difficult to understand or use. Complexity "is used to reflect the number of customized components, the breadth of knowledge and skills required and the degree of new knowledge involved in product" (Hobday, 1998, p. 690). Research has shown a negative relationship between the complexity of an innovation and its rate of adoption (Hobday, 1998). Yet, some exceptions have been found (Wonglimpiyarat, 2005). More importantly it is argued that sustainability, especially in the era of multinational corporations and globalization, has become a complex issue for corporations (van Marrewijk & Hardjono, 2003).

The second characteristic of the innovation is relative advantage. It concerns the degree to which an innovation is perceived as better than the idea it supersedes. Rogers (2003) argues that it can be measured in economic terms, brand image, convenience, satisfaction, etc. He also states that the greater perceived relative advantage - the more rapid the rate of adoption usually is.

The third main characteristic of an innovation is compatibility. It is the degree to which an innovation is perceived as being consistent with the existing values, as well as past experiences and needs of the potential adopters (organization). Rogers (2003) also points out that the adoption of an incompatible innovation often requires the prior adoption of a new value system, which is usually a relatively slow process.

Rogers defines the fourth main characteristic of an innovation as trialability, which is the degree to which an innovation may be experimented with on a limited basis; or basically whether the new idea can be tried out (before the actual implementation). Commonly, if an innovation can be tested in advance or on a small scale, the rate of diffusion is higher (Rogers, 2003).

The last characteristic is observability, which it is the degree to which the results of an innovation are visible to others. According to DoI theory - the easier it is for individuals to see the results of an innovation, the more likely they are to adopt it. Rogers has found that between 49 and 87 percent of variance in adoption is explained by these five attributes.

Characteristics of the external environment. As pointed out earlier, the diffusion of innovation is highly dependent on the social system – including culture, diversity, values, norms, etc. New environmental regulations, along with increasing demands from diverse stakeholders, such as customers or non-profit organizations, have increased firms' interest in reducing their ecological footprint (Sharma & Vredenburg, 1998). Hence, the second main component in the proposed framework concerns factors from the external environment, or the social system. Rogers (2003) argues that a system's norms can be a barrier to change. Esty & Winston (2006) suggest that in the new world, companies face two major pressures - the limits of the natural world which can constrain business operations, realign markets, and possibly even threaten well-being on the planet, and the growing spectrum of stakeholders who are concerned about the

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environment. Thus, effectively integrating sustainability into companies' strategies requires

action that exceeds organizational boundaries. It is becoming increasingly accepted that

stakeholders affect the organizational plans and that ineffective stakeholder involvement in

sustainability initiatives can hinder the achievement of business objectives (Waligo, Clark &

Hawkins, 2013). Generally, companies have limited ability to overcome external barriers to

change, which include pressure from competitors, regulation and legislation, lack of knowledge

and interest from consumers or investors. (Lozano, 2013). Commonly, those attributes are

measured in terms of perceived certainty levels, meaning the extent to which changes can

confidently be predicted (Downs & Mohr, 1976).

Competition. Literature suggests that firms perceiving a higher level of competition are

more proactive in adopting environmentally – related practices in order to sustain their

competitive advantages (Veliyath & Fitzerald, 2000). Moreover, other studies found that being

"green'' has become a common practice to gain competitive advantage in highly competitive

environments (Appiah-Adu & Singh 1998; Hurley & Hult, 1998; Rangel, 2000 as cited in Le et

al., 2006). As a result, companies are motivated to embrace sustainability not only by possible

cost savings and government regulation, but also through their stakeholders.

Customers. Another stakeholder in the journey towards sustainability are the customers

or ski resorts' guests who can also affect the diffusion of sustainability innovations. The

existence of groups such as Ski Area Citizens' Coalition, and Protect Our Winters, for example,

indicate that customers themselves are concerned how sustainable ski resorts' practices are and

increasingly demand accountability. Similarly, research has shown that poorly rated firms in

terms of sustainability respond by improving their performance (Schendler, 2011). Thus, it can

be argued that customers, have the power to assist in the process of corporate change towards sustainability.

Government regulations. The last factor from the external environment affecting ski resorts sustainability included in the study framework concerns government regulations. Schendler (2011) points out that when taking into consideration the scope and scale of the climate crisis (which ultimately affects sustainability), there is a pressing need for broad policy solutions. Moreover, focusing exclusively on voluntary operational greening including carbon neutrality distracts from the more pressing need for climate regulation to achieve the necessary overall reductions called for by climate scientists. Thus, it can be argued that government regulations in terms of sustainability (e.g. CO_2 emissions) are necessary. Yet, literature on this matter is limited.

Characteristics of the adopter. The third core component of an innovation concerns the characteristics of the adopters (ski resorts). The main ski resorts' characteristics included in the study are innovativeness, size, and financial structure.

Innovativeness. Rogers (2003) explains that innovativeness is the degree to which an individual or an organization is relatively earlier in adopting new ideas than the other members of a system. Innovativeness has often been shown as one of the most important strategic orientations required for firms to achieve long-term success (Calantone, Cavusgil, & Zhao, 2002; Noble, Sinha, & Kumar, 2002). Lozano (2013) states that internally, one of the main drivers towards sustainability in large corporations has been ethical leadership (Szekely & Knirsch, 2005), as well as risk management and protection of business reputation (Lantos, 2001), improvements in economic values (Lantos, 2001), and enhancements in corporate image (Frehs, 2003). Likewise, Dobni (2008) suggests that organizational managers and leaders play a key role

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in determining the innovativeness of a company. Similarly, Ireland and Hitt (1999) identify top management support and involvement as a key requirement for promoting innovation. However, managerial approaches toward environmental issues are heterogeneous because they depend on many determinants, such as managerial values, organizational resources, or market and industry conditions (Aragon-Correa & Sharma, 2003; Delmas et al., 2011).

Size. Literature suggests that generally large firms are often assumed to have more financial and human resources to adopt sustainability practices (Le et al., 2006). Sponseller (2015) also pointed out that leaders of many small companies believe innovation is just for big companies that employ scientists and have large research and development departments. Stating that this is probably a false belief, Sponseller (2015) reminded us of Richard Branson who has said, "small businesses are nimble and bold and can often teach much larger companies a thing or two about innovations that can change entire industries." Moreover, the same author (2015) offers a list of five ways small companies can innovate better than much larger organizations, including speed of execution (small businesses can position themselves to make decisions quickly, allowing them to be first to market with innovative ideas), fast access to business resources (a smaller company is able to temporarily reallocate significant resources to the innovative idea that is critical to the growth of the company), team environment (small businesses can develop a team culture that encourages everyone to get involved in the innovation process more easily); company-wide innovation support (to successfully cultivate a team of people who are actively identifying and developing innovative ideas, a company's leaders must openly support innovation activities), and measure innovation (start measuring and emphasizing innovation to stress the importance of creative thinking to everyone in the organization). Thus, more research on the role of a company's size in regards to sustainability is necessary.

Financial Structure. In terms of companies' financial structure, it is often found that sustainability policies and practices are adopted more easily among private firms as public companies have their first priority to bring maximum financial return to its stakeholders (personal communication, December 18, 2014). On the other hand, Shai Bernstein of Stanford University compared companies that went public with similar companies that stayed private. His report revealed that when companies went public the quality of internal innovation declined and firms experienced both a decrease in the number of skilled inventors as well as decline in the productivity of the remaining inventors. However, Bernstein also found that public firms could more easily attract new human capital and acquire external innovations.

To summarize, considering the scarce literature on diffusion of sustainability innovation in tourism and the significance of the ski industry in the corporate battle towards a more sustainable future, I developed a framework to explore which factors are most influential in the change process towards sustainability. Figure 4.1, adapted from Le, et al. (2006) and Smerecnik and Andersen (2011) depicts the three main factors (and sub factors) to likely affect ski resort's sustainability.
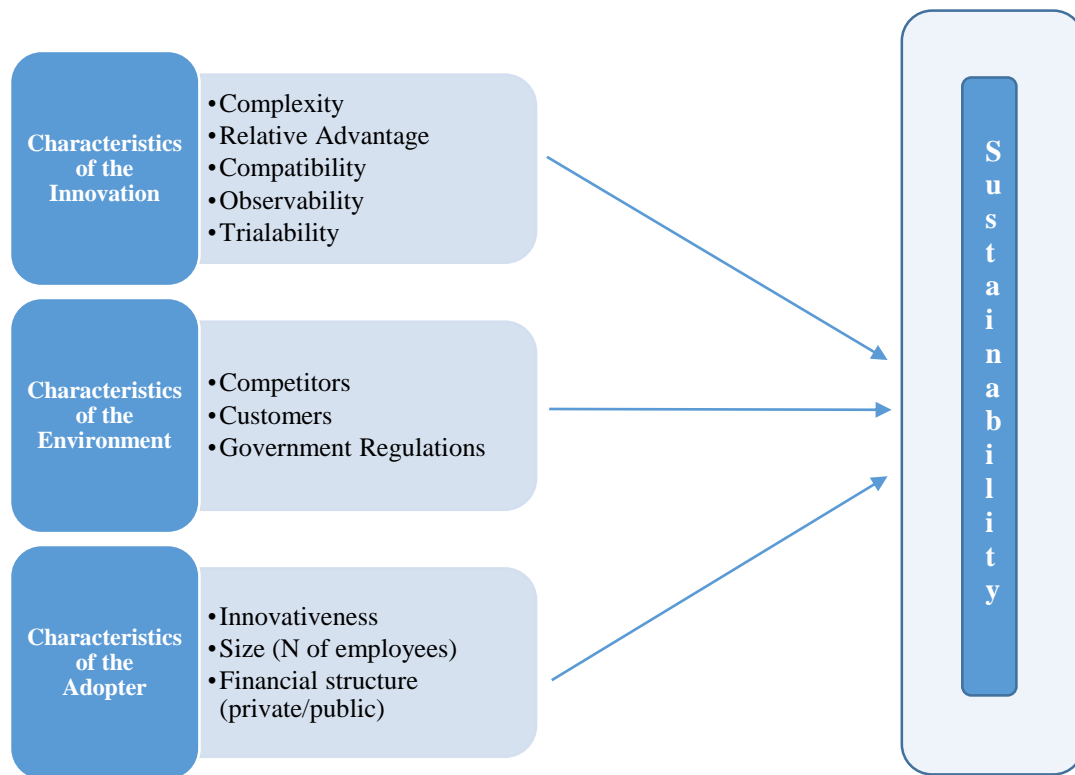
Figure 4.1.
Conceptual framework applying Roger's model
Adapted from Le, Hollenhorst, Harris, McLaughlin, & Shook (2006) and Smerecnik & Andersen (2011).

Methodology

The purpose of this research is to understand ski resort sustainability managers'

perspectives on factors affecting the diffusion of sustainability in their organizations. Thus, an

explanatory interpretivist case study approach was adopted to understand managers' views and

address my research questions. I specifically focused on identifying which of the diffusion of

innovations items affected resorts' sustainability. Moreover, I attempted to highlight which of

them play the role of drivers and which ones were barriers to sustainability. I further explored

what institutional mechanisms facilitate or impede the process of diffusion of sustainability and

whether external or internal factors are more powerful in this transformation. Because I was

interested in describing resort managers' professional views on ski resorts' sustainability, I chose a semi-structured interview method for gathering the data. Semi-structured interviews use open-ended questions to direct the discussion, but they also allow greater flexibility and a wider range of possible responses than a close-ended question or a survey (Lyles & Mitroff 1980; Miles & Huberman 1994). Glesne (2011) points out that the intent of semi structured (and open) interviews is to capture the unseen through the respondents' words, and allows understanding phenomena in their fullest possible complexity. Moreover, as open-ended questions do not presume that the range of answers is known in advance (Seidman 2006), they allow more exploration and explanation, which is what I was aiming for.

In regards to the study research method, Yin (1994, p. 13) proposes: that case study is "an empirical inquiry that investigates a contemporary phenomenon within its real life context." The phenomenon I study - corporate sustainability, has gained growing attention over the past several years, not only in the global corporate sector, but also in the tourism sector specifically. Thus, an explanatory case study was deemed most appropriate to answer my research questions (Ellram 1996; Meredith 1998; Yin 2003; Edmondson & McManus 2007). Explanatory case studies seek to answer the question "why" certain phenomenon takes place and to identify a cause and effect relationship (Yin, 2003). Thus, I deem this study to be explanatory in nature as it assesses factors affecting the diffusion of sustainability innovation among Colorado ski resorts. Yet, I was also interested in testing the applicability of DoI theory in a tourism context. Hence, the current study is collective in nature – addressing the contemporary phenomenon of sustainability of the ski industry, diversifying across its dimensions, while also adding to the literature on DoI theory (Yin, 2003).

Participants Selection. Hancook and Algozzine (2011) argue that the most important

consideration in this phase is identifying persons in the research setting who may have the best

information with which to address the study's research questions. Considering the complexity of

the sustainability idea, I wanted to speak with people who have professional knowledge on the

subject. Thus, ski resort managers holding sustainability-related positions were selected as

interviewees. They were identified and recruited from public records (position and contact

information from each ski resort website). Although, not every resort has a specific position on

sustainability, all of the resorts who agreed to participate were able to refer me to at least one

individual whose job responsibilities were related to sustainability of the ski resort. If no contact

information of a sustainability manager was available, I contacted human resources or other

contact person who would then refer me to the appropriate person. Hence, eight interviews with

individuals holding positions related to sustainability were conducted (one individual holding a

human resources position, yet very involved in sustainability matters), representing twelve ski

areas in Colorado (out of about twenty-five ski areas in total). In order to better understand

managers' perspectives on diffusion of sustainability innovations, it was important to speak with

managers from resorts of different sizes. Thus, managers from smaller and larger ski resorts were

targeted for the interviews. Table 4.1 offers a summary of the characteristics of the participating

resorts and interviewees. It is important to point out that due to the non-random sampling

techniques (Huberman & Miles, 2002) the sample possesses internal rather than external

generalizability.

Table 4.1.
Ski Resort/Participant Characteristics

Resort	Resort Size[1]	Financial Structure	Participant Position[2]	Employed with the Company[3]
1	25000[4]	Public	Sustainability manager	1.5
1	25000	Public	Non-sustainability director	10+
2	200	Private	Sustainability supervisor	5
2	200	Private	Sustainability manager	10
3	3600	Private	Sustainability manager	16
4	1600	Public	Non-sustainability supervisor	8
5	1500	Public	Non-Sustainability manager	18
6	1200	Private	Sustainability manager	10

[1]Approximate number of employees (provided by interviewee)
[2]Specific title was broadened to ensure anonymity (e.g. environmental manager – changed to sustainability manager; operations supervisor changed to non-sustainability supervisor).
[3]Number of years employed with the company
[4]Number includes employees from company-owned resorts outside of Colorado as well

Data Collection. The data for the study was collected between November 2014 and January 2015 and consisted of multiple sources of evidence for triangulation (public data from ski resort websites, interview data, and survey data). Initially, public data (i.e., from the ski resort website) on the company background, policies, initiatives related to sustainability, and sustainability reports when available were reviewed. Next, potential interview participants were contacted via e-mail explaining the study and requesting their participation. I contacted twenty out of the twenty-five ski areas in Colorado. About forty percent of them either declined to participate on the grounds that they did not have time, or I was never able to establish contact with them. In most cases, I spoke with one person in the organization (for four out of the six resorts) unless the primary contact wished to include another knowledgeable participant in the

interview (e.g., their replacement or someone with whom they worked closely in environmental sustainability matters). While this creates a limitation related to single respondent bias, I was studying participants' perceptions of their companies' actions with respect to sustainability. Although interviewing multiple respondents may have yielded additional perceptions, many of the responses were based on reporting actual company activity or policy, which is more objective in nature. Similarly, most ski areas have only one devoted position to sustainability (if any). Thus, data for this study is based on eight semi-structured interviews. Interviews recordings ranged from 35 to 65 minutes. Three of the interviews were conducted face-to-face while the other five were conducted over the phone.

The interview schedule addressed topics related to company background information, personal definition of sustainability, company innovations in relation to sustainability, sustainability integration in the resort (diffusion of sustainability innovations and reasons for it), opportunities and barriers for sustainability, entities/individuals initiating changes towards sustainability, motivation/obstacles for sustainability (internal and external), and ideas on the future of the ski industry and sustainability (see Table 4.2 for sample questions and Appendix C for a full interview protocol and questions).

Table 4.2.
Sample of Semi-Structured Interview Questions

Background Information
Briefly describe purpose of interview to participant
Please tell me a little bit about the background of your company (number of employees) and your position (title, how long at the current position, etc.)

Sustainability
Personal/Professional understanding/definition of sustainability
Sustainability as an innovation
Company changes over the years (related to sustainability)
Factors affecting the change towards sustainability (why is the company changing or not)
Who initiates the changes (internally or externally)
Company characteristics (size, financial structure, innovativeness) as factors affecting sustainability
Obstacles to sustainability
Future Plans
Sustainability (long-term success)
Climate change

Data Analysis and Validation. All interviews were transcribed verbatim for analyses and grouped by cases (ski resorts). The qualitative research analysis used to reveal patterns and themes involved several steps (Patterson et al., 1998). First, all interview data were read and coded openly on a line-by-line basis with a hard copy approach highlighting text and taking notes (Miles & Huberman 1994). The codes included a priori categories that stemmed from the interview questions as well as additional categories that emerged during the coding process, also related to the conceptual framework of the study (Lyles & Mitroff 1980; Miles & Huberman 1994). Most of the a priori codes were descriptive in nature, thus requiring little interpretation of data (Miles & Huberman 1994). The researcher then began to look for the presence of similar patterns through interpretative coding. Finally, as a third level of coding, pattern matching

occurred as the researcher started to analyze the data. Consequently responses were sorted under relevant themes (thematic analysis) (Krueger & Casey, 2000; Stewart & Shamasani, 1990); all themes were confirmed and cross-case synthesis created (Yin, 2014). Subsequently, evidence in the form of summaries, charts, and selected examples was compiled and linked back to my research questions and conceptual framework.

The quality of the data analysis and interpretations (i.e. validity and reliability) was ensured using accepted criteria for qualitative research as recommended by standard case study methodology (Meredith, 1998; Stuart, McCutcheon, Handfield, &McLachlin, 2002; Yin, 2003). Specifically, practices supporting transferability and dependability/confirmability were applied (Miles & Huberman 1994; Wallendorf & Belk 1989). The establishment of correct operational measures for the concepts being studied (i.e., construct validity) was demonstrated through the convergence of patterns from multiple data sources (i.e., interviews and company and public documents), as well as through the chain of evidence linking the research questions to the protocol to the data results. Similarly, the variation in the sample resorts (small/large, public/private) was specifically chosen to introduce variation in the dependent variables to support the internal validity. Internal validity of the research findings was further supported through pattern matching within and across cases and addressing rival explanations. Similarly, the consistent use of methods to collect and analyze – e.g. using a standard research protocol leads to dependability and confirmability of the data. Additionally, the trustworthiness of the data was strengthened by a peer debriefing technique (Lincoln & Guba, 1985), which involved discussing, reviewing, and testing emerging thoughts, hypotheses, and findings against a disinterested peer (a non-academic) to help ensure that researchers' conclusions are reasonable from others' perspective. The research cases consistently adhered to the protocol created for the

study, and all data were maintained in a research database, thus supporting the procedural

repeatability (i.e., reliability) of the study (Golicic & Sebastiao, 2011).

The data analysis focused on finding patterns across all cases (ski resorts). Findings are

organized in three sections following the study conceptual framework and research questions.

Section one focuses on characteristics of the innovation as factors affecting resorts'

sustainability. Section two discusses the role guests (customers), competitors (other resorts), and

government regulations play in the diffusion of sustainability innovation. Lastly, section three

focuses on internal factors, including the resort's innovativeness, size and financial structure as

factors affecting sustainability.

Research Findings

First, to better understand ski resort managers perspectives on diffusion of sustainability

innovation I wanted to explore how they defined sustainability, what their understanding and

interpretation of this "controversial" term was. Thus, I asked the participants to define

sustainability in their own words. There was a general agreement among them what

sustainability really meant. Most of them focused on the triple bottom line, or basically keeping

all of the resorts' stakeholders happy. One resort manager highlighted that, "our key stakeholders

include our employees, our guests, our shareholders, our community and our environment. And

if any of those falter, we cannot sustain…." Another resort manager also talked about the triple

bottom line, stating:

> We kind of focus more on the triple bottom line – being sustainable within the
> community, certainly from the business point of view but also considering…the
> environment too…so, that's really kind of our philosophy.
> In this sense, one important aspect to point out is that sustainability is a "philosophy."

Later on the same participant specified that it [sustainability] was naturally embedded in everything the company does. Another ski resort manager also defined sustainability in terms of its three main aspects – economic, environmental, and social, yet also argued that all of those aspects were dependent on climate change:

> We define sustainability as sustaining business for ever – and we think that we have to solve climate change to do that and that's the overreaching issue, that encompasses all subsets of sustainability issues …. you gotta account for many different things – economic success over the long term, that depends on a stable community, … it depends on a stable climate, it depends on you treating people well, it depends on your market staying healthy…When think about it that way it gets to a perspective where among other things, you have to deal with big issues like climate change.

Thus, generally the concept of sustainability was understood through environmental, social, and economic aspects. Yet, one of the respondents very clearly identified the importance of the fourth dimension – the institutional aspect of sustainability, which can be linked to understanding the term through the lens of the Prism of Sustainability framework (Spangenberg & Valentin, 1999). She stated that the other three parts (environmental, social, and economic) cannot function properly without the institutional mechanisms: "all of them will be random programs unless somebody can tie them all together and articulate."

Consequently, the interview followed the research protocol aiming at a discussion of the three main components of the study framework – characteristics of the innovation, characteristics of the external environment, and characteristics of the adopter.

Characteristics of the innovation. The first main piece from the study's conceptual framework concerns the characteristics of the innovation (sustainability). Although the framework includes five specific items, the interviewees were just openly asked about their perceptions on barriers and drivers of sustainability as a concept in the corporate world. The

questions asked were not specifically framed including the terms complexity, compatibility, relative advantage, observability, and trialability.

*Complexity***.** A few of the interviewees talked about the complexity of sustainability and how difficult it was to be integrated into an organization and even more so measuring progress:

> …the whole idea of sustainability being so complex, so many systems come together to create this idea of sustainability, it's very hard to pin point it and it takes usually a couple years of watching your mission… to really see any big change… [it is also] tough to measure.

Another complex problem related to sustainability discussed by a few of the respondents was climate change. One interviewee pointed out that generally at a corporate level sustainability is understood to mean operational cleaning and carbon footprint reduction; there was "lack of understanding of climate science," as he put it, which can relate to the complexity of the idea.

*Relative advantage***.** When asked about the possible advantages sustainability as an innovation brings to the company, a few of the ski resort managers thought that the diffusion of sustainability within their organization did bring a relative advantage for the company. One of those advantages was an improved reputation. One participant pointed out that when you think of companies like Patagonia and Ikea, the first thing that comes to mind is sustainability, and then he added: "that's where we want to be." Similarly, another resort manager stated:

> It's just part of who we are, and we think it makes good business sense to be a good neighbor in a community. To be viewed as a responsible company, a socially responsible company. And that just makes all kinds of sense to us. It's part of who we are, and we want to continue to do that.

Hence, being sustainable can be an advantage in terms of a strong resort reputation. However, another interviewee warranted about green washing. He pointed out that a lot of the resorts write (on their websites) about their sustainability initiatives primarily for marketing purposes but were not actually doing it. It was further revealed that talking about sustainability

was "the status quo in the ski industry" – on any ski area website you could see tabs about the mountain, activities, as well as "the environment," which was somewhat ironic according to the respondent as skiing in general is probably "the least sustainable sport you can think of…" Therefore, it can be argued that the idea that sustainability as an innovation bringing advantages for the resort, is somewhat controversial – yes, it strengthens the reputation and may create a brand name for some of the "sustainable" resorts but it is still complex, difficult to measure, and track progress as well. Nevertheless, a few of the resort managers highlighted that adopting sustainability within their companies was a "win/win" scenario, bringing financial benefits as well:

> …if we can help major corporations of the world understand that this doesn't have to be altruistic, there's a big win-win in it for organizations….

> And the things we're finding, some of the other projects we're doing are saving money. Not only reducing our emissions, we're conserving resources, so we're actually saving money of the company. I think that's the biggest thing that'll hit home.

Compatibility. In regards to compatibility with existing company culture, structure, policies, leadership, etc., the participants had mixed responses. One manager stated that sustainability is "naturally…embedded in everything" and they had a company culture that was looking toward sustainability; the resort had a set of values to operate in a sustainable manner. Similarly, another participant explained that their goal was for sustainability to be part of the culture, and that change process had started with establishing a position devoted to sustainability [sustainability manager]. They pointed out that having the position established alone was a statement the company was making – taking the first big step in their organizational change towards sustainability. Nevertheless, another respondent pointed out that sustainability was currently not compatible with the company culture. He stated that "right now it [sustainability] is

viewed as a speedbump, it's viewed as a regulatory… almost like… do you have to?" He further

explained that it had to be dynamic and continuous because while sustainability-related company

changes started in 2006 and peaked in 2010, all of those initiatives have been "falling off" since

then. The resort manager stressed the lack of company culture to cultivate sustainability.

Conversely, another manager pointed out that in the last eight to ten years was when

sustainability really became incorporated in the corporate philosophy of her resort. Discussing

how sustainability is part of the resort's culture, one managers explained how everybody from

the CEO down is passionate about sustainability:

> …our CEO is really kind of sympathetic to environmental issues and …all down the line
> – everybody really that has position, decision-making power around, seems to be just
> personally kind of aligned that way.

Observability. The fourth characteristics of sustainability as an innovation concerns

observability. Although the resort managers did not directly speak about it, one participant

argued that one of the biggest obstacles to sustainability was that the benefits were long term, not

near term, which could certainly relate to observability (the results of the innovation are not

visible immediately). Moreover, the same respondent pointed out that it takes a vision, and you

have to believe that those investments will ultimately bear fruit over time; "it does take faith and

persistence," he added. It was also pointed that sustainability brings what they call "reverse

ROIs:"

> …wait a minute, if I invest X amount of capital, I'm not gonna make any more money,
> I'm gonna save money on electricity costs. So it's not the way businesses normally think.
> They think if I invest X amount of money, I'm gonna make Y amount more, and I can get
> my head around that. So here you're saying if I engage employees I'm going to reduce
> turnover. Well... you're investing in something that hasn't even happened yet, and so,
> like you haven't spent that amount of money on energy, but you know you will and
> you're gonna reduce it.

Thus, it is "a different way of thinking," he adds, and it was much harder for most people to get their head around, especially in the business world. To address the problem with lack of observability of the results from sustainability innovations, another resort manager pointed out that she takes little steps and does not spend a lot of money, while trying to show what could be saved. She further elaborated that:

It helps build the credibility of your program to the people that are making the decisions about the money and where it's going. And if its small and you don't see a bunch of expenses, you're more likely to get approval for that project, or get money for that project because you've proven that those things save money or human resources.

Hence, although observability as a characteristic of the innovation was primarily found as a barrier to change, the idea of small, incremental changes towards sustainability was identified as one way to overcome the problem with observability.

Trialability. The ski resort managers did not directly discuss trialability as a characteristic of sustainability during the interviews. Yet, as pointed out above, one manager spoke about the little steps she takes to gain the approval of leadership in regards to sustainability projects. This idea can be related to the role trailability of the sustainability as an innovation – i.e. the company "tries out" on a smaller scale before devoting to sustainability fully.

Characteristics of the external environment. The second main aspect from the study conceptual framework concerns factors from the external environment. As per the conceptual framework of the study, those include ski resort competitors, ski resort guest demands, and government regulations as entities affecting ski areas' sustainability.

Competition. In regards to competition between the ski resorts, one participant explained that the company did look at other parts of the industry as a member of the industry groups such as Colorado Ski Country in the state and nationally in the US - the National Ski Area Association. They further elaborated that the industry conferences were one place to share ideas

– learning what innovations other resorts were adopting and also "looking for win-wins." Yet, another ski resort manager reminded us of the fact that all twenty-five ski areas within Colorado were fighting over the same total number of people. Hence, being a more "sustainable" resort might possibly attract more customers. One interviewee pointed out that the nature of the business – outdoors, etc. is a reason that many of the resorts actually work together, "there is kind of common ground together, and common goal." Nevertheless, generally most of the managers did not speak strongly about competition among the resorts as a trigger for sustainability. One of the participants was even bluntly honest, stating:

> There is no competitive pressure surrounding sustainability, the competitive pressure is completely surrounded by guest [customers] experiences.

Customers. This quote clearly brings us to the next main entity managers discussed – the resort guests. There was an agreement among the sustainability managers that people are starting to migrate more and more towards socially responsible companies and that sustainability was one of the things that their clientele expects from them. Another participant added that:

> … [ski resorts] are going to be more open to it, because of public pressure. …there is more momentum around the need for sustainable practices. And there are more and more penalties and public outcry around folks that don't practice sustainable practices. So, I think there's a lot of opportunity and potential there.

Likewise, another individual supported this idea, stating that businesses today need to learn that sustainability was what the consumer wanted. The same manager added that the more people see successful businesses doing that, the more the company tends to follow suit. She also shared a story about the power consumers have over changes in the corporate world:

> I had this one guy come to me and say, you're not recycling in the hotel rooms at the hotel. And people told me to call you… I tell them to write a letter to the hotel. Tell them your group is not going to book if they don't get sustainable. And they wrote a letter, and they got recycling in all the hotel rooms.

This story clearly highlights that customers can be a powerful player in the business

change towards sustainability. On the other hand, one sustainability manager explained that the resort guests could also be a barrier. One respondent explained that because they have such a diverse group of people in the resort (including employees and guests from all over the world), holding various beliefs, different levels of awareness, etc., it was very difficult to change. Guests, specifically, people who are on vacation are usually not trying to spend their vacation "thinking," reading signing, getting educated about sustainability, etc.

> So that was our road block – we were expecting somebody who was on vacation from Texas, who lives someplace where they maybe don't even recycle…to walk with their tray of five different materials and find the right receptacles for all of them and then it work out… and it doesn't, it just doesn't…so….that one was a systemic – we need a better system for dealing with it.

This statement shows that maybe customers themselves have not completely embraced the idea of sustainability into their everyday life, or at least during their vacations. One resort manager stated that there were many things that could be done behind the scenes (e.g. recycling, composting, reducing footprint) but…"they either don't have a guest impact or don't have a positive guest impact…. And that's really all that matters here…" Thus, it was highlighted that some resorts have the mentality that if the guests did not ask for it, there was no need to do it. Similarly, another ski area sustainability manager pointed out that maybe guests were not that concerned with the topic of sustainability yet – "there's probably a small percentage that is looking [for sustainability practices]." This idea for a necessary shift in consumer values can be also linked to the idea of urgency – due to climate change and other societal problems of our time: "….You [the present generation] don't have a choice – you have to be the greatest generation ever!"

And maybe this shift in values can actually start from the business world, instead of the customers affecting the companies' decisions – companies can start the wave, as one of the

respondents suggested. Another interviewee shared that there were very big opportunities to

influence their guests:

> We have over seven million guests a year. So, …if we do a better job communicating not
> only our efforts, but helping them just by getting outdoors, research shows that affects
> peoples' ethic to want to preserve. …we can point them in the right direction through
> educational campaigns on our mountain. So maybe in the van ride up to the mountain, if
> we're using alternative fuels, there's the CEO of a small trucking firm in there, and he or
> she sees this idea and goes back, and implements that for his small trucking company. Or
> maybe as simple as a child recognizing the use of water, and the importance of turning it
> off when they brush their teeth. If we can touch the seven million guests and they take
> that away, imagine the impact that can have.

Government Regulations. Although most of the respondents did not consider

government regulations as a strong driver of ski resorts' sustainability, a few of them pointed out

that stricter regulations could actually assist in the process:

> …if anything were to happen will be most likely an outside factor…And I would say
> specifically the outside factor would be regulatory…the majority of things that we are not
> doing should be government mandated for us to do. ..if not government – then mandated
> from the corporate level.

Another topic, which was discussed as a barrier to sustainability related to government

policies was the lack of incentives. A few of the participants argued that not many incentives for

adopting sustainability practices exist:

> there was a lot of funding for the residential sector but there really hasn't been much
> funding available for businesses or commercial entities…I think – if there are incentives
> as there are for homeowners, I think we would improve that…it can be very successful.

Also related to regulations, a couple of the managers talked about politics – the role

elected officials play in affecting sustainability:

> Regulations definitely work, but, you certainly need to elect people to make that happen.
> And that's not on the people that got elected, that's on the voters. And that's on the
> apathy of voters as well, and the biggest group of apathetic people are young people.
> Why didn't they get out and vote? Or why didn't they get out and vote for more
> environmentally friendly people? They just didn't do it. It's the same thing with letting
> companies know. Apathy in either area is, you're right, if there's regulation, then you

won't have to rely on the customers to demand of the company. But you're not going to get regulations for the same reasons you're not gonna get people complaining to companies.

Lastly, also related to governments and regulations, the idea of advocacy, activism, and changes in policies and politics from the ski resorts themselves (and probably other companies) was pointed out as the only way a global change towards sustainability will be triggered:

> The business community needs to pivot from operational greening to basically activism, to create a political will or … climate policy. …Your CEO can speak out on the topic… to encourage elected officials to take action, you can encourage guests and professional athletes associated with the resort to move and educate those people, you can write articles, you can use social media, … you can create events around climate, so, you can use the power of a corporation to help push the social movement on climate change.

> …with our Congress in place, I certainly don't see that happenings in the next four years but… in a sense of building standards, and…you know, people are more aware, acquiring the use of energy efficiency and the technology that's available out there it's…more regulation…I don't know? ...Is that gonna really happen politically?

The former manager highlighted once again the complexity of the needed actions for change towards sustainability at a global level. A shift not only at an organizational/corporation level is necessary, but also change in government policies and regulations, which are certainly very tied to political aspects as well.

Characteristics of the adopters. In terms of internal factors affecting sustainability of the ski resorts, the innovativeness, size (number of employees), and financial structure (public or private) of the company as drivers or barriers to the diffusion of sustainability were considered.

Innovativeness. The first characteristic of an organization as a potential factor affecting ski resorts' sustainability was innovativeness. The most prominent theme related to this topic and across all interview data was leadership. All of the respondents stated clearly that the only way any changes towards sustainability would take place was through a devoted leader(s), who is

personally passionate about sustainability first, and also a person with "a holistic kind of forward

thinking," who has a well-defined vision for the company's path towards sustainability:

> …it takes a different type of thought process and that's hard. It takes a unique kind of
> leader to see that, and believe in that, and invest in that [sustainability].

> ...it [sustainability] does take a long term vision and approach … there is an investment
> associated here that has a longer payout. So it does take a holistic kind of forward
> thinking leader to think of the business that way.

> …the [resort] CEO has a vision … we're going to build a business that not only survives,
> or thrives over time, and we're going to invest in all aspects of the foundation because
> it's not only the right thing to do, but it drives a successful business.

The last quote supports the previously introduced idea that adopting sustainability was a

win-win scenario, where businesses did good for the environment and people, but also made

enough profit. Additionally, some of the respondents implied that the passion related to

sustainability was not necessarily innate – it could be learned as ski resort managers gain more

knowledge on the topic, as well as realize the "win-win" scenario many of the sustainability

initiatives present:

> Our senior management has gone from really kind of not getting this issue to being
> completely on board and even driving sustainability programs, so we are unifying
> management on this issue.

Conversely, another participant highlighted people in leadership positions as a barrier to

corporate sustainability. She stated that, *"right now it [sustainability] is viewed as a speedbump,*

it's viewed as a regulatory… almost like… do you have to?" She further elaborated that at her

resort, most of the individuals holding high leadership positions are relatively old (above 65

years old) and they were not very open to innovations, especially related to sustainability. This

idea was also linked to people's values – it is very difficult to change somebody's well

established values and attitudes. Yet, the change was usually triggered from top management.

While several of the resort managers explained that they have tried bottom-up approaches, generally, they have not been very successful. One respondent stated that: 'with very few exceptions, particularly in the corporate structure – things don't happen bottom-up!" It was further stated that all top leaders have to be on board for any sustainability changes to happen – not only the CEO, as one respondent stated but also, the CFO and all other managers and directors.

Moreover, those leaders should ensure continuous communication and collaboration for sustainability, and avoid "silos." The interviewees talked about systemic changes throughout the organization, rather than isolating each department as a separate silo with its own goals and objectives. Hence, the role of the institution was once again highlighted:

> Most people today have it all compartmentalized. All siloed. We're doing this HR stuff, we're doing this guest stuff, we're doing this community stuff, we're doing this environmental stuff…

> I think our biggest problem at this point is educating people and having the PR of what we have done … I think if you ask upper management if we are aware of all the things we've done, they would say yeah, but does that translate down to the ….lift ops and all the employees about being educated and fully realizing all the efforts that we have made – probably not…

> ….all of them [department sustainability initiatives] will be random programs unless somebody can tie them all together and articulate…

Thus, another important aspect from an internal organizational-institutional standpoint related to leadership was the role of communication. Most of the ski resorts stressed the importance of continuous communication between departments and across all company employees – through weekly employee newsletter, performance reviews, goals set annually, award systems (recognition), new hire orientation, outreach events (with community partners), volunteer efforts (employee volunteer day), emails, video trainings, etc. Also related to

communication is the idea to have a devoted department or a "green team," as well as a devoted position to sustainability specifically. Although a systemic integration in the company is necessary, without a "champion" or a leader devoted specifically to that, diffusion of sustainability innovations is difficult.

> The 2007-2008 season is when we started to get serious about an actual sustainability program, with a [sustainability] manager at [the resort]. That's when I added that to my current roles. So I have 2 jobs here…. my position started in the 2007 / 2008 season, that was kind of, to me, the company saying ok, we want to get serious about that [sustainability].

It was interesting to see that one of the resorts did not have a devoted position to sustainability, yet the interviewee was taking those additional responsibilities. She stated that she was working on sustainability but was "not really compensated to do it, nobody [at the resort] is…" Nevertheless, she also pointed out that "it is a full time job - if you want that done you need to pay somebody," otherwise it was very difficult for her to do any sustainability work among her other everyday responsibilities. Thus, the lack of a devoted person working on company's sustainability was revealed as a barrier to change towards sustainability.

Size. Generally, there was an agreement among all managers that sustainability as an innovation was more easily diffused in smaller companies. One of the managers of a smaller company explained that being a small company was a big advantage - almost any changes in policies and initiatives in smaller ski resorts are easier as people know each other and it is easier to hold people accountable for their actions:

> Here, pretty much every employee knows every other employee…the CEO knows everybody's name, first year employees included - everybody, so …the sense of accountability is there, within ourselves… it also I think gives you a little more freedom to take risk …just the financial cost of us trying something new is just such a smaller drop in the bucket [compared to that of big companies], even though, we see the same results….But… the other thing too with the bigger companies, is that they sort of…. can throw money at it - if they need to… if something isn't working, they will just go out and buy renewable energy credits...So, I think that the size of the company absolutely helps.

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The same respondent also pointed out that it is easier for smaller companies to cultivate an organizational culture, which ultimately affects the diffusion of innovations:

> …our CEO is, when we get a foot of snow, he is the first person here shoveling. You don't see that in a lot of companies. He's out there doing what needs to be done. Our assistant general manager drives the shuttle, parks cars, sells tickets. We all just do whatever we need to do to get everyone a great day.

The quote highlights once again another important internal driver of ski resort's sustainability – a devoted "hands-on" leader, who was involved in all sectors of the company's operations and administration. Another participant also argued that the larger an organization gets, the harder it is to stay "connected to the core:"

> I think it's easy as you get more and more dispersed, to lose sight of some of those things that you say are important. However, you can point to very, very large companies who have very, very strong sustainability ethic. But it takes work and energy and integration…It is all about leadership – top-down only works…

Conversely, one respondent stated that they did not think size matters. In their opinion, the only thing that matters was to have the passion. The manager also stated that in today's busy times (people working 40-60-80 hours per week) many ski resort managers felt that they did not have time to do any extra work (related to sustainability). But still – there are people, she argued, who would make it [sustainability] be a priority, and they would commit to it. Hence, she pointed out that whether it was a small or a big company, you have to have "a champion" who will take a project and get it done.

Lastly, to add to the debate on how the size of the ski resort affects sustainability, one respondent stated that smaller companies do not always have the resources to go out and invest in sustainability (e.g. build a huge solar farm just for the PR side), "we have to be very careful about how we invest our money," he added, especially considering that sustainability projects usually require an upfront investment:

…timing and resources. Resources being money, down time. That is one obstacle for us. Because we are small, everyone has a lot on their plate. So sometimes resources aren't available to start a project, or the timing is bad. Or we had a bad season, fires, so we just don't have the capital resources to do a project at a certain time.

Thus, larger resorts probably have more financial resources for investment while smaller ones have to be very cautious about their funding and finance distribution. On the other hand, the interviewees all agreed that smaller ski resorts have an advantage as they can more easily foster sustainability company culture.

Financial Structure. In regards to the financial structure of a ski resort – public or private, most of the respondents agreed that sustainability innovations were more easily diffused in private companies. One respondent highlighted that often times big companies were public and they were under pressure to grow and produce certain margins. A private company, on the other hand, does not experience any external pressure – thus, if the owner wants to invest in sustainability, they can…

...private ownership is a real benefit, it is harder to do this in a publicly traded company… and then – leadership, CEO leadership is critical, if you don't have that it is very hard to move forward…. and ..

Another participant talked about the bureaucracy in public (larger) companies. She stated that:

There's so much red tape and so many people that sometimes those ideas take too long to get to implementation. You know, if I have an idea, or the operations department has an idea, I just go up to our CEO's office and talk about it… it's very, it's much easier for a small private company to get things done…[there aren't] too many people involved.

Nevertheless, one of the managers in a publicly traded company summarized how the financial structure affects sustainability very clearly – "our mandate as a company is very clear – it is maximum return to shareholders." Thus, anything that does not bring immediate financial benefits, including sustainability, is not a priority of those resorts.

Internal vs. external factors. To address research question two, when directly being asked whether sustainability changes within the company were generated internally or by factors outside of the organization, all of the resort managers firmly stated that sustainability initiatives were triggered from within the organization, as the following quotes reveal:

> I think right now there's a lot more energy around internal ideas, on how to be more sustainable, then there is pressure externally….I think it's a self-generated kind of energy within this company.

> What we're trying to do is be proactive. We're trying to go beyond that [regulations]. … I'd say it would be roughly 80-85% of our initiatives are self-driven. They're not driven by external forces in the arena of sustainability.

> I think a lot of why we are so innovative is just personally from top-down everybody is sort of sustainability-minded …I think we have kind of committed to going down the sustainability path and I think as years go on… we are going to start seeing the economic benefits.

> …they typically come from within the organization but based on understanding of climate science.

Discussion

This section includes a discussion of the study findings, implications, and contributions to research related to diffusion of innovation and sustainability, as well as limitations and suggestions for future research. First, although all ski resort managers discussed a number of barriers for the diffusion of sustainability among their companies, most of the resorts claimed that sustainability is already diffused within their resorts (at least to a certain extend). Only one of the eight managers stated that her company has not yet adopted any changes in the sustainability direction. Moreover, to address the first research question in regards to factors affecting ski resorts' sustainability, the characteristics of the innovation (Figure 4.1) interestingly were not pointed out as the main factors affecting sustainability among Colorado ski resorts. Yet, Rogers (2003) argues that the characteristics of the innovation are usually the most influential

factor affecting the likelihood of adoption (between 49 and 87 percent of variance in adoption of innovations is explained by these five attributes). Although several (quantitative) studies found that innovation characteristics were the most influential factors in terms of environmental sustainability (Le et al., 2006; Smerecnik &Andersen, 2011), the ski resort respondents in this study implied that the characteristics of sustainability as an innovation were important yet not the most powerful factor affecting sustainability. One possible reason for the suggested "weak" role of the characteristics of the innovation might be due to lack of interest and/or knowledge of the ski resort industry about characteristics of sustainability as an innovation and about sustainability as a corporate philosophy. Yet, the results might also simply confirm that sustainability as a philosophy and a business model is truly an innovation in the ski industry. Thus, my findings bring new insights in regards to DoI theory, questioning the role of characteristics of the innovations in a tourism (ski resort) context, which indicates that further research is necessary.

Nevertheless, a few of the ski resort managers discussed the complexity of the concept and the lack of understanding/education, particularly speaking of leadership. The most important aspect related to the complexity of sustainability at an organizational level concerned systemic thinking. Senge (1993) states that systems thinking is concerned with understanding a system by means by bringing the linkages and interactions between the elements that comprise the entirety of the system, which certainly relates to the problem with "siloed" departments within the resorts and lack of communication on sustainability initiatives discussed earlier. This notion can be also linked to one of the other characteristics of the innovation – compatibility. As revealed through the interviews, not every ski resort has the company culture, compatible and open to change towards sustainability. It is argued that during organizational transformation efforts it is essential that the climate of the organization be conducive to change (Swanepoel, Schenk, van Wyk &

Erasmus, 2003). Once a company culture is established within the ski area, the systemic change and adoption of sustainability innovations is more easily achieved. Similarly, although some of the ski resort managers highlighted that adopting sustainability innovations brings relative advantages in terms of improved reputation primarily, what was referred to as a more important aspect was that sustainability brings a win/win scenario. Two of the interviewees argued that if leadership understands how to embed sustainability practice within the company, benefits would come, not only in improved guest and/or employee satisfaction and nature conservation, but also financially.

The findings in regards to characteristics of the external environment were also somewhat surprising. Considering that the ski industry has not seen a lot of growth in the last several years (NSAA, 2016), one would expect that competition – for the same number of customers would be fierce. Yet, the participants revealed that the stakeholders outside of the organization did not play an important role in the diffusion of sustainability innovations among Colorado ski resorts. Studies suggest that companies perceiving a higher level of competition are more proactive in adopting sustainability practices to gain a competitive advantage (Veliyath & Fitzerald, 2000). Yet, this study's findings imply that no competitive pressure from other resorts in Colorado existed – competitors were not a driver (or barrier) to sustainability. One explanation might be that ski areas managers do not think that sustainability sets the resort apart, which contradicts literature on the topic. However, if ski resort guests are not looking for "sustainable" resorts when choosing where to practice snow sports, not surprisingly – the resorts themselves will not be looking for ways to change towards sustainability either. The ski managers supported this notion, stating that their customers were not opting out for "green" resorts yet. A recent and rapidly growing trend in management has been to place the customer at the center of corporate

strategies (Martin et al., 2010), based on the insight that customers are the basis of company

profitability (Gupta et al. 2004; Hogan et al. 2002 as cited in Muller, 2014). Although a few of

the interviewees highlighted that most of the changes around the company are tailored to

improve guest satisfaction primarily, those changes were not focused on sustainability – they

included things like building more restaurants, and expanding the variety of activities offered on

the mountain. Lastly, a central point in one of the interviews was that consumers do not exercise

their power to trigger change at the corporate level enough. This has important implications for

the general public – we, as ski resort guests (and customers of any other business) can become a

driver in the shift towards sustainability – by talking to managers with complaints and

suggestions related to sustainability, being activists in the change process and creating "a social

revolution," as one of the participants called it. The idea further relates to the last component of

the diffusion of innovation variables related to the external environment – government

regulations. A few of the sustainability managers implied that stricter regulations in terms of

sustainability were needed and government bodies had the ultimate power to be the driver of

change towards sustainability among the ski resorts, and globally at a much faster pace. It was

further argued that each resort should write to government officials and advocate for change in

policies and regulations at the global level, if any real transformation is to take place. Once

again, considering the severity of the problems the ski industry is facing (i.e. climate change –

less snowfall, shorter winter season, political and social instability, etc.), severe measures should

also be taken to address those challenges. And those changes would most probably start at an

organizational level, which brings us to the last component in the proposed framework

concerning the characteristics of the ski resort as an organization, or factors, internal for the

company.

It is stated that firms generally have a higher degree of control over internal changes (i.e. constantly reassessing objectives and policies that affect or are affected by primary stakeholders) (Freeman, 1984), which allows them to be proactive (Lozano, 2013).

In regards to the characteristics of the ski resorts, the main point of all interviews was the role of leadership in each company, which can be linked to the ski area innovativeness as a factor affecting corporate sustainability as per the study conceptual framework. All interviewees supported Ireland and Hitt's (1999) proposition that top management support and involvement were a key requirement for promoting innovation. Sustainability ski resort managers highlighted that the key driver for a sustainable ski area is a devoted leader (e.g. CEO or other "change agent" in a management position), who knows how to communicate sustainability and trigger systemic change in her organization, or as one of the respondents put it: "how do we create one agenda that we're all very clear on, what we're trying to achieve, and that we're all working together in that direction. …. company mission, vision, values…" Therefore, the respondents stressed that the most important factor driving the overall diffusion of sustainability in a ski resort is an innovative leader. This finding has important implications for resort managers. Results imply that a ski resort can contribute to its own sustainability through internal organizational changes. A devoted leader who is proactive and open to new ideas and policies in regards to sustainability, and one who communicates sustainability throughout the company and advocates for it outside of the resort boundaries, can create the context for innovation and ensure company's long-term success from all possible aspects – preserving natural resources, keeping their employees happy, and bringing financial benefits for its owners.

With regards to size, Rogers (2003) points out that larger-sized organizations are generally found to be more innovative. Conversely, others (Sponseller, 2015) argue that smaller

companies are, or at least can be more innovative. This study's findings reveal that size is not a very significant factor for sustainability. Ski resort managers highlighted that sustainability innovations are generally more easily diffused in smaller companies due to more relaxed communication and organizational structure, thus supporting Sponseller's proposition. Yet, some of the participants also pointed out that smaller companies had financial restraints, which could be a big impediment. Hence, more research is needed when evaluating the role of a company's size as a driver of sustainability.

Conversely, ski resorts' managers had stronger opinions about the financial structure of their companies as a factor affecting the diffusion of sustainability innovations. The study findings supported the idea that it was easier for privately-owned companies to affect the attitudes and behaviors of their guests and employees in regards to sustainability, while public companies were much more complex as institutions and sustainability-related communication and change was more difficult to achieve.

In terms of the future of the ski sector of the tourism industry, respondents shared various thoughts. A few of the sustainability managers argued that sustainability concerns within the ski industry will keep growing. The interviewees pointed out that "ski resorts are going to be under increasing climate stress and also that we [the present generation] don't have a choice, we have to be "the greatest generation ever" and find solutions to these global challenges. We have to instigate a shift in values and a cultural change as "the tipping point" is now.

To summarize, this research brings new interesting insight in the under-researched field of diffusion of sustainability in tourism. From a theoretical standpoint, the findings expand on the applicability of DoI theory in tourism context. Yet the results also contradict some of Roger's ideas – i.e. characteristics of the innovations were not the most influential factor in the diffusion

process. One explanation might relate to the nature of the industry, and the case study approach of this research – limiting the results to only six ski areas in only one geographical region. Yet, the results might also imply that DoI theory should be revisited and more research in the field is necessary.

Moreover, this study also makes a contribution to the sustainability literature. It reveals perceptions of corporate sustainability as an innovation. Additionally, the study findings highlight the various drivers and barriers to sustainability from a business perspective, which has important practical and theoretical implications.

From a practical standpoint, the finding has important implications for resort leadership. Results imply that a devoted leader who is proactive and open to new ideas and policies in regards to sustainability, can ensure her company's CS. Thus, the great role of ski resort leadership is once again highlighted, implying that leaders are the primary drivers of CS and they have the duty of triggering changes towards CS at the ski resort.

Based on findings from the interview data, several propositions in regards to relationships between the diffusion of innovation variables and ski resort's sustainability were developed:

(P1). The characteristics of the innovation affect the diffusion of sustainability among Colorado ski resorts.

(P2). The characteristics of the external environment have no effect on the diffusion of sustainability among Colorado ski resorts.

(P3). The characteristics of the adopter have the strongest effect on the diffusion of sustainability among Colorado ski resorts.

Those propositions were utilized as hypotheses in the subsequent quantitative study (Chapter V) using an on-line survey to assess the relationship between the diffusion of innovations variables and ski resort's corporate sustainability.

Study limitations. The most significant limitation of the study is the relatively small data sample, including eight sustainability managers. The main reason for the relatively small sample is twofold. First, a few of the ski areas do not have a specific position devoted to sustainability which was possibly one reason for their rejection to participate in the study. The second main obstacle was related to the fact that I was trying to recruit individuals holding executive (or relatively high) positions in the business world. Possibly the lack of incentives and limited time availability of those business people might have been a reason to refuse participation in the study. Yet, considering the fact that the six companies who participated own twelve of the twenty-five ski areas in Colorado, I deem the study sample sufficient. Additionally, the study includes participants from smaller and larger ski resorts, which also contributes to the representativeness of the sample. Another limitation is the fact that the data sources come from a single industry and is limited to only one geographical area – Colorado.

Future research. Future research on sustainability in the resort industry should focus on institutional mechanisms at an organizational level, leadership and communication. Studies focusing on effective management techniques and leadership skills required to facilitate the diffusion of sustainability innovations should be further explored; factors beyond sustainability diffusion topics such as trustworthy leadership, trusting followers, capable champions, involved management, innovative culture, accountable culture, systems communication and systems thinking (Judge & Elenkov, 2005; Smerecnik & Andersen, 2011).

Nevertheless, a corporation's success in adopting green practices depends not only on corporate attitudes towards environmental issues but also on its employees' personal beliefs and everyday actions (Chou, 2014). Moreover, Sweetman (2007) states that no matter how good the company's policies and practices might look on paper, no changes will occur without the active support of employees across the organization. Similarly, different employees often see the same thing but interpret it differently based on their own unique way of thinking (Salisbury, 1999). Therefore, in order to understand the way in which decisions are made and strategies implemented within an organization, one would need to acknowledge and understand how employees within the organization view the system and what constitutes their worldviews (Viljoen-Terblanche, 2008). Related to that, a few of the respondents pointed out the seasonality of the business (and the high employee turnover) as barrier to sustainability.

Hence, the perceptions of the broad range of ski resort employees should be studied. To address this gap, I designed a second phase of this study – a survey questionnaire instrument evaluating ski resort employees' perceptions on the diffusion of sustainability innovations in their companies (Chapter V). Consequently, the findings from the two studies were combined and contrasted, highlighting differences and similarities in the perceptions of the two study groups (Chapter VI). It will also be interesting to repeat the study in other areas outside of Colorado to test theory and generalize findings. Lastly, findings are never static – the drivers of sustainability of ski resorts will probably change over time (e.g. consumers might start playing a more important role in affecting ski areas sustainability). Thus, it is recommended that the study be repeated in several years and findings compared.

Conclusion

This study contributes to the emerging field of resort sustainability and diffusion of sustainability innovations. Moreover, the findings provide useful theoretical knowledge and advice for managers, change agents, opinion leaders and suppliers in the resort industry on how to further diffuse sustainability in the sector. Dunphy, Griffiths and Benn (2007) argue that the fundamental question to address today is how the current model of the corporations need to be modified to contribute to global sustainability. This study demonstrates the drivers and barriers to the transformational process of diffusion of sustainability innovations among Colorado ski resorts. Despite its limitations, this study is one of only few attempts to explore ski resort perceptions toward sustainability. Lozano (2009) proposes that internally planned, orchestrated change, based on proactivity and collaboration, offers a better option to companies wishing to engage with sustainability. My findings support this proposition and offer ideas for companies' leadership teams primarily, highlighting the power each organization holds for its own long-term success. Strategic thinking, systemic structural change and strong leadership were highlighted as key institutional mechanisms in the journey of change towards sustainability. It is with hopes that the "new generation managers" with an innovative and open mind will further facilitate the change process. Additionally, we all need to be activists and instigate the social movement towards sustainability. One way to speed this process is through regulations, or as one of the participants put it "succession of the leadership or regulation – that's the only way it's gonna change!" Yet, although organizational change should be led from the highest levels, it should also ensure participation on all levels of the institution, as well as the participation of other external entities (Viljoen – Terblanche, 2009). Thus, the study brings new insights into the field of diffusion of sustainability innovations in the tourism industry, or ski resorts more specifically.

Even though the different characteristics of sustainability as an innovation and the external environmental factors were found to affect sustainability of the resorts, the study results indicate that most of the "change towards sustainability" stems from within the company. It was found that the innovativeness, fostered through innovative leadership is the ultimate driver of sustainability. Thus, adopting sustainability innovations can act as a "transformational innovation" that can dramatically reshape the way companies from all industries provide products and services and contribute to society's progress toward integrating sustainable lifestyles (Denning, 2005).

CHAPTER V

PREDICTORS OF SUSTAINABILITY AMONG COLORADO SKI RESORTS. A

DIFFUSION OF INNOVATIONS PERSPECTIVE

Introduction

As the world faces an increasing array of environmental, social and economic challenges,

businesses must lead the way to a transformative paradigm shift towards sustainability.

Businesses play a key role in creating a more sustainable future through transforming their

products and services to offer consumers options for a more sustainable lifestyle (Smerecnik &

Andersen, 2011). Corporate sustainability (CS) is viewed as a new management paradigm,

alternative to the traditional growth and profit-maximization model. CS requires that firms not

only ensure profits but also pursue societal goals, related to sustainable development (Wilson,

2003). And the first step in the shift towards corporate sustainability is understanding what the

drivers and barriers of this process are. Next, the company can look for ways of affecting those

factors at an organizational or institutional level. Studies suggest factors external to the

organization such as environmental regulations set by governments and pressures from

customers and the community being primary drivers behind adoption of corporate sustainability

practices (e.g. Howard-Grenville, 2006). Yet, others consider internal organizational pressures

such as staff turnover, top managements support, environmental training, employee

empowerment, etc. as key motivators for achieving corporate sustainability (Wilkinson, Hill, &

Gollan, 2001). The numerous factors affecting corporate sustainability pose a challenge for

corporate leaders and champions, but also an opportunity, in fostering sustainability within the

companies. The challenge is how to manage and balance the internal and external drivers and

stimuli, so that the company can respond quickly to external stimuli, and promote and reward the internal drivers, so that the organization can become more proactive to helping societies become more sustainable (Lozano, 2013).

Tourism as an industry is expanding rapidly, bringing a number of positive economic benefits, but also potential negative impacts on the natural environment, society, and culture, among others (Dabphet, Scott, & Ruhanen, 2012). The ski resort industry specifically, is found to be an important sector to examine in this context. Ski resorts create significant environmental impacts and also are dependent on the natural environment to maintain profitability (World Tourism Organization and United Nations Environment Program, 2008).

Hence, this study investigates factors affecting the diffusion of sustainability innovation among Colorado ski resorts. Furthermore, I explore to what extent ski companies can internally affect their own sustainability (through changes at an organizational level) or rather external factors, such as customers, competitors, and government regulations (which ski resorts cannot directly control) play a more important role affecting the resort's overall sustainability. One way for any business to respond to the constant changes in the natural and business environment is through innovations.

Rogers' (2003) Diffusion of Innovations theory (DoI) which is considered a leading model for understanding the adoption of innovations (Smerecnik & Andersen, 2011), has been applied in numerous studies worldwide in a variety of fields including agriculture, communications, mass media, public health, and sociology. This study utilizes DoI to examine the relationship of the three main independent variables - characteristics of the innovation (sustainability), characteristics of the external environment and characteristics of the organization as predictors to resorts' sustainability through the four dimensions of sustainability

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(environmental, socio-cultural, institutional, and economic (Spangenberg & Valentin, 1999).

Only few prior studies have investigated sustainability in the resort industry as an innovation

process utilizing DoI theory. They found the DoI variables to be highly predictive in terms of

diffusion of sustainability in the resort industry (e.g. Le et al., 2006; Smerecnik & Andersen,

2011).

Hence, the application of Roger's DoI theory in a tourism context is the unique

contribution of this study, thus bringing new insights into this under-researched, yet relevant

field of sustainability and innovation. Moreover, by operationalizing corporate sustainability

(dependent variable) through the four dimensions of sustainability, this study contributes to the

literature by applying a holistic framework of sustainability, the Prism of Sustainability (PoS).

Thus, the study is guided by two main research questions:

(R1) What factors affect the diffusion of sustainability among Colorado ski resorts?

(R2) Are internal or external factors stronger predictors of sustainability (among

Colorado ski resorts)?

Literature Review

This section provides a review of literature related to sustainability and DoI theory, as

well as background information on the ski industry in Colorado.

Sustainability and ski resorts. The corporate sustainability idea originates from the

broader concept of sustainability, defined by the World Commission on Environment and

Development (WCED) as ''development that meets the needs of the present without

compromising the ability of future generations to meet their own needs'' (WCED, 1987, p. 43).

From the business perspective, the sustainability concept has been first applied through the idea

of corporate social responsibility (CSR) and corporate sustainability (CS) – applied in this study. CS is viewed as a new management paradigm, alternative to the traditional growth and profit-maximization model. While CS recognizes that corporate growth and profitability are important, it also requires the corporation to pursue societal goals, specifically those relating to sustainable development — environmental protection, social justice and equity, and economic development at an organizational level (Wilson, 2003); a sustainable company focuses not only on efficiency, but also mechanisms to encourage "meritocracy, diversity, innovation and long-term planning" (Dill, 2015). Additionally, the International Institute for Sustainable Development defines sustainability for the business enterprise as "adopting business strategies and activities that meet the needs of the enterprise and its stakeholders today while protecting, sustaining and enhancing the human and natural resources that will be needed in the future" (IISD, 1992). This definition is important because it stresses the dual objective of meeting practical business needs while also protecting the environment (Prentergast, 2011) and contributing to global sustainability. Yet, a debate on whether factors external to the organization or internal organizational pressures play a more important role in the journey towards sustainability exist. Hence, this study adds to this debate, revealing factors affecting corporate sustainability and also identifying whether external or internal factors play a more significant role in orchestrating corporate sustainability.

Increasingly, the corporate sector is showing interest in sustainability. Some of the initiatives supporting their interest include the United Nations Global Compact (UNGC), the Global Code of Ethics, OECD's Guidelines for Multinational Enterprises, and the Global Reporting Initiative. Nevertheless, embedding the actual principles of sustainability into company's systems represents significant challenges, mainly due to the complexity and multi-dimensionality of the sustainability concept (Langer & Schon, 2003; Lozano, 2012b).

These challenges are present in a tourism context as well. Bramwell and Lane (2012) point out that the idea of sustainable tourism began as a negative and reactive concept in response to issues in the tourism industry in the 1970s such as environmental damage and negative impacts on society and cultures. Yet, now, over forty years later, sustainable tourism has become "a central focus" of tourism destinations (McGehee et al., 2013). At a resort level, some of the pressure for sustainable tourism operations stem from consumer demands, government regulations and environmental organizations (Erdogan & Baris, 2007; Goodman, 2000). As a result, more hotels and resorts, including ski resorts, are adopting environmental sustainability innovations such as minimizing energy and water use and managing waste and greenhouse gas emissions (Erdogan & Baris, 2007; Honey, 2008; Trung & Kumar, 2005 as cited in Smerecnik & Anderson, 2011). While, some of the literature reveals positive impacts of sustainability on customer satisfaction, as well as loyalty, which is believed to improve overall resort performance (Kassinis & Soteriou, 2003), other studies have found no conclusive evidence of a correlation with performance (Claver-Cortes, Molina-Azorin, Pereira-Moliner & Lopez-Gamero, 2007 as cited in Smerecnik & Anderson, 2011). Hence, the reasons for adoption of sustainability practices vary.

In regards to the ski industry specifically, according to data from the National Ski Area Association (NSAA) for the year 2014/2015 the ski industry brought in $7.3 billion to the US economy (direct spending in US resorts) (NSSA, 2016). Based on the amount of participants in snow sports and the income generated by resorts, ski areas are an important sector of the tourism industry in the US. Ski resorts also have a major impact on their local economies by bringing in customers for area business and providing employment for residents of ski towns (Prentergast, 2011). At the state level, Colorado typically ranks as the top state in the U.S. for total skier visits.

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Overall, Colorado's ski industry generates more than $1.5 billion in revenues per year (Colorado Tourism Office, 2015; HVC, 2014) with Colorado skier visits numbers at 12.6 million in the 2013/2014 season (Blevins, 2014). Hence, the significance of the ski industry in the state, is one of the main reasons for selecting the state of Colorado as the study site.

Nevertheless, the ski sector has generally been cast in the same light as timber and mining in the United States and is being called "the next extractive industry", rather than a socially beneficial form of recreation (Tonge, 2008 as cited in Call, 2012). As a result of such allegations and/or of concern for its dependence on the natural environment for maintaining profitability and the future of successful business operations, ski resorts are another segment of the tourism industry which is concerned with the idea of sustainability (WTO, 2008). Yet, currently, U.S. ski resorts operate under voluntary environmental regulations. The primary sustainability-related initiative is the Sustainable Slopes Program, established by the National Ski Areas Association, in partnership with the U.S. Environmental Protection Agency, the U.S. Forest Service, and other federal agencies and organizations participating. Over 75 percent of US ski resorts signed the Sustainable Slopes Charter in 2000 (Smerecnik & Andersen, 2011), while currently about 196 ski areas (approximately 50 percent of the ski areas in US) are endorsing the Environmental Charter of the program (NSAA, 2015). Similarly, on the demand side, organizations such as the Ski Area Citizens' Coalition indicate that customers themselves are concerned with ski resorts' sustainability initiatives and demand accountability and transparency from businesses (through its ski areas score card) (Ski Area Citizens' Coalition, 2014). Hence, it is important to research factors affecting ski resorts decision to adopt sustainability-related practices and understanding who plays a major role in affecting the diffusion of sustainability innovation among ski resorts.

Most of the research related to ski resorts and sustainability focuses on studying the impact the ski industry has on the environment – e.g. effects of snowmaking to the environment and for the resorts (Fahey and Wardle, 1998, Leao & Tecle, 2003; Prentergas, 2011; Scott et al., 2003; Smith, 2010, Steiger & Mayer, 2008), chairlifts and trail maintenance environmental impacts (Hadley & Wilson, 2004; Martin, et al. 2010, Patthey et al., 2008, Rolando et al., 2007, Wipf, et al., 2005), impacts from resort development (Gill & Williams, 2011; Prentergas, 2011; Rivera & de Leon, 2004, Tenenbaum, 2001, Williams & Todd, 1997). On the other hand, a large number of studies examined how climate change impacts the industry while discussing implications for the resorts' future (e.g. Moen & Fredman, 2007; Hopkins, 2014; Morrison & Pickering, 2013; Nolin & Daly, 2006; Pickering, 2011; Smerecnik & Anderson, 2011; Weaver, 2011; Whetton, Haylock, & Galloway, 1996).

On another note related to impacts, research shows that ski resorts that are more innovative tend to be more environmentally proactive (Sharma, Aragon-Correa, & Rueda-Manzanares, 2007) and that climate change effects might create a competitive advantage for resorts that naturally receive more snowfall and will require improved snowmaking infrastructures for the others (Scott, McBoyle, Minogue, & Mills, 2006). While one study created a model for improved strategic performance in ski resorts specifically, incorporating elements of sustainability supported by the World Tourism Organization (Flagestad & Hope, 2001), other research has found that the voluntary adoption of the Sustainable Slopes program, created by US National Ski Area Association, did little to improve ski resorts' environmental performance (Rivera & de Leon, 2004; Rivera, de Leon, & Koerber, 2006). Hence, further research is necessary to explain which factors influence the diffusion of sustainability practices in the ski resort industry (Sharma et al., 2007; Smerecnik & Andersen, 2011). Understanding why some

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resorts move towards sustainability while others decide to just adapt to the changing environment (e.g. buying more snow guns, offering more summer activities, etc.) offers new insights for ski company management. Additionally, government agencies can also utilize the findings for identifying new paths for transformation towards sustainability while consumers' ability to influence this transformation is also evaluated.

Prism of sustainability. After a systemic review on innovation practices in the last twenty years Klewitz and Hansen (2014) pointed out that research is still strong on eco-innovation rather than on innovation from the traditional triple bottom line perspective (economic, social, and environmental dimension, also known as people, profit, planet (Dijks, 1995; Spangenberg 2002). A business striving towards sustainability would attempt to find the balance between those three aspects. However, a balance among these three classic dimensions is difficult to achieve without an institutional perspective to manage, mediate and facilitate growth (Cottrell, Vaske, & Roemer, 2013; Eden, Falkheden, & Malbert, 2000; Puhakka, Sarkki, Cottrell, & Siikamäki, 2009; Spangenberg, 2002; Spangenberg & Valentin, 1999). Spangenberg and Valentin (1999) illustrated the importance of the institutional aspect in developing the Prism of Sustainability (PoS). This study utilizes the PoS model as a guide to assess predictors of corporate sustainability among ski resorts in Colorado holistically. From the socio-cultural aspect, the company's approach towards resort guests and company employees was considered; from an economic standpoint the role the company plays in the local economy was evaluated; environmentally, focus was placed on natural resource protection and use of sustainable products. According to Valentin and Spangenberg (2000), institutional sustainability refers to human interaction and the rules by which they are guided or the institutions of the society. Thus, the institutional imperative in this study focused on ski resorts rules, norms and policies

concerning sustainability, as well how those were communicated within the companies. A study conducted by Cottrell, Vaske, and Roemer (2013) looking at resident satisfaction with sustainable tourism in Frankenwald Nature Park, Germany is one of few studies identified applying the PoS framework in a tourism context. Puhakka, Sarkki, Cottrell, & Siikamäki, (2009) also utilized the PoS model while exploring how local stakeholders perceive the sociocultural sustainability of tourism in Oulanka National Park in Finland. The study also highlights the role of the institutional dimension as a facilitator of sustainability (also see Cottrell & Cutumisu, 2006; Cottrell & Raadik, 2008; Cottrell, & Vaske, 2006; Cottrell, Vaske, & Shen, 2007; Shen & Cottrell, 2008; and Shen, Cottrell, Morrison, & Hughey, 2009). This study contributes to this literature with further application of the PoS in a tourism context, yet focusing on diffusion of sustainability as an innovation among ski resorts in Colorado specifically.

Business and innovations. In today's dynamic markets and environments one increasingly important way for companies to contribute to sustainable development is through sustainability-driven innovation practices (Klewitz & Hansen, 2014). Innovations allow companies to adapt their strategy to market changes, and are thus of critical importance for creating organizational value (Stieglitz & Heine, 2007). At an organizational level, it is argued that the capacity of firms to innovate and adapt to market developments is crucial to their success, but research-based knowledge on innovation strategies in tourism remains scarce (Alsos, Eide, & Madsen, 2014). Throughout history the tourism sector has been a phenomenon characterized by immense innovativeness. Yet, the classical innovation literature has until recently primarily been concerned with the manufacturing industry (Hjalager, 2010). Smerecnik and Andersen (2011) point out that although DoI theory has been widely utilized in various disciplines, with over thirty nations using the theory and over 6000 published studies (Rogers,

2003), it has been scarcely applied in the service sector. Moreover, the authors highlight that studies on sustainability innovations have primarily investigated topics related to diffusion of environmental sustainability policies (Bergstrom & Dobers, 2000; Foxon & Pearson, 2008; Kern, Jorgens, & Janicke, 2001; Tsoutsos & Stamboulis, 2005), sustainability innovations adopted in geographical regions (Geltz, 2008; McEachern, & Hanson, 2008; Vasi, 2007) and consumer adoption of sustainability innovations (Labay & Kinnear, 1981). Thus, the diffusion of sustainability innovation in the resort industry has not been systematically investigated. I have identified only two studies bridging this gap (Le et al., 2006 and Smerecnik & Andersen, 2011). The first one by Le et al. (2006) studied factors influencing the intentions of Vietnamese hotel businesses to adopt environmentally friendly practices (EFP) (considered the innovation). Their results confirmed Rogers (2003) proposition that innovation characteristics were the most influential, particularly in regards to EFP, with complexity and observability most significantly correlated with likelihood of adoption (LOA). Another interesting finding from the study was that perceived competition was most strongly correlated with LOA. Their findings support Rogers' argument that diffusion occurs within a social system and this social system plays a key role in the innovation-diffusion process; considering the competition-intensive nature of tourism, these results are not surprising. Similarly, Smerecnik and Anderson (2011) also conducted a study on diffusion of environmental sustainability innovations in North American hotels and ski resorts. The most interesting finding from their study was that simplicity was the most predictive variable for the adoption of sustainability innovations and actually the only variable in the regression analysis the authors conducted, that predicted the overall resort sustainability innovation (consistent with what was found in the Vietnamese Hotels study). Smerecnik and Anderson (2011) concluded that resorts must not look solely to customer demand for a reason to

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adopt sustainability initiatives but rather understand the holistic long-term benefits from the adoption of sustainable practices and policies. Thus, considering the scarce literature on diffusion of sustainability innovation in tourism and the significance of the ski industry in the corporate battle towards a more sustainable future, it can be argued that more research in the field is necessary.

Diffusion of Innovations theory. Rogers (2003) defines an innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p.12). It is important to point out that the newness may be considered in terms of knowledge, persuasion, or a decision to adopt. Diffusion, on the other hand, is defined as "the process in which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003, p.5); it is a special type of communication and it focuses on messages concerned with new ideas. Additionally, Rogers (2003) suggests that the diffusion of innovations is a kind of social change, including a process by which alterations occur in the structure and function of a social system. The author distinguishes three main components affecting the diffusion of innovation – characteristics of the innovation, characteristics of the external environment, and characteristics of the adopter.

Characteristics of the innovation. Rogers suggests five main "perceived" characteristics of an innovation. The first characteristic of the innovation is complexity. It is the degree to which an innovation is perceived as difficult to understand or use. Complexity "is used to reflect the number of customized components, the breadth of knowledge and skills required and the degree of new knowledge involved in product" (Hobday, 1998, p. 690). Research has shown a negative relationship between the complexity of an innovation and its rate of adoption (Hobday, 1998). Yet, some exceptions have been found (Wonglimpiyarat, 2005). More importantly it is argued

that sustainability, especially in the era of multinational corporations and globalization, has become a complex issue for corporations (van Marrewijk & Hardjono, 2003).

The second characteristic of the innovation is relative advantage. It concerns the degree to which an innovation is perceived as better than the idea it supersedes. Rogers (2003) argues that it can be measured in economic terms, brand image, convenience, satisfaction, etc. He also states that the greater the perceived relative advantage - the more rapid the rate of adoption usually is.

The third main characteristic of an innovation is compatibility. It is the degree to which an innovation is perceived as being consistent with the existing values, as well as past experiences and needs of the potential adopters (organization). Rogers (2003) also points out that the adoption of an incompatible innovation often requires the prior adoption of a new value system, which is usually a relatively slow process.

Rogers defines the fourth main characteristic of an innovation as observability, which it is the degree to which the results of an innovation are visible to others. Rogers (2003) argues that the easier it is for individuals to see the results of an innovation, the more likely they are to adopt it.

The last characteristic is trialability, which is the degree to which an innovation may be experimented with on a limited basis; or basically whether the new idea can be tried out (before the actual implementation). Commonly, if an innovation can be tested in advance or on a small scale, the rate of diffusion is higher (Rogers, 2003).Rogers has found that between 49 and 87 percent of the variance in adoption of innovations is explained by these five attributes.

Considering the above-discussed literature on characteristics of the innovation and the findings from the first phase of this dissertation (qualitative data) (see Chapter IV) the following is hypothesized in this study:

(H1). The characteristics of the innovation significantly predict sustainability among Colorado ski resorts.

Characteristics of the external environment. As pointed out earlier, the diffusion of innovation is a social process that is highly dependent on the social system – including culture, diversity, values, norms, etc. Hence, the second main component in the proposed framework concerns factors from the external environment, or the social system. Roger (2003) defines a social system as "a set of interrelated units that are engaged in joint problem solving to accomplish a common goal" (p. 23); it constitutes the boundary within which an innovation diffuses" (p. 24). Rogers (2003) argues that a system's norms can be a barrier to change. Thus, effectively integrating sustainability into companies' strategies requires actions that exceeds organizational boundaries. It is becoming increasingly accepted that stakeholders affect the organizational plans and that ineffective stakeholder involvement in sustainability initiatives can hinder the achievement of business objectives (Waligo, Clark & Hawkins, 2013). Generally, companies have limited ability to overcome external barriers to change, which include pressure from competitors, regulation and legislation, lack of knowledge and interest from consumers or investors (Lozano, 2013). As a result, I assess the impact perceived industry rivalry (competition), customer demands, and government regulations have as external factors affecting the diffusion of sustainability. Commonly, those attributes are measured in terms of perceived certainty levels, meaning the extent to which changes can confidently be predicted (Downs & Mohr, 1976).

Competition. Literature suggests that when an organization operates in a highly competitive market, or when its members perceive that they are operating under competitive market conditions, they are more likely to accept the need for innovation (Frambach & Schillewaert, 2002). Similarly, firms perceiving a higher level of competition are more proactive in adopting environmentally – related practices in order to sustain their competitive advantages (Veliyath & Fitzerald, 2000). Similarly, Moreover, other studies found that being "green'' has become a common practice to gain competitive advantage in highly competitive environments (Appiah-Adu & Singh 1998; Hurley & Hult, 1998; Rangel, 2000 as cited in Le et al., 2006).

Customers. Another stakeholder in the journey towards sustainability are the ski resorts' guests (customers) who can also affect the diffusion of sustainability innovation. The existence of groups such as Ski Area Citizens' Coalition, and Protect Our Winters, for example, indicate that customers themselves are concerned how sustainable ski resorts' practices are and increasingly demand accountability. Similarly, research has shown that poorly rated firms in terms of sustainability respond by improving their performance (Schendler, 2011). Thus, it can be argued that customers, have the power to assist in the process of corporate change towards sustainability.

Government regulations. The last factor from the external environment affecting ski resorts sustainability included in the framework concerns government regulations. Schendler (2011) points out that when taking into consideration the scope and scale of the climate crisis (which ultimately affects sustainability), there is a pressing need for broad policy solutions. Moreover, focusing exclusively on voluntary operational greening including carbon neutrality distracts from the more pressing need for climate regulation to achieve the necessary overall reductions called for by climate scientists. Thus, it is argued that government regulations in terms

of sustainability (e.g. CO2 emissions) is necessary. Yet, the perceived "strictness" of the current policies has not been studied extensively. Therefore, I evaluated the role "stricter" government regulations play as predictors of sustainability among the resorts.

Thus, based on literature on the external environment affecting businesses and the findings of the interview data and propositions following the results (Chapter IV), I hypothesize the following:

(H2). The characteristics of the external environment are not significant predictors of sustainability among Colorado ski resorts

Characteristics of the adopter. The third core component of an innovation concerns the characteristics of the adopters (ski resorts). The main ski resorts' characteristics studied include innovativeness, size, and financial structure.

Innovativeness. Innovativeness has often been shown as one of the most important strategic orientations required for firms to achieve long-term success (Noble, Sinha, & Kumar, 2002). Rogers (2003) explains that innovativeness is the degree to which an individual or an organization is relatively earlier in adopting new ideas than the other members of a system. Dobni (2008) suggests that organizational managers and leaders play a key role in determining the innovativeness of a company. Similarly, Ireland and Hitt (1999) identify top management support and involvement as a key requirement for promoting innovation. Moreover, Ryan and Tipu (2013) argued that leaders create organizational capability and disposition through sharing an innovation-promoting vision with the members of the organization (Hansen & Kahnweiler, 1997; Papadakis & Bourantas, 1998), hiring and supporting champions of innovation-orientated change (Kanter, 1985), and instilling a sense of strong innovation culture that rewards productive work. In short, followers are more likely to innovate if leaders provide support (Basu & Green,

1997). More specifically, innovation leadership is defined as the process of creating the context for innovation to occur; creating and implementing the roles, decision-making structures, physical space, partnerships, networks, and equipment that support innovative thinking and testing (Mallock & Porter-O'Grady, 2009). The literature distinguishes different stages in the innovation process which suggests that for organizations to succeed in the development of innovations, they must initially foster an organizational climate that is oriented toward innovation, and open to changes (Van de Ven, 1986). Thus, many authors use the term "innovativeness" to refer to organizational cultures that encourage the acceptance of changes and new routines, the assumption of a certain degree of risk, and the identification of internal and external opportunities (Hurley & Hult, 1998; Tajeddini, 2010).

Size. Large firms are often assumed to have more financial and human resources to adopt sustainability practices (Le et al., 2006). Sponseller (2015) also pointed out that leaders of many small companies believe innovation is just for big companies that employ scientists and have large research and development departments. Stating that this is probably a false belief Sponseller (2015) reminded us of Richard Branson who has said, "small businesses are nimble and bold and can often teach much larger companies a thing or two about innovations that can change entire industries." Moreover, the same author (2015) offers a list of five ways small companies can innovate better than much larger organizations, including speed of execution (small businesses can position themselves to make decisions quickly, allowing them to be first to market with innovative ideas), fast access to business resources (a smaller company is able to temporarily reallocate significant resources to the innovative idea that is critical to the growth of the company), team environment (small businesses can develop a team culture that encourages everyone to get involved in the innovation process more easily); company-wide innovation

support (to successfully cultivate a team of people who are actively identifying and developing innovative ideas, a company's leaders must openly support innovation activities), and measure innovation (start measuring and emphasizing innovation to stress the importance of creative thinking to everyone in the organization). Thus, more research on the role of a company's size in regards to sustainability is necessary.

Financial structure. In terms of companies' financial structure, it is often found that sustainability policies and practices are adopted easier among private firms; public companies have their first priority to bring maximum financial return to its stakeholders, everything else comes second (personal communication, December 18, 2014). On the other hand, Shai Bernstein of Stanford University compared companies that went public with similar companies that stayed private. His report reveals that when companies went public the quality of internal innovation declined and firms experienced both a decrease in the number of skilled inventors as well as decline in the productivity of the remaining inventors. However, Bernstein also found that public firms could more easily attract new human capital and acquire external innovations. In terms of companies' financial structure and sustainability in particular, Mazzacurati (2013), providing highlights from the CERES 2013 conference, revealed that the three key drivers for private equity firms to engage their portfolio companies on sustainability issues are competitiveness (private equity firms are very competitive and seeing that one of their peers is engaging and performing on the issue really helps get the other companies on board), operational improvement and cost savings, and the fact that institutional investors are putting pressure on private equity companies to pay more attention to sustainability. It was also pointed out that in a context where competition for capital is stiff, having a good sustainability strategy to show for could be a

decisive advantage for a private equity company in securing support from large investors (Mazzacurati, 2013).

Based on the literature review on characteristics of the adopter and propositions developed in the qualitative phase of this study (Chapter IV), the following is hypothesized in regards to characteristics of the ski resort:

(H3). The characteristics of the adopter are the strongest predictor of sustainability among Colorado ski resorts.

Thus, considering the scarce literature on diffusion of sustainability innovation in tourism (Le et al., 2006 and Smerecnik & Andersen, 2011) and the significance of the ski industry in the corporate battle towards a more sustainable future, I developed a framework to explore which factors are most influential in the change process towards sustainability. Figure 5.1 depicts the three main variables (indices) hypothesized to likely predict ski resort's sustainability.
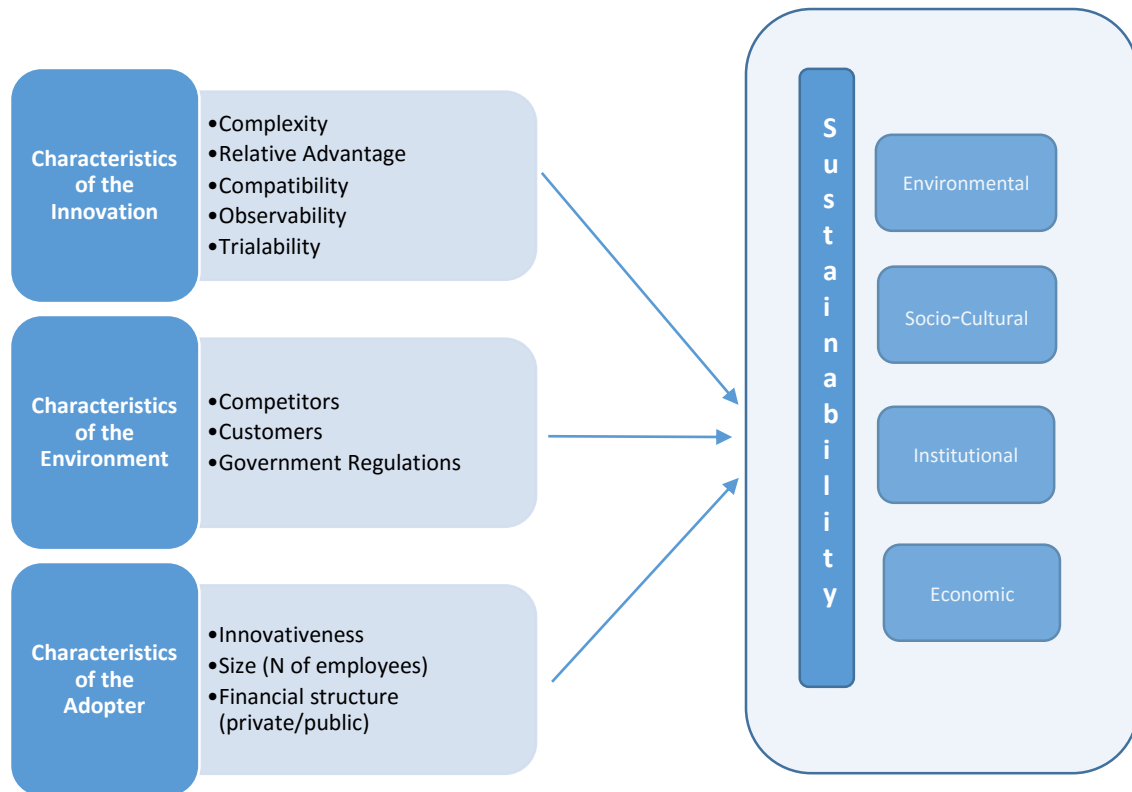
Figure 5.1.
Predictors to Diffusion of Sustainability Innovation Framework
Adapted from Le, Hollenhorst, Harris, McLaughlin, & Shook (2006) and Smerecnik & Andersen, (2011).

Methods

Instrument Design. An online explanatory online survey was used for this study.

Explanatory studies are useful when the researcher is interested in understanding why things

happen and identifying possible causal variables related to the phenomenon (Vaske, 2008). An

online survey distribution was selected due to time and funding constraints. Survey questions

were developed based on DoI theory and the PoS framework and related empirical studies. The

survey included an introductory page describing the objectives of the study, the nature of the

questions, its anonymity, as well as providing contact information of the research team members

for questions or concerns. Additionally, the survey included demographic questions as a final

section, ending with a page thanking the participant. Most of the questions were adapted from previous empirical studies. Yet, some of the themes and wording stemmed from the first phase of the study – the interview data. The questionnaire followed the conceptual framework of the study and the research questions, inquiring about drivers and barriers of sustainability among the resorts.

Cognitive interviewing methods (Collins, 2003; Willis, 1999) were utilized for pilot testing the instrument among three individuals (one graduate student and two non-academics). More specifically, the "think-aloud" method was applied where the interviewer reads each question to the subject, and notes the processes that the subject uses in arriving at an answer to the question. The interviewer interjects only to say "tell me what you're thinking" when the subject pauses (Collins, 2003). The advantages of this method include freedom from interviewer-imposed bias because the interviewer contributes little other than the reading of the survey question. Similarly because the subject's response is guided very minimally, he or she may provide information that is unanticipated by the interviewer. Hence, Collins (2003) argues that cognitive testing should be a standard part of the development process of any survey instrument. After the pilot testing, two questions were removed from the survey and four questions were reworded to address pilot test participants' comments.

Participants/Data Collection. The effectiveness of planned change is often related to the participation of members, at all levels of an organization, in assessing and diagnosing needed changes, and in formulating its goals and objectives (Benne & Birnbaum, 1969 as cited in Lozano, 2013). It is argued that corporate sustainability can be managed through compliance alone, yet companies achieve much greater success if they foster a strong commitment from staff (Lyon, 2004). Thus, participants in the survey were a sample of all employees from five

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Colorado ski resorts. Participants accessed the survey online through Survey Monkey.com

between March 2015 and May 2015. A web link to the survey instrument was sent to a contact

person (manager) at each of the resorts who then sent out the survey link to the resort's

employees. After the survey has been sent, the contact person provided me with an approximate

number of email accounts the survey has been sent to (allowing calculation of the approximate

study response rate). The respondents held varying positions, including both – full-time and part-

time employees, front-line staff, as well as supervisors, managers and directors from various

departments at the ski resorts, including operations and administration.

The study sample consisted of 322 respondents from five ski resorts in Colorado with an

approximate response rate of fifteen percent. Yet, 58 of the respondents did not complete all

questions of the survey. Thus, the number of respondents included in the analyses dropped to

264 with an approximate response rate of twelve percent. The five companies included in this

study own and manage twelve of the twenty-five ski areas in Colorado. Thus, it can be argued

that the survey participants represent a convenience sample of about fifty percent of the

employees of Colorado ski resorts. The number of participants for each of the ski areas varied.

All survey responses were anonymous – I did not have any information about the respondents

besides information from their survey responses. All survey responses were recorded on Survey

Monkey software and then downloaded into SPSS files.

Table 5.1. provides demographic information about the participating resorts, including

type of financial structure (private or public) and size (in terms of employee numbers) as well as

a summary of the number of participants and respondents and the corresponding response rate

for each of the five resorts.

Table 5.1.
Resort Characteristics and Response Rates

Resort	Financial Structure	Resort Size	Number of participants	Number of Responses	Response Rate %
1	Public	25000[1]	500	75	15
2	Private	200	85	50	59
3	Private	3600	1300	109	8
4	Public	1500	200	76	38
5	Private	1200	100	12	12

[1] Number includes employees working for resorts outside of Colorado, owned by the same company.

Measures. Several indices and modified measures from previously published literature were developed to test the predictive power of DoI variables on ski resorts' sustainability. Several scales were created to measure three of the DoI variables (see Table 3.5 Chapter III). Similarly, four sustainability indices representing environmental, socio-cultural, institutional, and economic sustainability were created (see Table 3.6 Chapter III). The majority of indices were based on a seven-point Likert-type scale (strongly disagree to strongly agree). All indices were constructed through a combination of exploratory factor analysis and reliability analysis to create optimally reliable scales. Cronbach's alpha coefficient was used to determine the internal consistency of the measurement scale items used to operationalize the constructs (see Table 3.1 - 3.4 in Chapter III for principal component factor analyses and reliability analyses results).

Sustainability. Sustainability, as a dependent variable in this study, is measured through its four components as per the PoS framework (Spangenberg & Valentin, 1999). Those include environmental, socio-cultural, institutional, and economic dimensions. The environmental sustainability measure ($\alpha = .785$) was assessed from responses to five questions. The socio-cultural dimension of sustainability was represented by four items ($\alpha = .873$). Similarly, the

institutional sustainability scale included seven items ($\alpha = .862$). Lastly, six items were combined to measure the economic dimension of sustainability ($\alpha = .862$) (see Table 3.6 Chapter III). The items in the indices were adopted from previous literature studying local perceptions of sustainable tourism development and predictors of sustainability (e.g. Cottrell, Vaske, and Roemer, 2013; Cottrell & Cutumisu, 2006; Cottrell & Vaske, 2006; Cottrell, Vaske, & Shen, 2007; Cottrell & Raadik, 2008; Cottrell, & Siikamäki, 2009; Le et al., 2006; Puhakka, Sarkki, Shen & Cottrell, 2008; Shen, Cottrell, Morrison, & Hughey, 2009; Smerecnik & Andersen, 2011).

  Diffusion of Innovation. The Diffusion of Innovation variables were grouped into three main categories – characteristics of the innovation (sustainability), characteristics of the external environment, and characteristics of the adopter. The first variable from the DoI measures in the characteristics of the innovation group is complexity. It was measured through a scale including two items ($\alpha = .598$), which were adopted from previous literature (Le et al, 2006; McCabe, 1987; Smerecnik & Andersen, 2011). According to Vaske (2006) and DeVellis (1991) Cronbach's coefficient alpha levels below .60 are unacceptable and indicate a problem with the internal consistency of the questionnaire items. Yet, Nunnally (1978) argued that in the early stages of research, reliabilities of .50 to .60 are acceptable. Moreover, previous research had identified complexity (reverse coded simplicity) as one of the strongest predictors to environmental sustainability (e.g. Smerecnik & Andersen, 2011). Hence, the complexity of sustainability innovation was deemed an important measure from a theoretical standpoint to be included in the analysis as it is one of the five main characteristics of the innovation according to Rogers (2003).

The second characteristic of the innovation - relative advantage was also measured through a scale, consisting of four questions with a reliability of .833 (survey items adopted from Smerecnik and Andersen, 2011). The compatibility index included three items from previous literature (Kocis, 1986; Le et al, 2006; Smerecnik & Andersen, 2011) with Cronbach's alpha of .881. The last two characteristics of the innovation as per the conceptual model of the study and Roger's (2003) theory are trialability and observability. These characteristics were measured by one questionnaire item each (Le et al, 2006; McCabe, 1987; Moore & Benbasat, 1991; Smerecnik & Andersen, 2011).

The second component in the model concerns the characteristics of the external environment. Those include competitors, customers (guests), and government regulations. The perceived competition scale consisted of two items ($\alpha = .532$), while the role of the customers and government regulations was measured through a single questionnaire item for each. Questions for this measure were adopted from previous studies measuring likelihood to adopt sustainability practices (Le et al., 2006).

Lastly, the characteristics of the adopter (ski resort organization) include innovativeness, size (measured in terms of number of employees), and financial structure (public or private). A public company is defined as "a limited company whose shares may be purchased by the public and traded freely on the open market," while a private company is "a limited company that does not issue shares for public subscription and whose owners do not enjoy an unrestricted right to transfer their shareholdings" (Collins English Dictionary, 2015, n.p.). Resorts' innovativeness was measured through a scale consisting of five items ($\alpha = .532$). The questionnaire items were adopted from Le et al. (2007) and Smerecnik and Andersen (2011) (see Table 3.5 Chapter III).

Data analysis. To assess the relative contribution of each predictor variable identified in Figure 5.1, I used multiple regression analysis, regressing the DoI variables on each of the four dimensions of sustainability. All statistical tests were performed with the Statistical Package for the Social Sciences (SPSS), Version 23.0.

Results

This section presents the results from the online survey questionnaire. The organization of the results follows the conceptual framework of the study (i.e. beginning with characteristics of the innovation, etc.).

Characteristics of the innovation. Of the five characteristics of the innovation observability was the only significant predictor of environmental sustainability. ($B = .084$, p <.05). Yet, when we look at predictors of socio-cultural sustainability – three out of the five characteristics of the innovation were significant predictors – relative advantage ($B = -.129$, $p <$ .01), compatibility ($B = .200$, $p < .001$), and observability ($B = .125$, $p<.001$). On the other hand, none of the characteristics of the innovation were found to be significant predictors of institutional sustainability. Lastly, only trialability was a significant predictor of economic sustainability ($B = -.120$, $p <.05$).

Characteristics of external environment. In regards to the predictive power of characteristics of the external environment on environmental sustainability of the ski resorts, it was found that only government regulations were significant predictors ($B = .116$, $p < .001$). Conversely, customers were found to be the only predictor of socio-cultural sustainability ($B = .113$, $p < .01$), while competitors were the only predictor of institutional sustainability ($B = .098$, $p < .05$). Finally, none of the characteristics of the external environment were significant predictors of economic sustainability among Colorado ski resorts.

Characteristics of the adopter. Both, innovativeness and size significantly predicted environmental sustainability ($B = .768$, $p < .001$), ($B = -.110$, $p < .01$, respectively). The results were similar when looking at predictors of resort's socio-cultural sustainability. Innovativeness was the strongest predictor ($B = .677$, $p < .001$), followed by size ($B = -.222$, $p < .001$). Additionally, financial structure was also found to significantly affect socio-cultural sustainability among Colorado ski resorts ($B = .125$, $p < .01$). For institutional sustainability, results indicate once again resort's innovativeness as the strongest predictor ($B = .475$, $p < .001$), followed by financial structure ($B = -.277$, $p < .001$). Lastly, only resort's innovativeness was a significant predictor of economic sustainability ($B = .383$, $p < .001$).

Overall, the diffusion of innovation attributes were found to explain seventy percent of the variance in environmental ($R^2 = .706$, $p < .001$) and socio-cultural sustainability ($R^2 = .705$, $p < .001$) of Colorado ski resorts, 46 percent of the variance in institutional sustainability ($R^2 = .461$, $p < .001$) and 24 percent of the variance in economic sustainability ($R^2 = .243$, $p < .001$) of Colorado ski resorts.

Table 5.2.

Diffusion of Innovations Variables as Predictors of Environmental, Socio-Cultural, Institutional, and Economic Sustainability

	Dependent Variable							
	Environmental Sustainability		Socio-Cultural Sustainability		Institutional Sustainability		Economic Sustainability	
	(n=262)		(n=264)		(n=264)		(n=264)	
Independent Variable	*r*	*β*	*r*	*β*	*r*	*β*	*r*	*β*
Characteristics of the Innovation								
Complexity	0.048	.024	0.37	.067	-.015	-.029	-0.025	.039
Relative Advantage	0.114*	-.066	0.132*	-.129**	.115*	-.052	0.223***	.045
Compatibility	0.479***	.039	0.57***	.200***	0.389***	.040	0.345***	.068
Observability	0.302***	.084*	0.328***	.125***	0.234***	.054	0.22***	.073
Trialability	0.003	-.023	-.016	-.071	-.041	-.048	-0.094	-.120*
Characteristics of the External Environment								
Competition	0.66	.018	0.083	.048	0.098	.098*	0.031	.037
Customers	0.135*	-.012	0.22***	.113**	0.132*	.024	0.211***	.100
Government Regulations	0.289***	.116***	0.199***	.004	0.23***	.076	0.121*	.009
Characteristics of the Adopter								
Innovativeness	0.825***	.768***	0.784***	.677***	0.638***	.475***	0.483***	.383***
Size	-0.196***	-0.110**	-0.264***	-.222***	-0.106*	.077	-0.006	.040
Financial Structure	-0.408***	.020	-0.346***	.125**	-0.481***	-.277***	0.221***	-.032
R^2		.706***		.705***		.461***		.243***

  * Significant at .05
 ** Significant at .01
*** Significant at .001

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Discussion

This section includes a discussion of the study findings, implications, and contributions to research related to diffusion of innovation and sustainability, as well as limitations and suggestions for future research. Interestingly, the characteristics of the innovation were not the strongest predictor of sustainability among Colorado ski resorts, thus hypothesis one, which posited that "the characteristics of the innovation significantly predict sustainability among Colorado ski resorts" is only partially supported as not all of the characteristics of the innovation were found to be significant predictors of sustainability. Rogers (2003) argues that the characteristics of the innovation are usually the most influential factor affecting the likelihood of adoption (between 49 and 87 percent of variance in adoption of innovations is explained by these five attributes). A study on Vietnamese hotels by Le et al. (2006) also found that innovation characteristics were the most influential factors, being highly correlated with likelihood to adopt environmentally friendly practices. Moreover, Smerecnik and Andersen (2011) also found that the perceived simplicity (reverse-coded complexity) of the innovation was one of the strongest predictors of sustainability innovations in North American hotels and ski resorts, while here I found that complexity had no effect on any of the dimensions of sustainability at all. Hence, the results of this study bring new insight into the diffusion of sustainability innovations. My findings indicate that the resorts' employees do not consider the complexities related to measuring and implementing sustainability into a company's operations being an important factor affecting the diffusion of sustainability. These findings can also relate to sustainability literature in general, contradicting the idea that sustainability as a concept is very difficult to grasp, measure, and implement. One explanation for the difference in my findings and other studies might be the framework I used for measuring sustainability as a concept. While Le et al.

(2006) measured likelihood of adoption (through a binary response), Smerecnik & Andersen focused on environmental sustainability only. The current study, on the other hand, looks through the lens of the PoS, including not only environmental, but also socio-cultural, institutional, and economic sustainability, argued to be a more holistic framework for sustainability. The results indicated that observability was the only characteristic of the innovation to predict environmental sustainability. Yet, the relationship (effect size) was less than minimal (Vaske, 2008). Considering that the results from adopting the environmental innovations are usually observed in the long run (e.g. savings from more effective snow guns can be seen in at least several years), it is not surprising that if resorts have the ability to foresee the overall effects of these innovations, they will be more likely to adopt them, which will contribute to environmental sustainability. Yet, when we look at predictors of socio-cultural sustainability, two of the five characteristics of the innovation - compatibility and observability were significant predictors of sustainability (yet, with still relatively low effect sizes). Thus, it can be implied that as sustainability innovations are more compatible with the company's culture and policies and the results of adopting sustainability practices are more visible, there will be a simultaneous increase in socio-cultural sustainability. On the other hand, I found that relative advantage was negatively correlated with resort's socio-cultural sustainability, implying that as the relative advantage increases, resort's sustainability will decrease, which is somewhat controversial. This is an interesting finding suggesting that some companies might not consider sustainability innovations even knowing that the change will bring benefits (advantages), which can certainly relate to personal values, professional awareness, and/or understanding of sustainability as an innovation. Additionally, this finding contradicts Rogers ideas who suggested that the greater perceived relative advantage - the more rapid the rate of adoption.

It was also interesting to note that none of the characteristics of the innovation significantly predicted Colorado ski resort's institutional sustainability. Considering the items included in the institutional scale (i.e. organizational policies and reports, communication channels regarding sustainability, etc.), it does make sense that those would be influenced by other factors such as leadership and the type of a company's financial structure. Lastly, trialability was the only characteristic of the innovation that significantly predicted economic sustainability; yet, still with a minimal effect size of the relationship. Perhaps if suppliers of sustainability-related products and services offer trial periods (if possible at all), that will make the decision to adopt those changes easier, ultimately contributing to economic sustainability.

The results in regards to characteristics of the external environment are also somewhat surprising. It is interesting to see that different players from the external environment of the organization affect the different dimensions of sustainability of the ski resorts in Colorado, thus hypothesis two which posited that "the characteristics of the external environment are not significant predictors of sustainability among Colorado ski resorts" was also only partially supported. Although government regulations predicted environmental sustainability, ski resort customers were the only predictor of socio-cultural sustainability, and the resort's competitors were significant predictors of institutional sustainability. Results also reveal that as government regulations in regards to sustainability practices and policies become stricter, ski resorts' sustainability will increase. Considering the fact that the ski industry is among the top three emitters of CO_2 per participant in the tourism/leisure industry (U.S. EPA 2000 as cited in Schendler, 2003), perhaps government bodies should re-think regulations in the sector. Results indicate that through new (stricter) regulations in terms of sustainability, government bodies have the power to instigate change towards sustainability among the ski resorts, or at least

significantly affect their environmental sustainability. In regards to ski areas' customers, my findings suggest that if ski resort guests are looking for sustainability practices when selecting a resort for their vacation that will positively influences the socio-cultural sustainability of the ski area (i.e. education opportunities about sustainability for both – customers and employees). A recent and rapidly growing trend in management has been to place the customer at the center of corporate strategies (Martin et al., 2010), based on the insight that customers are the basis of company profitability (Gupta et al. 2004; Hogan et al. 2002 as cited in Muller, 2014). It does seem that society as a whole is becoming increasingly more concerned with corporate social responsibility, holding businesses accountable for preserving cultures, respecting differences and embracing diversity (e.g. Ski Areas Citizen Coalition). Yet, it can be argued that customers do not exercise their power to influence decisions, policies, and regulations enough (personal communication, January 17, 2015).

Lastly, it was also not surprising that ski resorts' competitors predicted resort's institutional sustainability. As more and more organizations share their organizational structure and policies, performance, human resource components, etc., each company can learn from its competitors, which ultimately boosts institutional performance. None of the three attributes from the external environment affected economic sustainability. Thus, findings reveal that the stakeholders outside of the organization did not play an important role in the diffusion of sustainability innovations among Colorado ski resorts. I found that the perceived certainty of the level of competition, of changes in customer demand, and of changes in government policies were not the strongest predictors of sustainability as the relationship coefficients were relatively low.

The last component in the proposed framework concerns characteristics of the ski resort as an organization, or factors internal for the company. It is stated that firms generally have a higher degree of control over internal changes (i.e. constantly reassessing objectives and policies that affect or are affected by primary stakeholders (Freeman, 1984), which allows them to be proactive (Lozano, 2013).

The strongest predictor of sustainability among Colorado ski resorts across all four dimensions (environmental, socio-cultural, institutional, and economic) was the innovativeness of the organization, thus hypothesis three which posited that "the characteristics of the adopter are the strongest predictor of sustainability among Colorado ski resorts" was supported (particularly in regards to innovativeness). Findings indicate that if a company is proactive in terms of shifting its operations and policies regarding sustainability – i.e. adopting practices beyond regulatory requirements and before other resorts do so, it will ultimately be more sustainable in terms of environment, socio-cultural aspects, institutional and economic perspectives. Therefore, the higher the innovativeness, the greater the overall diffusion of sustainability among the ski resort. This finding has important implications for resort managers. Results imply that a ski resort can contribute to its own sustainability through internal organizational changes. A devoted leader who is proactive and open to new ideas and policies in regards to sustainability, will ensure her company's long-term success from all possible aspects – preserving natural resources, keeping their employees happy, and bringing financial benefits for its owners.

The study results also show that as a company size grows, environmental and socio-cultural sustainability decrease, thus supporting Sponseller's proposition. However, the results also indicate that size does not affect economic or institutional sustainability of the ski resorts.

These findings support literature suggesting that it is easier for smaller companies to shift towards more sustainable practices as those changes are more easily obtained (due to lack of bureaucracy). Yet, larger companies generally have more financial resources to invest into sustainability, while smaller firms have the ability to concentrate funds into certain projects quicker (Sponseller, 2015). Hence, more research is needed when evaluating the role of a company's size as a predictor of sustainability.

It was also interesting to see that the financial structure of the company (private or public) impacted only the socio-cultural and institutional sustainability of Colorado ski resorts. First, being a private company significantly predicted socio-cultural sustainability indicating that private companies can more easily foster employees and guests' opportunities for education and participation in the decision making. Nevertheless, the trend was reversed in terms of institutional sustainability – it is more difficult for public companies to develop CSR policies and reports and even more so communicate about sustainability thought the resort. Thus, the study results support the idea that it is easier for privately owned companies to affect the attitudes and behaviors of their guests and employees in regards to sustainability, while public companies are much more complex as institutions and sustainability-related communication and change is more difficult to achieve. I found that the type of financial structure of the ski resort did not significantly predict environmental and economic sustainability. As revealed earlier, the environmental and economic aspect of sustainability was rather affected primarily by how innovative a ski resort is (as well as through government regulations in terms of environmental sustainability). Hence, it can be concluded that both – public and private companies can be ecologically and economically healthy if they are innovative.

Thus, to summarize and address the second research question – the study results indicate that internal factors are stronger predictors of sustainability among Colorado ski resorts. Therefore, from a theoretical standpoint, this study supports the application of DoI theory as a multidisciplinary tool in tourism industry context. Yet, the results contradict Roger's idea that the characteristics of the innovations were the most critical factor in the diffusion of innovations. Conversely, this study's results point to the characteristics of the adopter as the strongest factor affecting the diffusion of innovation. Hence, further exploration of the theory in various industries context is necessary.

Study limitations. This study has several limitations. The most significant one is the relatively low response rate, which is believed to be due to the time the survey was distributed. As the primary ski season is between December and March, distributing the survey between March and May 2015 led to low representation of seasonal ski resort employees (approximately twenty percent). Yet, the full time employees are probably more knowledgeable and familiar with sustainability practices of their companies (compared to somebody who had worked at the resort for only 4-5 months, possibly first year). Additionally, it is not clear whether all seasonal employees have company email accounts, and whether they check their emails regularly if they do. Similarly, no incentive for participation were offered due to limited funding, which might have further affected the response rate. One way to compensate for sampling issues is data weighing (Vaske, 2011). Nevertheless, no weighting of data or response-check was possible in this case as all participants were anonymous (the research team had no access to respondents names or email accounts).

Moreover, considering that the research team had no access to the email accounts of the prospective respondents, I had to rely solely on the "good will" of the contact person in each

resort to distribute the survey, as well as follow up with them through weekly reminders. Nevertheless, Internet surveys have been increasing in popularity in recent years (Dillman, Smyth, & Christian, 2009; Vaske, 2011). Yet, Dillman (2007) states that few survey undertakings are as difficult as defining, sampling, contacting, and obtaining responses to self-administered questionnaires businesses or other organizations.

Future research. Future research on sustainability in the resort industry should focus on institutional mechanisms at an organizational level, leadership and communication. Studies focusing on effective management techniques and leadership skills required to facilitate the diffusion of sustainability innovations should be further explored; factors beyond sustainability diffusion topics such as trustworthy leadership, trusting followers, capable champions, involved management, innovative culture, accountable culture, systems communication and systems thinking (Judge & Elenkov, 2005; Smerecnik & Andersen, 2011).

Nevertheless, a corporation's success in adopting green practices depends not only on corporate attitudes towards environmental issues but also on its employees' personal beliefs and everyday actions (Chou, 2014). Moreover, Sweetman (2007) states that no matter how good the company's policies and practices might look on paper, no changes will occur without the active support of employees across the organization. Hence, the role personal values of resort employees play should also be studied.

Conclusions

This study provides a valuable contribution to the emerging field of resort sustainability and diffusion of sustainability innovations. Dunphy, Griffiths and Benn (2007) argue that the fundamental question which needs to be answered today is how the current model of the

corporations need to be modified to contribute to continuing health of the planet, survival of human and other species, development of just and humane society, and creating a work environment that brings dignity and self-fulfillment. This study brings insight on this dilemma by revealing the factors affecting the transformational process of diffusion of sustainability innovations among Colorado ski resorts. Despite its limitations, this study is one of only few attempts to explore ski resorts perceptions about sustainability. Lozano (2009) proposes that internally planned, orchestrated change, based on proactivity and collaboration, offers a better option to companies wishing to engage with sustainability. The findings support this proposition and offer ideas for companies' leadership teams primarily, highlighting the power each organization holds for its own long-term success. The study results show that if a company is proactive in terms of shifting its operations and policies for sustainability – i.e. adopting practices beyond regulatory requirements and before other resorts do so, it will ultimately be more sustainable in terms of environment, socio-cultural aspects, institutional and economic perspectives. Therefore, the higher the innovativeness, the greater the overall diffusion of sustainability among the ski resort. These findings support literature connecting innovativeness to high performance (e.g. Hult, Hurley, & Knight, 2004) while questioning findings from other literature – e.g. Le et al. (2006) found no significant relationships between what they call "greenness level" (partly overlapping with innovativeness) and likelihood to adopt sustainability. Similarly, Smerecnik and Anderesen (2011) found that although the perceived resort innovativeness was positively correlated with the adoption of environmental sustainability innovations, it was not the strongest predictor.

Thus, the study brings new insights into the field of diffusion of sustainability innovations in the tourism industry, or ski resorts more specifically. Although the different

characteristics of sustainability as an innovation and the external environmental factors affected

the various dimensions of sustainability among the resorts, the study results indicate that most of

the "change towards sustainability" stems from within the company. It was revealed that the

innovativeness of an organization is the ultimate factor affecting their sustainability. Adopting

sustainability innovations can act as a "transformational innovation" that can dramatically

reshape the way companies from all industries provide products and services and contribute to

society's progress toward integrating sustainable lifestyles (Denning, 2005).

CHAPTER VI

FACTORS AFFECTING THE DIFFUSION OF SUSTAINABILITY INNOVATIONS

AMONG COLORADO SKI RESORTS: A MIXED METHODS APPROACH

Introduction

Sustainability is now widely held to be the desirable path forward for organizations

across the globe (Dunphy, Griffiths, & Benn, 2007). Therefore, the question now is not

"whether," but "how" to integrate changes at corporate level in order to ensure business long-

term sustainability (Epstein, 2008), while also contributing to continuing health of the planet,

survival of human and other species, development of just and humane society, and creating a

work environment that brings dignity and self-fulfillment (Dunphy, Griphiths & Benn 2007).

Corporate sustainability (CS) is viewed as a new management paradigm, alternative to the

traditional growth and profit-maximization model. While CS recognizes that corporate growth

and profitability are important, it also requires the corporation to pursue societal goals,

specifically those relating to sustainable development - environmental protection, social justice

and equity, and economic development at an organizational level (Wilson, 2003); a sustainable

company focuses not only on efficiency, but also mechanisms to encourage "meritocracy,

diversity, innovation and long-term planning" (Dill, 2015). The first step in the shift towards

corporate sustainability is understanding what factors affect the process and identifying the

drivers and barriers among them. Next, the company can look for ways of affecting those factors

at an organizational or institutional level. Studies suggest factors external to the organization

such as environmental regulations set by governments and pressures from customers and the

community being primary drivers behind adoption of corporate sustainability practices (Howard-

Grenville, 2006). Yet, others consider internal organizational pressures such as staff turnover, top management support, environmental training, employee empowerment, etc. as key motivators for achieving corporate sustainability (Wilkinson, Hill, & Gollan, 2001). Regardless of their origin, the numerous factors affecting corporate sustainability pose a challenge for corporate leaders and champions, but also an opportunity, to foster sustainability within the companies.

Tourism as an industry is expanding rapidly, bringing a number of positive economic benefits, but also potential negative impacts on the natural environment, society, and culture, among others (Dabphet, Scott, & Ruhanen, 2012). The ski industry specifically, is found to be an important sector to examine in this context because it creates significant environmental impacts and is also dependent on the natural environment to maintain profitability (World Tourism Organization and United Nations Environment Program, 2008). Considering the multifaceted and complex nature of tourism as a phenomenon, it has to be studied comprehensively. A mixed method of analysis offers a promising approach in order to understand tourism-related issues (Puhakka, Cottrell, & Siikamaki, 2013). The central premise of mixed methods is that the use of quantitative and qualitative approaches in combination may provide a better understanding of research problems than either approach alone (Creswell & Plano Clark, 2007), incorporating the strengths of both methodologies and reducing some of the problems associated with singular methods (Molina-Azorin & Font, 2015). Teddlie and Tashakkori (2003) point out that a major advantage of mixed methods research is that it enables the researcher to simultaneously generate and verify theory in the same study. Additionally, mixed methods provide stronger inferences and in some cases can offset the disadvantages that certain research methods have by themselves. Some other potential benefits of mixed methods research include more comprehensive findings,

increased confidence in results, increased conclusion validity, and more insightful understanding of the underlying phenomenon (Johnson & Christensen, 2004).

The value of mixed methods approaches in the tourism field, was highlighted almost fifteen years ago by Opperman (2000, p. 145), who stated that "tourism is strategically placed at the interface of so many disciplines that inherently tourism is an interdisciplinary field. This should stimulate interdisciplinary approaches using multiple methods as well as using different data sets and investigators in the quest for truth" (McGehee, Boley, Hallo, McGee, Norman, Oh, & Goetcheus, 2013). Similarly, when discussing the application of mixed-methods in the field of sustainable tourism more specifically, Molina-Azorin and Font (2015) pointed out that mixed methods were a good choice for sustainability studies by encouraging cross-disciplinary teamwork, which facilitated reflection and the advancement of ideas. While a number of advantages related to the use of mixed-methods in tourism studies in particular have been identified, in a content analysis of the Journal of Sustainable Tourism conducted by Lu and Nepal (2009) between 1995 and 2007 and a review of tourism articles in twelve key journals between 1994 and 2005 (Ballantyne, Packer, & Axelsen, 2009), both found that only six percent of the papers utilized mixed methods approaches (McGehee et al., 2013). Similarly, Puhakka, Cottrell, and Siikamaki (2013) pointed out that while mixed methods represent a step forward in the evolution of research methodology as it combines the strengths of both approaches (Creswell, 2009), a gap in its usage in tourism research exists (Decrop, 1999). Nevertheless, a more recent content analysis of empirical studies published in the Journal of Sustainable Tourism Molina-Azorin & Font (2015) found that fourteen percent of the papers published in the journal utilized mixed-method approaches. Yet, there remains a general perception that mixed methods studies are rarely put into practice in tourism (McGehee et al., 2013). Thus, the advancement of tourism

research requires improved understanding of the application of a variety of research methods. In this regard, mixed methods research approaches may play an important role in the use of diverse methods. Mixed methods research shows great promise, but only if researchers understand the purposes and design options of this methodological choice (Molina-Azorin & Font, 2015).

This paper positions mixed-methods research as a complement to traditional qualitative and quantitative methods in sustainability and tourism, and it also specifically illustrates a complimentarity mixed methods approach (Golicic & Davis, 2012). The case study application considers the perceptions of Colorado ski resort employees about the diffusion of sustainability innovations throughout their companies. Traditionally, the sustainable development paradigm includes three dimensions - economic, socio-cultural, and environmental (also known as people, profit, planet) (Dijks, 1995; Spangenberg 2002). Most businesses focus on those three aspects when addressing corporate sustainability. However, achieving a balance among these three classic dimensions is difficult without an institutional perspective to manage, mediate and facilitate growth as suggested through the Prism of Sustainability (PoS) framework. (Cottrell, Vaske, & Roemer, 2013; Eden, Falkheden, & Malbert, 2000; Puhakka, Sarkki, Cottrell, & Siikamäki, 2009; Spangenberg, 2002; Spangenberg & Valentin, 1999). In order to operationalize, evaluate and monitor the complex concept of corporate sustainability, it is useful to rely on an established sustainability framework as PoS (Puhakka, Cottrell, & Siikamaki, 2013). The PoS model provides a relatively holistic framework to think, understand, and analyze tourism sustainability (Spangenberg & Valentin, 1999). This study utilizes the PoS model as a guide to assess predictors of corporate sustainability among ski resorts in Colorado. From the socio-cultural aspect, the company's approach towards resort guests and company employees was considered; from an economic standpoint the role the ski resort plays in the local economy was

evaluated; environmentally, focus was placed on natural resource protection and use of sustainable products. According to Valentin and Spangenberg (2000), institutional sustainability refers to human interaction and the rules by which they are guided or the institutions of the society. Kets de Vries (2009) further argues that no organization can function without a set of clearly outlined rules and procedures. Thus, the institutional imperative in this study focused on ski resort rules, norms and policies concerning sustainability, as well how those were communicated within the companies. A study conducted by Cottrell, Vaske, and Roemer (2013) looking at resident satisfaction with sustainable tourism in Frankenwald Nature Park, Germany is one of few studies identified applying the PoS framework in a tourism context. Puhakka, Sarkki, Cottrell, & Siikamäki, (2009) also utilized the PoS model while exploring how local stakeholders perceive the sociocultural sustainability of tourism in Oulanka National Park in Finland. The study also highlighted the role of the institutional dimension as a facilitator of sustainability (also see Cottrell & Cutumisu, 2006; Cottrell & Raadik, 2008; Cottrell, & Vaske, 2006; Cottrell, Vaske, & Shen, 2007; Shen & Cottrell, 2008; and Shen, Cottrell, Morrison, & Hughey, 2009, Puhakka, Cottrell, & Siikamaki, 2013).

Similarly in regards to innovation research, after a systemic review on innovation practices for twenty years Klewitz and Hansen (2014) pointed out that research is still strong on eco-innovation rather than on innovation from a triple bottom line perspective (economic, social, and environmental dimension), or including the fourth – institutional aspect. Likewise, only few studies (Smerecnik & Anderson, 2011 and Le et al., 2006) have explored factors affecting the diffusion of sustainability innovations in tourism resort context. Moreover, they studied sustainability through the triple bottom line perspective while here the PoS framework is applied, including the fourth dimension – institutional aspects. Hence, this study contributes to this

literature by applying the PoS in a tourism context, yet focusing on diffusion of sustainability innovations among ski resorts in Colorado specifically.

Diffusion of Innovations and Tourism. In today's dynamic markets and environments one increasingly important way for companies to contribute to global sustainability is through sustainability-driven innovation practices (Klewitz & Hansen, 2014). Rogers (2003) defines an innovation as "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (p.12). It is important to point out that the newness may be considered in terms of knowledge, persuasion, or a decision to adopt. Diffusion, on the other hand, is defined as "the process by which an innovation is communicated through certain channels over time among the members of a social system" (Rogers, 2003, p.5); it is a special type of communication and it focuses on messages concerned with new ideas. Additionally, Rogers (2003) suggests that the diffusion of innovations is a kind of social change, including a process by which alterations occur in the structure and function of a social system. Innovations allow companies to adapt their strategy to market changes, and are thus of critical importance for creating organizational value (Stieglitz & Heine, 2007).

At an organizational level, it is argued that the capacity of firms to innovate and adapt to market developments is crucial to their success, but research-based knowledge on innovation strategies in tourism remains scarce (Alsos, Eide, & Madsen, 2014). Throughout history the tourism sector has been a phenomenon characterized by immense innovativeness. Yet, the classical innovation literature has until recently primarily been concerned with the manufacturing industry (Hjalager, 2010). Smerecnik and Andersen (2011) point out that although DoI theory has been widely utilized in various disciplines, with over thirty nations using the theory and over 6000 published studies (Rogers, 2003), it has been scarcely applied in the service sector.

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Moreover, the authors highlight that studies on sustainability innovations have primarily investigated topics related to diffusion of environmental sustainability policies (Bergstrom & Dobers, 2000; Foxon & Pearson, 2008; Kern, Jorgens, & Janicke, 2001; Tsoutsos & Stamboulis, 2005), sustainability innovations adopted in geographical regions (Geltz, 2008; McEachern, & Hanson, 2008; Vasi, 2007) and consumer adoption of sustainability innovations (Labay & Kinnear, 1981). Hence, the diffusion of sustainability innovations in the (ski) resort industry has not been systematically investigated. Therefore, this study attempts to fill in this gap, while also providing important insight regarding change towards sustainability for ski resort leadership, government agencies, and the general public.

The conceptual framework guiding this study includes three main components – characteristics of sustainability as an innovation, characteristics of the external environment, and characteristics of the ski resort as factors affecting Colorado ski resorts' corporate sustainability. Figure 6.1 visually depicts the relationship between the different components of the framework.
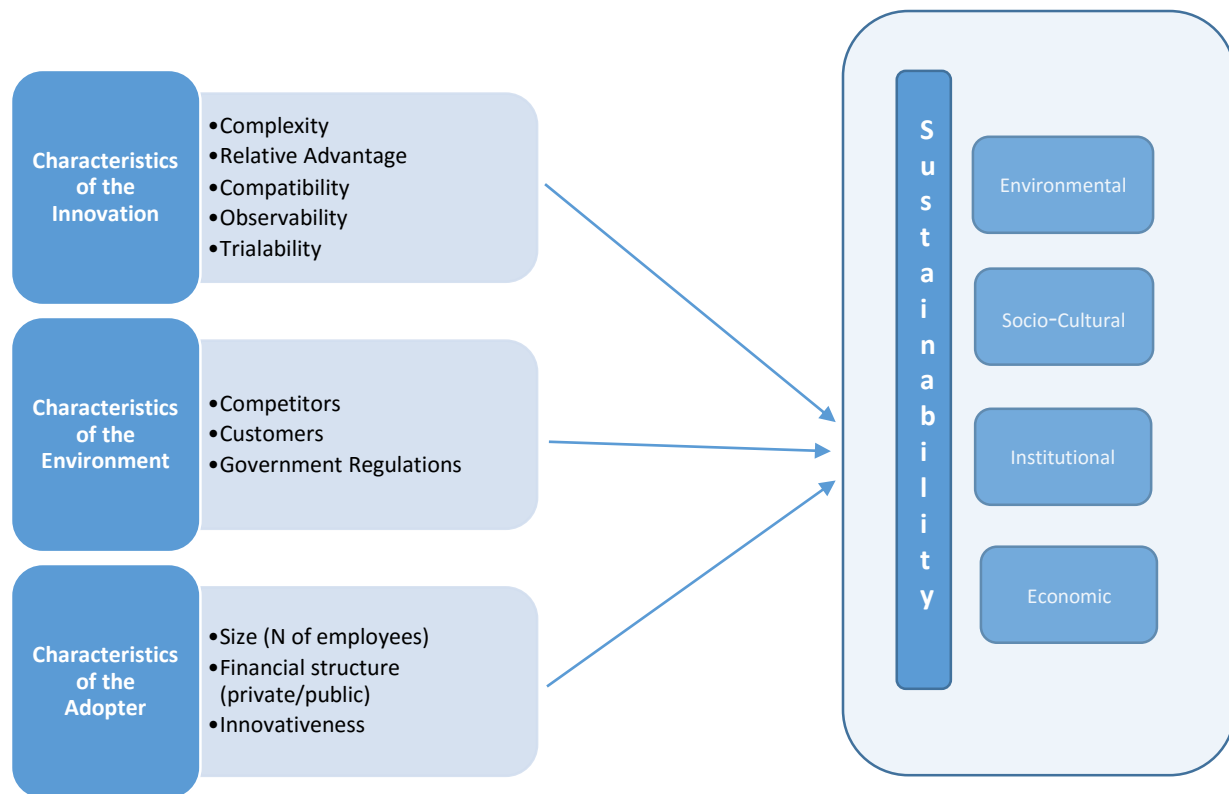
Figure 6.1.
Diffusion of Sustainability Innovations Framework
Adapted from Le, Hollenhorst, Harris, McLaughlin, & Shook (2006) and Smerecnik & Andersen, (2011).

The proposed framework highlights the main factors expected to affect the diffusion of sustainability innovations among Colorado ski resorts. More specifically, the following research questions are guiding this paper:

(R1) To what extent does the data from the ski resort employees (quantitative data) support/supplement the results of the ski resort managers' interviews (qualitative data) in a complimentarity development mixed-methods research approach?

(R2) What are the major differences in the two study groups' perceptions regarding factors affecting the diffusion of sustainability innovations among Colorado ski resorts?

(R3) Is there value in a mixed-methods approach exploring ski resort employees perceptions on the diffusion of sustainability innovations among Colorado ski resorts?

The following section provides a brief introduction of DoI theory (see Chapter II for a more comprehensive review of the theory) and background information on the ski industry in Colorado.

Diffusion of Innovations Theory

Rogers distinguishes three main components affecting the diffusion of innovations – characteristics of innovation, characteristics of the external environment, and characteristics of adopter (see Figure 6.1).

Characteristics of the innovation. The first component of the proposed framework concern the characteristics of the innovation itself, or characteristics of sustainability as an idea in this study. Rogers suggests that there are five main "perceived" characteristics of an innovation.

The first characteristic of the innovation is complexity. It is the degree to which an innovation is perceived as difficult to understand or use. Research has shown a negative relationship between the complexity of an innovation and its rate of adoption (Hobday, 1998). Yet, some exceptions have been found (Wonglimpiyarat, 2005). More importantly, it is argued that sustainability, especially in the era of multinational corporations and globalization, has become a complex issue for corporations (van Marrewijk & Hardjono, 2003).

The second characteristic of the innovation is relative advantage. It concerns the degree to which an innovation is perceived as better than the idea it supersedes. Rogers (2003) argues that it can be measured in economic terms, brand image, convenience, satisfaction, etc. He also states that the greater perceived relative advantage - the more rapid the rate of adoption usually

is. Yet, studies also show that companies that try to lead the sustainability frontier are often losing (Laughland, Bansal,&Bansal, 2011).

The third main characteristic of an innovation is compatibility. It is the degree to which an innovation is perceived as being consistent with the existing values, as well as past experiences and needs of the potential adopters (organization). Rogers (2003) also points out that the adoption of an incompatible innovation often requires the prior adoption of a new value system, which is usually a relatively slow process.

Rogers defines the fourth main characteristic of an innovation as observability, which is the degree to which the results of an innovation are visible to others. Rogers (2003) argues that the easier it is for individuals to see the results of an innovation, the more likely they are to adopt it.

The last characteristic is trialability, which is the degree to which an innovation may be experimented with on a limited basis; or basically whether the new idea can be tried out (before the actual implementation). Commonly, if an innovation can be tested in advance or on a small scale, the rate of diffusion is higher (Rogers, 2003).

Characteristics of the external environment. Empirical studies show that most individuals/organizations do not evaluate an innovation on the basis of scientific studies but rather based on a subjective evaluation of an innovation that is conveyed to them from other individuals/organizations (who have already adopted the innovation) or media (Rogers, 2003). This idea can also be linked to institutional theory which suggests that organizations adopt sustainability practices not because they guarantee an increase in efficiency, but rather because they are deemed "appropriate and legitimate" (Trendafilova , Baiak, & Heinze, 2013). It is further argued that effectively integrating sustainability into companies' strategies requires action

that exceeds organizational boundaries. It is becoming increasingly accepted that stakeholders affect the organizational plans and that ineffective stakeholder involvement in sustainability initiatives can hinder the achievement of business objectives (Waligo, Clark & Hawkins, 2013). Generally, companies have limited ability to overcome external barriers to change, which include pressure from competitors, regulation and legislation, lack of knowledge and interest from consumers or investors. (Lozano, 2013). Therefore, the impact perceived industry rivalry (competition), customer demands, and government regulations have as external factors affecting the diffusion of sustainability have been assessed.

Commonly, those attributes are measured in terms of perceived certainty levels, meaning the extent to which changes can confidently be predicted (Downs & Mohr, 1976). Literature suggests that firms perceiving a higher level of competition are more proactive in adopting environmentally – related practices in order to sustain their competitive advantages (Veliyath & Fitzerald, 2000). Moreover, other studies found that being "green'' has become a common practice to gain competitive advantage in highly competitive environments (Appiah-Adu & Singh 1998; Hurley & Hult, 1998; Rangel, 2000 as cited in Le et al., 2006).

Another stakeholder in the change towards sustainability is the customers or ski resorts' guests who can also affect the diffusion of sustainability innovations. Although some studies indicate that customers do not consistently factor sustainability into their purchase decisions (Laughland, Bansal, & Bansal, 2011), the existence of groups such as Ski Area Citizens' Coalition, and Protect Our Winters, for example, indicate that customers themselves are concerned how sustainable ski resorts' practices are and increasingly demand accountability. Similarly, research has shown that poorly rated firms in terms of sustainability respond by

improving their performance (Schendler, 2011). Thus, it can be argued that customers, have the power to assist in the process of corporate change towards sustainability.

The last factor from the external environment affecting ski resorts sustainability included in the study framework concerns government regulations. It is argued that government policies need to incent outcomes and be more clearly connected to sustainability (Laughland, Bensel, & Bensel, 2011). Similarly, Schendler (2011) points out that when taking into consideration the scope and scale of the climate crisis (which ultimately affects sustainability), there is a pressing need for broad policy solutions. Moreover, focusing exclusively on voluntary operational greening including carbon neutrality distracts from the more pressing need for climate regulation to achieve the necessary overall reductions called for by climate scientists. Yet, literature on this matter is limited.

Characteristics of the adopter. The third core component of an innovation concerns the characteristics of the adopters (ski resorts). The main ski resorts' characteristics included in the study are size, financial structure and innovativeness.

The first variable from the characteristics of the adopter is the innovativeness of the resort. Rogers (2003) explains that innovativeness is the degree to which an individual or an organization is relatively earlier in adopting new ideas than the other members of a system. Many authors use the term "innovativeness" to refer to organizational cultures that encourage the acceptance of changes and new routines, the assumption of a certain degree of risk, and the identification of internal and external opportunities (Hurley & Hult, 1998; Tajeddini, 2010). Innovativeness has often been shown as one of the most important strategic orientations required for firms to achieve long-term success (Noble, Sinha, & Kumar, 2002). Likewise, Dobni (2008) suggests that organizational managers and leaders play a key role in determining the

innovativeness of a company. Similarly, Ireland and Hitt (1999) identify top management

support and involvement as a key requirement for promoting innovation. However, managerial

approaches toward environmental issues are heterogeneous because they depend on many

determinants, such as managerial values, organizational resources, or market and industry

conditions (Aragon-Correa & Sharma, 2003; Delmas et al., 2011).

In regards to size, literature suggests that generally large firms are often assumed to have

more financial and human resources to adopt sustainability practices (Le et al., 2006). Sponseller

(2015) also pointed out that leaders of many small companies believe innovation is just for big

companies that employ scientists and have large research and development departments. Yet,

stating that this is probably a false belief, Sponseller (2015) reminded us of Richard

Branson who has said, "small businesses are nimble and bold and can often teach much larger

companies a thing or two about innovations that can change entire industries." Thus, it can be

implied that more research on the role of a company's size in regards to sustainability is

necessary.

The third main component from the characteristics of the adopter is the financial structure

of the organization. It is often found that sustainability policies and practices are adopted more

easily among private firms as public companies have their first priority of bringing maximum

financial return to its stakeholders, everything else comes second (personal communication,

December 18, 2014). On the other hand, Shai Bernstein of Stanford University compared

companies that went public with similar companies that stayed private. The report from the

study revealed that public firms could more easily attract new human capital and acquire external

innovations.

Study Context and Study Area

According to the National Ski Area Association (NSAA) data for 2014/2015, the ski industry brought in $7.3 billion to the US economy (direct spending in US resorts) (NSSA, 2016). Based on the amount of participants in snow sports and revenue generated by resorts, ski areas are an important sector of the tourism industry in the US. Ski resorts also have a major impact on local economies by bringing in customers for area business and providing employment for residents of ski towns (Prentergast, 2011). At the state level, Colorado typically ranks as the top state in the U.S. for total skier visits. Overall, Colorado's ski industry generates more than $1.5 billion in revenues per year (Colorado Tourism Office, 2015; HVC, 2014) with Colorado skier visits numbers at 12.6 million in the 2013/2014 season (Blevins, 2014). Hence, the significance of the ski industry in the state is one of the main reasons for selecting Colorado as the study site.

Nevertheless, the ski sector has generally been cast in the same light as timber and mining in the United States and is being called "the next extractive industry", rather than a socially beneficial form of recreation (Tonge, 2008 as cited in Call, 2012). As a result of such allegations and/or of concern for its dependence on the natural environment for maintaining profitability and the future of successful business operations, ski resorts are another segment of the tourism industry, which is concerned with the idea of sustainability (WTO, 2008). Yet, currently, U.S. ski resorts operate under voluntary environmental regulations (e.g. Sustainable Slopes Program). Similarly, on the demand side, organizations such as the Ski Area Citizens' Coalition indicate that customers themselves are concerned with ski resorts' sustainability initiatives and demand accountability and transparency from businesses (through its ski areas score card) (Ski Area Citizens' Coalition, 2014).

Most of the research related to ski resorts and sustainability focuses on studying the impact the ski industry has on the environment – e.g. effects of snowmaking to the environment and for the resorts (Fahey & Wardle, 1998, Leao & Tecle, 2003; Prentergas, 2011; Scott et al., 2003; Smith, 2010, Steiger & Mayer, 2008), chairlifts and trail maintenance environmental impacts (Hadley & Wilson, 2004; Martin, et al. 2010, Patthey et al., 2008, Rolando et al., 2007, Wipf, et al., 2005), impacts from resort development (Gill & Williams, 2011; Prentergas, 2011; Rivera & de Leon, 2004, Tenenbaum, 2001, Williams & Todd, 1997). On the other hand, a large number of studies examined how climate change impacts the industry while discussing implications for the resorts' future (e.g. Moen & Fredman, 2007; Hopkins, 2014; Morrison & Pickering, 2013; Nolin & Daly, 2006; Pickering, 2011; Smerecnik & Anderson, 2011; Weaver, 2011; Whetton, Haylock, & Galloway, 1996).

On another note related to impacts, research shows that ski resorts that are more innovative tend to be more environmentally proactive (Sharma, Aragon-Correa, & Rueda-Manzanares, 2007) and that climate change effects might create a competitive advantage for resorts that naturally receive more snowfall and will require improved snowmaking infrastructures for the others (Scott, McBoyle, Minogue, & Mills, 2006). While one study created a model for improved strategic performance in ski resorts specifically, incorporating elements of sustainability supported by the World Tourism Organization (Flagestad & Hope, 2001), other research has found that the voluntary adoption of the Sustainable Slopes program, created by NSAA, did little to improve ski resorts' environmental performance (Rivera & de Leon, 2004; Rivera, de Leon, & Koerber, 2006). Thus, further research is necessary to explain which factors influence the diffusion of sustainability practices in the ski resort industry (Sharma et al., 2007; Smerecnik & Andersen, 2011).

Methods

A mixed methods approach involving a complimentarity sequential case study design (QUAL→ QUAN) (Creswell & Plano Clark, 2007), was used to gain a holistic understanding of ski resorts employees' ideas and perceptions of diffusion of sustainability innovations. In this approach the data collection happens sequentially (or concurrently). Data is analyzed and interpreted separately while merging the findings in a single report at the end (Golicic & Davis, 2012). With this design, the two methods have an equivalent status (Johnson & Onwuegbuzie, 2004). The mixing or linking of the two types of data occurs during the analysis, interpretation, and discussion activities (Tashakkorri & Teddlie, 2003). A case study methodological approach was used due to the need to investigate the phenomenon in a particular socio-cultural and institutional context. The study is collective in nature as it addresses the contemporary phenomenon of (ski resort) sustainability, diversifying across its four dimensions, while also adding to the literature and applications of DoI theory. The research study was approached through an interpretivist paradigm, portraying reality as socially-constructed, complex, and ever changing (Glesne, 2011). For data collection, two main methods were employed - in-depth semi-structured interviews and online survey questionnaires in an attempt to gain a broad understanding of the phenomenon with the time and resources allotted for the research. By utilizing the two methods I aimed at studying the perceptions of sustainability experts in depth (through semi-structured interviews) as well as the perceptions of sustainability non-experts (ski resort staff) about the diffusion of sustainability in their companies (through the survey questionnaire). Thus, the ideas of the two study groups are juxtaposed and the value of a mixed-methods approach in the ski resorts context is explored.

Qualitative data. First, eight semi-structured interviews with sustainability managers from six ski areas in Colorado were conducted. The six companies the eight individuals work for own and operate twelve ski areas in Colorado (out of twenty-five ski areas in total). The size of the resorts varied from small – up to 200 employees during the peak of the winter season to a resort with 25 000 employees. Three of the ski areas, which participated in the study were private and three of them – public companies. Interviews were conducted between November 2014 and January 2015 (see Table 1, Chapter II for participant characteristics). Interview recordings ranged from 35 to 65 minutes. Three of the interviews were conducted face-to-face while the other five were conducted over the phone (see Table 2 Chapter II for sample interview questions and Appendix C for a full interview protocol and questions).

Qualitative data analysis. All interviews were transcribed verbatim for analyses and grouped by cases (ski resorts). Qualitative analysis tools and procedures were used to reveal patterns and themes in the data, which involved several steps. The first level of analysis was open coding of the interview data on a line-by-line basis. The codes included a priori categories that stemmed from the interview questions as well as additional categories that emerged during the coding process, also related to the conceptual framework of the study (Lyles & Mitroff 1980; Miles & Huberman 1994). Most of the a priori codes were descriptive in nature, thus requiring little interpretation of data (Miles & Huberman 1994). I then began to look for the presence of similar patterns through interpretative coding. Finally, as a third level of coding, pattern matching occurred as I started to analyze the data. Consequently responses were sorted under relevant themes (thematic analysis) (Krueger & Casey, 2000; Stewart & Shamasani, 1990), all themes were confirmed and cross-case synthesis created (Yin, 2014). Subsequently, evidence in

the form of summaries, charts, and selected examples was compiled and linked back to the research questions and conceptual framework.

Validity. The quality of the interview data analysis and interpretations was ensured using well-accepted criteria for qualitative research. First, multiple sources of evidence were analyzed for triangulation (public data from the ski resort websites on the company background, policies, initiatives related to sustainability, and sustainability reports, the semi-structured interviews and online surveys). Additionally, practices supporting transferability and dependability/confirmability were also applied (Miles & Huberman 1994; Wallendorf & Belk 1989). First, the variation in the sample resorts (small/large, public/private) was specifically chosen to introduce variation in the dependent variables to support internal validity. Internal validity of the research findings was further supported through pattern matching within and across cases and addressing rival explanations. Similarly, the consistent use of methods to collect and analyze – e.g. using a standard research protocol, leads to dependability and confirmability of the data. Additionally, the trustworthiness of the data was strengthened by a peer debriefing technique (Lincoln & Guba, 1985), which involved discussing, reviewing, and testing emerging thoughts, hypotheses, and findings against a disinterested peer (a non-academic) to help ensure that researchers' conclusions are reasonable from others' perspective.

Quantitative data. The quantitative methodological approach selected for this research was an on-line survey questionnaire to staff from ski areas in Colorado. Participants in the survey were a sample of employees from five Colorado ski resorts. They accessed the survey online through Survey Monkey.com between March 2015 and May 2015. A web link to the survey instrument was sent to a contact person (manager) at each of the resorts who then sent out the survey link to the resort's employees. The contact person from each ski area provided the

researcher with an approximate number of employees to whom the survey has been sent (allowing calculation of the approximate study response rate). Thus, the study sample consisted of 322 respondents from five ski areas in Colorado. Yet, 58 of the respondents did not complete all questions of the survey. As a result, the number of responses included in the analyses dropped to 264 with an approximate response rate of twelve percent. Considering that the surveyed companies operate about half of the ski areas in Colorado, it can be argued that the survey participants represent a convenience sample of about fifty percent of the employees of Colorado ski resorts. The number of participants for each of the ski areas varied (see Table 4.1 in Chapter IV). All survey responses were anonymous – I did not have any information about the respondents besides information from their survey responses. The survey responses were recorded on Survey Monkey software and then downloaded into SPSS files. The questionnaire began by asking participants about their familiarity with the idea of sustainability, perceptions of sustainability and related initiatives as part of the resort operations. Participants were then asked a series of questions to explore their perceptions of the influence of the business environment outside of the resort in terms of sustainability, followed by a section including questions related to practices and policies related to sustainability specific to the resort. The majority of the questions utilized a seven-point scale - from strongly disagree to strongly agree. Lastly, demographic questions were included as a final section in the survey, ending with a page thanking the participant.

   Measures. Several indices and modified measures from previously published literature were developed to test the predictive power of DoI variables on ski resorts' sustainability. Four sustainability indices representing environmental, socio-cultural, institutional, and economic sustainability were created (see Table 3.6 in Chapter III). Similarly, several scales were created

to measure three of the DoI variables (see Table 3.5 Chapter III). All indices were constructed

through a combination of exploratory factor analysis and reliability analysis to create optimally

reliable scales. Cronbach's alpha coefficient was used to determine the internal consistency of

the measurement scale items used to operationalize the constructs. Principal components factor

analysis steps and results are presented in Chapter III (see Table 3.1 – 3.4).

Consequently, to assess the relative contribution of each predictor variable identified in

Figure 6.1, multiple regression analysis was used, regressing the DoI variables on each of the

four dimensions of sustainability. All statistical tests were performed with the Statistical Package

for the Social Sciences (SPSS), Version 23.0.

The following section presents findings of the overall research study. The findings from

the two data sets are juxtaposed following the conceptual framework of the study.

Study Findings

The analysis focused on finding patterns across all cases (ski resorts) and comparing and

contrasting perceptions of sustainability professionals (sustainability ski resort managers) and the

sustainability non-experts (broad range of ski staff) about diffusion of sustainability. Findings

follow the study conceptual framework and research questions as the results from the two study

groups are presented simultaneously, while differences in perceptions are highlighted. Table 6.1

presents a summary of the main themes from the interview data, including quotes illustrating

each of the themes. Similarly, Table 6.2 reveals the results from the survey questionnaire.

Characteristics of the innovation. First, in regards to characteristics of the innovation, a

few of the interviewees talked about the complexity of sustainability and how difficult it was to

be integrated into an organization – revealing a negative relationship between the two variables.

It was pointed out that it required systemic changes throughout the organization, long time to see any of the results, and was very difficult to measure. One manager explained that sustainability is multifaceted in a way that most organizations do not understand the "win-win" in being a sustainable company – the relationship between happy employees, happy guests, financial profit, and the preserved environment, which can relate to effects to all four dimensions of sustainability. Managers need to have a "holistic look," as he put it and recognize that sustainability is "good business" but that requires knowledge and devotion. To add to the complexity of the sustainability idea, a few of the respondents referred to climate change. One interviewee pointed out there was "lack of understanding of climate science," and at a corporate level sustainability is understood to mean only operational cleaning and carbon footprint reduction. Therefore, once again the complexity of the idea was revealed, highlighting that knowledge and awareness is required for the successful diffusion throughout the organization, including a multi-disciplinary approach from leadership.

When comparing the results with those from the survey questionnaire – complexity was not found to be a significant predictor of sustainability among Colorado ski resorts. Thus, in regards to complexity as a characteristic of the innovation, the perceptions of sustainability professionals and the broad range of ski areas employees differed.

The second component from the characteristics of the innovation is relative advantage. A few of the ski resort managers discussed the resort's improved reputation as one benefit (advantage). An interviewee pointed out that when one thinks of companies like Patagonia and IKEA, the first thing that comes to mind is sustainability, and then he added: "that's where we want to be." Additionally, a few of the resort managers highlighted that adopting sustainability within their companies was a "win-win" scenario, bringing a financial return as well. Thus, it can

be implied that relative advantage affects the economic sustainability of a ski resort – i.e. improved reputation can be a facilitator for higher financial returns for the company (and the local economy).

Thus, the sustainability professionals' views on relative advantage were generally supporting the idea that the advantages sustainability innovation brings help its diffusion in the company. Nevertheless, the results in regards to perceptions of the general ski resort staff (sustainability non-experts) indicated that relative advantage predicted only socio-cultural sustainability ($B = -.129$, $p < .01$), yet with a minimal effect size and reversed relationship. This indicates that even when knowing that sustainability innovation will bring advantages for the resort, it is not considered an important factor in most cases. Moreover, the possible advantages of sustainability negatively affect the way the ski resort treat their employees and staff. Thus, a difference between the perceptions of the two groups about advantages sustainability brings was once again exposed.

Additionally, a number of the sustainability professionals highlighted that another aspect to be considered was the compatibility with existing company culture, structure, policies, and leadership team. Although it was argued that a company climate is a necessary prerequisite for corporate sustainability, the interview participants had mixed responses regarding how compatible sustainability was within their company culture and structure. While one manager stated that sustainability is "naturally…embedded in everything," another participant pointed out that sustainability was currently not compatible with the resort's culture and was viewed as "a speedbump." He further explained that it had to be dynamic and continuous because otherwise it "falls off." One advice from several of the resort managers was about systemic changes and

communication throughout the company, rather than isolating each department as a separate silo

with its own goals and objectives:

> ….all of them [department sustainability initiatives] will be random programs unless
> somebody can tie them all together and articulate…

Adding to this, the need for communication between departments and across all company

staff – through weekly employee newsletter, performance reviews, award systems (recognition),

new hire orientation, outreach events (with community partners), volunteer efforts (employee

volunteer day), emails, video trainings, etc. was also highlighted, which can be also linked to the

institutional dimension of sustainability.

Conversely, the results from the survey questionnaire indicated that compatibility was not

a strong predictor of corporate sustainability of Colorado ski resorts, as compatibility affected

only socio-cultural sustainability through the perceptions of ski resort staff ($B = .200, p < .001$).

Nevertheless, not surprisingly, the sustainability non-professionals results show that if a ski

resort fosters a sustainability company culture, that will affect the way guests and employees are

treated, and possibly the way they perceive sustainability ideas. Therefore, it is revealed that the

perceptions of the sustainability experts and the broad non-sustainability resort staff were

somewhat different.

The fourth characteristic of the innovation is observability. Although the sustainability

resort managers did not speak directly about it, one participant argued that one of the biggest

obstacles to sustainability was that the benefits were long term, not near term, which could

certainly relate to observability (the results of the innovation are not visible immediately), thus

implying that as observability increases, the sustainability of the resort will also improve.

Moreover, the same respondent pointed out that it takes a vision, and you have to believe that

those investments will ultimately bear fruit over time; "it does take faith and persistence," he added. Thus, it is "a different way of thinking," he adds, and it was much harder for most people to get their head around it, especially in the business world, because the return often comes in the form of savings rather than income. Thus, it is suggested that the observability of sustainability as an innovation affects the economic aspect of corporate sustainability – i.e. the company "misses on" possible financial benefits in the near or far future due to the lack of observability with benefits of sustainability as an innovation.

Nevertheless, sustainability non-professionals (ski resort employees) perceived observability as a predictor to environmental ($B = .084$, $p <.05$) and socio-cultural sustainability ($B = .125$, $p<.001$), yet again with a minimal effect size. As a result, it can be argued that although both groups considered observability as a factor affecting ski resort's CS, it was not considered to be among the most powerful drivers or barriers.

To address the problem with lack of observability of the results from sustainability innovations, one resort manager pointed out that she takes little steps and not spend a lot of money, while trying to show what could be saved, which can also relate to trialability – try out smaller changes before moving to a more major shift towards sustainability. Yet, no further discussion of the role of trialability as a factor affecting sustainability took place. This idea can be also linked to the results of the survey questionnaire, where trialability was found to be a significant predictor of economic sustainability ($B = -.120$, $p <.05$), once again with a minimal effect size. Hence, it can be implied that both groups did not speak strongly about trialability as a factor affecting CS and it would possibly affect mainly the economic aspect of resort's sustainability.

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It is important to point out that none of the characteristics of the innovation were found to be significant predictors of institutional sustainability according to the survey results.

Characteristics of the external environment. The second main aspect from the study conceptual framework concerns factors from the external environment. In regards to competition between the ski resorts, one participant explained that the company did look at other parts of the industry as a member of the industry groups such as Colorado Ski Country in the state, and nationally within the US - the National Ski Association. They further elaborated that the industry conferences were one place to share ideas – learning what innovations other resorts were adopting and also "looking for win-wins." One participant also pointed out that the nature of the business – being outdoors and appreciating nature, is one reason why many of the resorts actually work together, "there is kind of common ground together, and common goal." Nevertheless, most of the managers did not speak strongly about competition among the resorts as a trigger for sustainability. Similarly, according to the non-sustainability staff, competitors were found to be only a predictor of institutional sustainability ($B = .098$, $p < .05$), yet with a minimal effect size. This suggests that seeing how other companies approach sustainability, might drive the development of resort's corporate sustainability policies, reports, and communication efforts.

Next, discussing the role of ski resort customers, there was a general agreement among the ski areas sustainability managers that people were starting to migrate more and more towards socially responsible companies and that sustainability was one of the things that their clientele expected from them - businesses today need to learn that sustainability is what the consumer wants. It was further added that, the more people see successful businesses doing that, the more they tend to follow suit.

Conversely, another participant was concerned with the role customers play in a negative way. He stated that often the ski resort guests were not willing to make any "extra" efforts in order to be more sustainable primarily because they were on vacation or because they were coming from another area (state, country), and holding different values towards sustainability. Taking that in consideration, it was also highlighted that some resorts have the mentality that if the guests did not ask for it, there was no need to do it. This brings the idea that maybe customers themselves have not completely embraced the idea of sustainability into their everyday life, or at least during their vacations. One of the interviewees stated that there were many things that could be done behind the scenes (e.g. recycling, composting, reducing footprint) but…"they either don't have a guest impact or don't have a positive guest impact…. And that's really all that matters here…" Thus, it can be argued that customers are not a driver of CS according to ski resort sustainability professionals, rather they can be perceived as a barrier, or have a negative relationship with corporate sustainability.

Similarly, the broad ski resort employee group did not perceive their customers as a strong predictor of CS. The survey results indicate that resort guests only affected the socio-cultural sustainability of Colorado ski resorts ($B = .113$, $p < .01$) or the resort's approach towards company employees and guests in regards to sustainability, yet again with a minimal effect size.

Nevertheless, it was interesting to see that although most sustainability ski resort managers did not consider their guests to be a strong driver of sustainability, several participants talked about the reversed process – businesses driving or initiating change in customers' perceptions and behaviors:

> We have over seven million guests a year. So, …if we do a better job communicating not only our efforts, but helping them just by getting outdoors, research shows that affects peoples' ethic to want to preserve. …we can point them in the right direction through educational campaigns on our mountain. So maybe in the van ride up to the mountain, if

we're using alternative fuels, there's the CEO of a small trucking firm in there, and he or she sees this idea and goes back, and implements that for his small trucking company…If we can touch the seven million guests and they take that away, imagine the impact that can have.

The above quote related well to one of the "bigger picture" ideas of this dissertation – the idea that a ski area can trigger change in their customers' attitudes and behaviors and other ski areas or businesses practices, which can in turn trigger a small change in the direction towards global sustainability. And one "entity" that can drive sustainability innovation are regulations. Most of the respondents did not consider government regulations as a strong driver of ski resorts' sustainability, although a few of them pointed out that stricter regulations could actually assist in the process:

> …if anything were to happen will be most likely an outside factor…And I would say specifically the outside factor would be regulatory…the majority of things that we are not doing should be government mandated for us to do. ..if not government – then mandated from the corporate level.

Also related to regulations, a couple of the managers discussed politics and the role elected officials play in affecting sustainability, suggesting that people need to vote, and vote for officials who are supportive and proactive in terms of corporate sustainability.

In regards to the survey results, government regulations were found to be a significant predictors of environmental sustainability ($B = .116$, $p < .001$). Not surprisingly, the ski resort staff showed that stricter regulations will certainly affect the ecological aspects of CS. This is particularly through for climate change. Several interviewees expressed their opinions that "the tipping point it now" and governments need to act in a timely manner.

One more important point related to regulations highlighted in the interviewees was the lack of incentives. A few of the participants argued that not many incentives for adopting sustainability practices existed, especially compared to existing incentives for homeowners.

Finally, it was interesting to see that none of the characteristics of the external environment were significant predictors of economic sustainability among Colorado ski resorts indicating that the financial aspects of CS are affected by other, possibly internal factors.

Characteristics of the adopters. In terms of internal factors the interviews aimed at understanding how the innovativeness of the company and its leadership, size of the company (number of employees), and its financial structure (public or private) affect the diffusion of sustainability innovations.

The first characteristic of an organization as a potential factor affecting ski resorts' sustainability per the study framework is innovativeness considering whether the ski resorts were open to changes, proactive, and adopting sustainability practices beyond government regulations. The most prominent theme related to this topic and across all interview themes was leadership. All of the participants stated that any changes and innovations towards sustainability that take place in the resort were triggered by a devoted leader(s), who is personally passionate about sustainability first, and also a person with "a holistic kind of forward thinking," who has a well-defined vision for the company's path towards sustainability. One respondent stated that: 'with very few exceptions, particularly in the corporate structure – things don't happen bottom-up!" It was further stated that all top leaders have to be on board for any sustainability changes to happen – not only the CEO, as one respondent stated, but also the CFO and all other managers and directors. Hence, proactive, open-minded leadership was suggested to be the antecedent of ski resort's innovativeness and ultimately the strongest driver of CS.

The survey results matched this proposition. Innovativeness was found to be a predictor for all four dimensions of sustainability - environmental ($B = .768$, $p < .001$), socio-cultural sustainability ($B = .677$, $p < .001$), institutional ($B = .475$, $p < .001$), and economic sustainability

($B = .383$, $p < .001$). Moreover, the effect sizes for all coefficients were substantial >.5 (Vaske, 2008) (except the economic dimension approaching .4). Thus, both – sustainability experts and the sustainability non-professionals perceived innovativeness to be a very strong driver of CS.

The second characteristic of the adopter was the size of the ski resort, measured in terms of number of employees. Generally, there was an agreement among the managers who discussed the topic that sustainability innovations were more easily diffused in smaller companies. One of the managers of a smaller company highlighted that being a small ski area is a big advantage - almost any changes in policies and initiatives in smaller ski resorts are easier to achieve as people know each other and it was easier to hold people accountable for their actions. The same respondent also pointed out that it is easier for smaller companies to cultivate an organizational culture and stay "connected to the core, "which ultimately affects the diffusion of innovations. This statement can also relate to the institutional dimension of sustainability indicating that the smaller size affects the communication in the organization, including policies, rules and norms (institutional dimensions). Conversely, another sustainability manager stated that they did not think size matters. In her opinion, the only thing that mattered was to have the passion.

Another important point was that smaller companies not always have the resources to go out and invest in sustainability, "we have to be very careful about how we invest our money," he added, which can certainly relate to effects on the economic sustainability of the resort. Thus, most of the participants concluded that while larger resorts probably have more financial resources for investment, smaller ones have to be very cautious about their funding and finance distribution, but can more easily develop sustainability organizational culture.

On the other hand, the survey results revealed the size of the company as a predictor of environmental ($B = -.110$, $p < .01$, respectively) and socio-cultural sustainability ($B = -.222$, $p <$

.001), yet with minimal to approaching typical effect size, respectively. Thus, the perceptions of the two study groups appeared to match in regards to the idea that the size of the ski resort played a role for CS, yet the dimensions of sustainability to be affected appeared to differ.

Lastly, in regards to the financial structure of a ski resort – public or private, the sustainability professionals agreed that sustainability innovations were more easily diffused in private companies. One respondent highlighted that very often big companies were public and they were under pressure to grow and produce certain margins, relating to the economic aspects of resort's sustainability. A smaller company, on the other hand, does not experience any external pressure – thus, if the owner wants to invest in sustainability, they can. Another participant also talked about the bureaucracy in public (larger) companies. She stated that:

> There's so much red tape and so many people that sometimes those ideas take too long to get to implementation. You know, if I have an idea, or the operations department has an idea, I just go up to our CEO's office and talk about it… it's very, it's much easier for a small private company to get things done…[there aren't] too many people involved.

This quote reveals the impact the financial structure of the ski resort has on the institutional and socio-cultural dimensions of sustainability – the bureaucracy in public companies makes communication and implementation of sustainability ideas difficult. Similarly, another manager in a publicly traded company stated that "our mandate as a company is very clear – it is maximum return to shareholders." Thus, anything that does not bring immediate financial benefits, including sustainability, is not a priority of those resorts.

The perceptions of the non-sustainability ski areas employees were somewhat similar. The survey results indicate that the ski resort's financial structure affected the socio-cultural ($B = .125$, $p < .01$) and institutional sustainability of Colorado ski resorts ($B = -.277$, $p < .001$), yet the relationships were in opposite directions. This indicates that being a private company positively

affects the socio-cultural sustainability of the company, while in a public financial structure it is more difficult to ensure institutional sustainability. Accordingly, it can be concluded that the perceptions of sustainability professionals and the general ski areas staff about the role of the ski resort's financial structure as a predictor to CS were very similar.

Overall, the survey results reveal that diffusion of innovation attributes explain seventy percent of the variance in environmental (R^2 = .706, p < .001) and socio-cultural sustainability (R^2 = .705, p < .001) of Colorado ski resorts, 46 percent of the variance in institutional sustainability (R^2 = .461, p < .001) and 24 percent of the variance in economic sustainability (R^2 = .243, p < .001) of Colorado ski resorts.

Table 6.1.

Sustainability ski resort managers' perceptions on diffusion of sustainability innovations

DoI Variables	Emergent Theme/Aspect	Quote
Characteristics of the Innovation		
Complexity	Multifaceted; systemic integration; difficult to measure	*...the whole idea of sustainability being so complex, so many systems come together to create this idea of sustainability, it's very hard to pin point it and it takes usually a couple years of watching your mission... to really see any big change... [it is also] tough to measure.*
Relative Advantage	Improved reputation	*...we think it makes good business sense to be a good neighbor in a community. To be viewed as a responsible company, a socially responsible company. And that just makes all kinds of sense to us. It's part of who we are, and we want to continue to do that.*
	Financial benefits	*...some of the projects we're doing are saving money. Not only reducing our emissions, we're conserving resources, so we're actually saving money of the company. I think that's the biggest thing that'll hit home.*
Compati-bility	Company culture; sustainability position	*Sustainability is naturally...embedded in everything.*
		...right now it [sustainability] is viewed as a speedbump, it's viewed as a regulatory... almost like... do you have to?"
Trialability	Small scale trial	*It helps build the credibility of your program to the people that are making the decisions about the money and where it's going. And if its small and you don't see a bunch of expenses, you're more likely to get approval for that project, or get money for that project because you've proven that those things save money or human resources.*
Observabi-lity	Long-term results	*...wait a minute, if I invest X amount of capital, I'm not gonna make any more money, I'm gonna save money on electricity costs. So it's not the way businesses normally think. They think if I invest X amount of money, I'm gonna make Y amount more, and I can get my head around that.*

Characteristics of the External Environment		
Competition	No effect	*There is no competitive pressure surrounding sustainability, the competitive pressure is completely surrounded by guest experiences.*
Customers	Not a factor but can play a role	*… they [ski resorts] are going to be more open to it, because of public pressure. …there is more momentum around the need for sustainable practices. And there are more and more penalties and public outcry around folks that don't practice sustainable practice, so, I think there's a lot of opportunity and potential there.* *So that was our road block – we were expecting somebody who was on vacation from Texas [for example], who lives someplace where they maybe don't even recycle…to walk with their tray of five different materials and find the right receptacles for all of them and then it work out… and it doesn't, it just doesn't*
Government Regulations	Not a factor but can play a role	*Regulations definitely work, but, you certainly need to elect people to make that happen.* *…the majority of things that we are not doing should be government mandated for us to do. ..if not government – then mandated from the corporate level.*
Characteristics of the Adopter		
Innovative-ness	Leadership	*…it [sustainability] does take a long term vision and approach … there is an investment associated here that has a longer payout. So it does take a holistic kind of forward thinking leader to think of the business that way.* *…the [resort] CEO has a vision … we're going to build a business that not only survives, or thrives over time, and we're going to invest in all aspects of the foundation because it's not only the right thing to do, but it drives a successful business.*
Size	Easier for smaller resorts	*I think it's easy as you get more and more dispersed, to lose sight of some of those things that you say are important. However, you can point to very, very large companies who have very, very strong sustainability ethic. But it takes work and energy and integration…It is all about leadership.*
Financial Structure	Easier for private resorts	*…private ownership is a real benefit; it is harder to do this in a publicly traded company.* *Our mandate as a company is very clear – it is maximum return to shareholders.*

Table 6.2.
Survey questionnaire results

Independent Variable	Environmental Sustainability (n=262)		Socio-Cultural Sustainability (n=264)		Institutional Sustainability (n=264)		Economic Sustainability (n=264)	
	r	*β*	*r*	*β*	*r*	*β*	*r*	*β*
Characteristics of the Innovation								
Complexity	0.048	.024	0.37	.067	-.015	-.029	-0.025	.039
Relative Advantage	0.114*	-.066	0.132*	-.129**	.115*	-.052	0.223***	.045
Compatibility	0.479***	.039	0.57***	.200***	0.389***	.040	0.345***	.068
Observability	0.302***	.084*	0.328***	.125***	0.234***	.054	0.22***	.073
Trialability	0.003	-.023	-.016	-.071	-.041	-.048	-0.094	-.120*
Characteristics of the External Environment								
Competition	0.66	.018	0.083	.048	0.098	.098*	0.031	.037
Customers	0.135*	-.012	0.22***	.113**	0.132*	.024	0.211***	.100
Government Regulations	0.289***	.116***	0.199***	.004	0.23***	.076	0.121*	.009
Characteristics of the Adopter								
Innovativeness	0.825***	.768***	0.784***	.677***	0.638***	.475***	0.483***	.383***
Size	-0.196***	-0.110**	-0.264***	-.222***	-0.106*	.077	-0.006	.040
Financial Structure	-0.408***	.020	-0.346***	.125**	-0.481***	-.277***	-0.221***	-.032
R^2		.706***		.705***		.461***		.243***

* Significant at $p<.05$
** Significant at $p<.01$
*** Significant at $p<.001$

Discussion

This section includes a discussion of the study findings comparing and contrasting the results from the two study groups – sustainability professionals (ski resort sustainability managers) and the sustainability non-experts (all ski resort staff) to address research question one and two. Additionally, implications and contributions to research and practice related to diffusion of sustainability innovations, as well as the value of mixed methods approaches in tourism research is discussed (R3). Study limitations and suggestions for future research are also highlighted.

A summary of the study findings, highlighting agreements and differences among ski areas sustainability managers and the ski areas employees regarding factors affecting the diffusion of sustainability innovations is presented in Table 6.3. The bubbles represent findings from the interviews (qualitative data) in the form of frequencies. Conversely, the survey results bubbles indicate how many of the four sustainability dimensions are predicted by each variable. It is important to note that the purpose of Table 6.3 is to allow visual summary of the mixed-methods findings and not statistical comparison as the two types of bubbles (for qualitative and quantitative data) are not compatible.

Table 6.3.
Qualitative and Quantitative Data Comparison

Diffusion of Innovations Variables	Qualitative Data*	Quantitative Data**
Characteristics of the Innovation		
Complexity	●	
Relative Advantage	●	●[2]
Compatibility	●	●[2]
Trialability	●	●[4]
Observability	●	●[1,2]
Characteristics of the External Environment		
Competition	●	●[4]
Customers	●	●[2]
Government Regulations	●	●[1]
Characteristics of the Adopter		
Innovativeness	●	●[1,2,3,4]
Size	●	●[1,2]
Financial Structure	●	●[2,3]

*Number of interviewees discussing the theme
** Number of sustainability dimensions affected (significance level $p<.05$ or lower)

Qualitative data: Discussed by 1-2 interviews ●; 3-4 interviews ●; 5-6 interviews ●; 7-8 interviews ●.

Quantitative data: Significant for 1 dimension ●; 2 dimensions ●; 3 dimensions ●; 4 dimensions ●
[1]Environmental Dimension; [2]Socio-cultural dimension; [3] Institutional dimension; [4] Economic dimension

First, to address the first and second research questions, the data from the ski resort employees (quantitative data) was found to supplement the results of the ski resort sustainability managers' interviews (qualitative data) in this complimentarity mixed-methods research approach (R1). Yet, differences on their perceptions of diffusion of sustainability were revealed in regards to some of the variables from the conceptual framework (R2).

The main difference concerns the characteristics of the innovation. Rogers (2003) argues that the characteristics of the innovation are usually the most influential factor affecting the likelihood of adoption (between 49 and 87 percent of variance in adoption of innovations is explained by these five attributes). Several studies also found that innovation characteristics were the most influential factors, being highly correlated with sustainability practices (Le et al., 2006;

Smerecnik & Andersen, 2011). Conversely, the results of this study show that while many of the sustainability managers highlighted the characteristics of the innovation as important factors affecting sustainability, the survey results indicated that those items affected in most cases only one of the dimensions of sustainability and the effect size was minimal in all cases. One explanation for the different results from the two groups might be that the ski resort sustainability managers are probably more knowledgeable about sustainability as a concept in general, and more aware of how the sustainability philosophy is applied and embedded in the company's operations, policies, etc. The front line staff on the other hand, was possibly not informed enough about sustainability from a ski resorts' stand point (and maybe in general) in order to consider the characteristics of the innovation as predictors to the ski resorts' overall sustainability. Another possible explanation might relate to the different measures utilized in the interviews and the survey (e.g. the complexity index included only two items – thus, an improved measure might possibly affect the results). An important implication in this regard concerns the internal communication within the resort. As one manager highlighted, although regular meetings and workshops related to sustainability are conducted with department managers, very often the information they gather is not "diffused" successfully among the broad ski areas' staff. This idea relates to the compatibility characteristic as well – where once again differences between the two study groups existed. Systemic sustainability change at an organizational level was highlighted as one of the key institutional mechanism in the transformational process towards sustainability. Hence, the findings highlight a central issue that needs to be addressed if a ski resort desires to take steps towards corporate sustainability – communication. One solution is to offer regular, clear, continuous communication across all

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departments and levels of staff to ensure effective transition of the company towards long-term sustainability and business success.

In regards to the external environment, there was a general agreement that ski resort competitors and customers, as well as the government regulations related to sustainability and ski resorts did not play a very significant role affecting ski areas' overall sustainability. A relatively low number of ski resort sustainability professionals (managers) talked about those three entities, primarily stressing on the lack of competitive pressure, lack of interest in sustainability from customers (although they do have the power to trigger change at a corporate level) and not strong enough government regulations. A recent and rapidly growing trend in management has been to place the customer at the center of corporate strategies (Martin et al., 2010), based on the insight that customers are the basis of company profitability (Gupta et al. 2004; Hogan et al. 2002 as cited in Muller, 2014). And society as a whole seemingly is becoming increasingly more concerned with corporate social responsibility, holding businesses accountable for preserving cultures, respecting differences and embracing diversity (e.g. Ski Areas Citizen Coalition). Yet, it can be argued that customers do not exercise their power to influence decisions, policies, and regulations enough (personal communication, January 17, 2015). Thus, it was interesting to see that although a few of the participants discussed how being perceived as a sustainable ski resort might attract more customers, they also spoke about the lack of interest in sustainability from their guests. Several of the sustainability managers explained that the lack of interest might stem from personal values, or just the fact that people were on vacation. Similarly, from an employee perspective, another participant pointed to the older generation management as a major barrier – people who are not very open to innovations, especially related to sustainability. Therefore, the

shift in people's values necessary for transition towards sustainability was once again highlighted as a barrier to sustainability innovation.

Similarly, although no competitive pressure from other ski resorts was identified, the survey results indicated that competitors affected the institutional sustainability of the resorts, yet with a minimal effect size. These findings relate well to the mimetic pressures (imitating other organizations perceived as successful) as per institutional theory (Campbell, 2007). DiMaggio & Powell (1983) highlight that when an organization is faced with uncertainty and ambiguity, it looks at other organizations that have adopted successful practices. Yet, none of the ski resorts managers interviewed considered competition in the industry as a key factor affecting the diffusion of sustainability innovations among the resorts.

In regards to government regulations, considering the fact that the ski industry is among the top three emitters of CO_2 per participant in the tourism/leisure industry (U.S. EPA, 2000 as cited in Schendler, 2003), it is suggested that perhaps government bodies should re-think regulations in the sector. Results indicate that through stricter regulations in terms of sustainability, government bodies have the power to instigate change towards sustainability among the ski resorts, or at least significantly affect their environmental sustainability. Taking into consideration these results, and the strong opinions a few of the interview respondents expressed in regards to government policies and regulations, it can be argued that stricter rules and guidelines are necessary. This idea has important implications for ski resort managers, government agencies, and the general public interested in affecting ski resort sustainability. Ski resorts need to advocate for these measures, while customers have the power to also advocate and help initiating changes in policies. And if such a "social revolution" takes place, maybe ski resorts, and businesses in general, can ultimately contribute to global sustainability as well. It is

stated that business "statesmanship" is essential for raising the urgency of sustainability issues at the global and local levels. Advocacy by business leaders can influence peers, consumers and, most importantly, governments on the need to tackle societal crises (UNGC, 2016).

Lastly, concerning the characteristics of the ski resort (adopter of innovations), although size and financial structure were pointed out as important factors affecting ski resorts' sustainability, the innovativeness, including proactive, open-minded, knowledgeable and devoted leader(s), was the ultimate factor which affected all dimensions of sustainability. Its significance was stressed by all ski resort managers interviewed and by the survey results. The ski resort employees supported sustainability professionals' opinions that if a company is proactive by shifting its operations and policies in terms of sustainability – i.e. adopting practices beyond regulatory requirements and before other resorts do so, it will ultimately be more sustainable in terms of environmental, socio-cultural aspects, institutional and economic perspectives. In that regard, sustainability managers also stressed on the importance of leadership. Similarly, in their study evaluating travel agency attitudes toward climate change in Hong Kong McKercher, Mak and Wong (2014) also identified leadership (or lack of) as the most critical factor. And companies and their leadership teams are maybe beginning to shift in that direction. UNGC (2016) reveals that the sustainability agenda is increasingly resonating with top leadership, with the majority of CEOs considering sustainability important to the future success of their business (93%), a route to competitive advantage in their industry (80%), and an opportunity for growth and innovation (78%), thus bringing CS to the company. It is further argued that by choosing a path of sustainability, leaders are taking responsibility for a shared future towards global sustainable development (UNGC, 2016).

In regards to the role of a company's size, results revealed a general agreement among the sustainability professionals and the ski resort non-sustainability staff – the characteristic affects CS but is not necessarily one of the most prominent drivers or barriers in the change process. Rogers (2003) points out that larger-sized organizations are generally found to be more innovative. Conversely, others (Sponseller, 2015) argue that smaller companies are, or can be more innovative. This study results show that as company size grows, environmental and socio-cultural sustainability decrease, thus supporting Sponseller's proposition. These results are in line with literature suggesting that it is easier for smaller companies to shift towards more sustainable practices as those changes are more easily obtained (due to lack of bureaucracy), also suggested by the ski resort managers. Yet, these findings also contradict Roger's idea that larger companies are more innovative. Nevertheless, larger companies generally have more financial resources to invest into sustainability, while smaller firms have the ability to concentrate funds into certain projects quicker (Sponseller, 2015), which was also supported by the interviewees. Hence, more research is needed when evaluating the role of a company's size as a driver or barrier to sustainability.

In terms of the financial structure, most of the sustainability managers interviewed held strong opinions supporting this notion that the financial structure matters when considering CS. Similarly, the survey results indicated that while being a private company significantly predicted socio-cultural sustainability; the trend was reversed in terms of institutional sustainability – institutional sustainability decreased if the company was public. Thus, the overall results from both data collection methods reveal that it is easier for privately owned companies to affect the attitudes and behaviors of their guests and employees in regards to sustainability, while public

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companies are much more complex as institutions and sustainability-related communication and change is more difficult to achieve.

Lastly, addressing the third research question, it can be argued that mixed methods proved a valuable approach when exploring ski resort perceptions on the diffusion of sustainability innovations among Colorado ski resorts. The two methods complement each other as in some cases the interviews offered more depth – where sustainability professional discussed some of the drivers and barriers to sustainability more insightfully, while in other cases the survey results were more intuitive as the relationships were specified in terms of the four dimensions of sustainability – e.g. it was highlighted that a certain variable affected only one or two of the dimensions while not significant for the rest. Thus, it can be argued that the application of complimentarity sequential mixed-method approach is an appropriate choice for exploring and explaining the complex and multifaceted concept of CS and its diffusion throughout an organization.

Implications. From a practical standpoint, the finding has important implications for resort leadership. Results imply that a disconnect between sustainability professionals and the broad ski resort staff exists. Although some of the differences might stem from the different data collection methods used, it might also suggest a gap in communication and/or education about corporate sustainability. On a more positive note, the study findings reveal that ski resorts can contribute to CS at a resort level through internal organizational changes. A devoted leader who is proactive and open to new ideas and policies in regards to sustainability, can ensure her company's CS from all possible aspects – preserving natural resources, keeping their employees happy, and bringing financial benefits for its owners, and ultimately making a small contribution to global sustainable development. Thus, the great role of ski resort leadership is once again

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highlighted, implying that leaders are the primary drivers of CS and they have the duty of triggering changes towards CS at the ski resort.

From a theoretical standpoint, this study supports the application of DoI theory as a multidisciplinary tool in the tourism field, especially when taking into consideration the relatively high percent of variance explained by the DoI variables (see Table 6.2). Yet, the study findings contradict Roger's idea that the characteristics of the innovations were the most critical factor in the diffusion of innovations. Hence, further exploration of the theory is necessary. Additionally, this study confirms the value of the PoS framework and its applicability in tourism-related studies.

From a methodological standpoint, this paper positioned mixed-methods research as a complement to traditional qualitative and quantitative methods in sustainability and tourism, as it specifically illustrated a complimentarity sequential mixed methods approach. The value of utilizing a mixed-methods approach in this context is exposed as the qualitative data provided a greater understanding of the survey responses, while the quantitative analysis provided detailed assessments of the qualitative response patterns (Driscoll, Appiah-Yeboah, Salib, & Rupert, 2007).

Study Limitations. Several limitations exist in this study. The most significant one is the relatively small data sample for the interviews and the survey questionnaire. The main reason for it is twofold. First, a few of the ski areas do not have a specific position devoted to sustainability which was possibly one reason for their decision to not participate in the study. The second main obstacle was related to the fact that I was trying to recruit individuals holding executive (or relatively high) positions in the business world. Possibly the lack of incentives and limited time availability of those business people might be another reason to refuse participation in the study.

Yet, considering the fact that the six companies who participated own twelve of the twenty-five ski areas in Colorado, I deem the sample sufficient. Additionally, the study includes participants from smaller and larger ski resorts, which also contributes to the representativeness of the sample.

In regards to the relatively low response rate to the survey questionnaire, it might be due to the time the survey was distributed. As the primary ski season is between December and March, distributing the survey between March and May 2015 led to low representation of seasonal ski resort employees (approximately twenty percent). Yet, the full time employees are probably more knowledgeable and familiar with sustainability practices of their companies (compared to somebody who had worked at the resort for only 4-5 months, possibly first year). Additionally, it is not clear whether all seasonal employees have company email accounts, and whether they check their emails regularly if they do. Similarly, no incentive for participation were offered due to limited funding, which might have further affected the response rate. Although Internet surveys have been increasing in popularity in recent years (Dillman, Smyth, & Christian, 2009; Vaske, 2011), Dillman (2007) states that few survey undertakings are as difficult as defining, sampling, contacting, and obtaining responses to self-administered questionnaires businesses or other organizations. One way to compensate for sampling issues is data weighing (Vaske, 2011). Nevertheless, no weighting of data or response-check was possible as all participants were anonymous (the research team had no access to respondents names or email accounts). I had no access to the email accounts of the prospective respondents, and had to rely solely on the "good will" of my contact person in each resort to distribute the survey, as well as follow up with weekly reminders.

Future Research. Future research on sustainability in the resort industry should focus on institutional mechanisms at an organizational level, leadership and communication. Studies focusing on effective management techniques and leadership skills required to facilitate the diffusion of sustainability innovations should be further explored; factors beyond sustainability diffusion topics such as trustworthy leadership, trusting followers, capable champions, involved management, innovative culture, accountable culture, systems communication and systems thinking (Judge & Elenkov, 2005; Smerecnik & Andersen, 2011).

Nevertheless, a corporation's success in adopting green practices depends not only on corporate attitudes towards environmental issues but also on its employees' personal beliefs and everyday actions (Chou, 2014). Moreover, Sweetman (2007) states that no matter how good the company's policies and practices might look on paper, no changes will occur without the active support of employees across the organization. Hence, the role personal values of resort employees play should also be studied. Another interesting future research might focus on the role supply chain plays affecting corporate sustainability. UNGC (2016) points out that supply chain practices are one of the biggest challenge to improving their sustainability performance. Accordingly, supply chain's part in CS should also be studied.

Conclusions

This study contributes to the emerging field of resort sustainability and diffusion of sustainability innovations. Dunphy, Griphiths and Benn (2007) argue that the fundamental question which needs to be answered today is how the current model of the corporations need to be modified to contribute to global sustainability. This study demonstrates the factors affecting the transformational process of diffusion of sustainability innovations among Colorado ski

resorts. Despite its limitations, this study is one of only few attempts to explore ski resorts perceptions toward sustainability. Lozano (2009) proposes that internally planned, orchestrated change, based on proactivity and collaboration, offers a better option to companies wishing to engage with sustainability. The findings from this study corroborate with this proposition and offer ideas for companies' leadership teams, highlighting the power each organization holds for its own long-term success. Furthermore, the study results show that if a company is proactive in terms of shifting its operations and policies for sustainability – i.e. adopting practices beyond regulatory requirements and before other resorts do so, it will ultimately be more sustainable in terms of environment, socio-cultural aspects, institutional and economic perspectives. Therefore, the higher the innovativeness, the greater the overall diffusion of sustainability among the ski resort. These findings support literature connecting innovativeness to high performance (Hult, Hurley & Knight, 2004) while questioning findings from other literature – e.g. Le et al. (2006) found no significant relationships between what they call "greenness level" (partly overlapping with innovativeness) and likelihood to adopt sustainability. Similarly, Smerecnik and Anderesen (2011) found that although the perceived resort innovativeness was positively correlated with the adoption of environmental sustainability innovations, it was not the strongest predictor.

Differences were found between sustainability ski resort managers and the broader non-sustainability ski staff primarily for the characteristics of the innovation. In contrast, there was a general agreement between the two study groups in regards to the key role of leadership and general innovativeness or the ski resorts. Accordingly, this study shows that the perceptions of front line employees do not completely mirror those of sustainability managers. Thus, gaps in communication, knowledge distribution and/or the role of differences in personal values and attitudes between the two study groups were highlighted.

The study used a complimentarity sequential development mixed-methods approach where two data sets were collected independently (sequentially), while the results of the results from the two were combined in a single report. The survey results supported many of the ideas highlighted from the ski resort interviews, yet a few important differences were revealed. The value of utilizing mixed-methods approach in this context is exposed as the qualitative data provided a greater understanding of the survey responses, while the quantitative analysis provided detailed assessments of the qualitative response patterns (Driscoll, Appiah-Yeboah, Salib, & Rupert, 2007). The managers interviews complemented the quantitative analysis since the interviewees discussed some critical aspects, which were not included in the survey. The findings of the study highlight the challenges involved in organizational change towards corporate sustainability, as well as the importance of examining sustainability issues holistically. Furthermore, as interviews enable the interviewer to ask respondents for further explanation of their answers, it might prove helpful in explaining complex or contradictory survey responses (Driscoll et al., 2007).

Adopting sustainability innovations can act as a "transformational innovation" that can dramatically reshape the way companies from all industries provide products and services and contribute to society's progress toward integrating sustainable lifestyles (Denning, 2005). This study brings new insights into the field of diffusion of sustainability innovations in the tourism industry, or ski resorts more specifically. Mixed methods may provide an avenue to understand the complex transition process towards corporate sustainability for tourism businesses. The interdisciplinary nature of tourism and sustainability research can contribute to the formation of research teams with diverse backgrounds and methodological approaches, and thus encourage the use of new approaches that mixed methods can offer (Puhakka et al., 2013).

CHAPTER VII

CONCLUSIONS

The research presented in this dissertation provides a valuable contribution to sustainability literature by identifying and describing factors affecting the diffusion of sustainability innovation among Colorado ski resorts, as well as highlighting institutional mechanisms facilitating corporate sustainability. Furthermore, the study discusses the value of mixed-methods approach in a tourism context. Findings of the study have practical and theoretical implications.

From a practical standpoint, this dissertation offers ideas for companies' leadership teams, highlighting the power each organization holds for its own long-term success. Results from the mixed-method study imply that a disconnect between sustainability professionals and the broad ski resort staff exists in terms of understanding and perceptions in regards to CS. Although some of the differences might stem from the different data collection methods used, it might also suggest a gap in communication and/or education about corporate sustainability. Hence, the key role of continuous and dynamic education and communication throughout the organization for change towards sustainability was revealed. Additionally, results implied that leaders are the primary driver of change towards CS. It can be argued that the imperative we now face is to create a more sustainable responsible world, and it starts with leadership (Pearce & Stahl, 2015). Moreover, the importance of systemic integration of sustainability ideas and practices through fostering organizational climate and policies was highlighted.

From a theoretical standpoint, this study expanded on the application of DoI theory as a multidisciplinary, practical tool in a tourism industry context. Yet, the study findings contradict

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Roger's idea that the characteristics of the innovations were the most critical factor in the diffusion of innovations. Conversely, results point to the characteristics of the adopter as the strongest factor affecting diffusion of innovation. Hence, further exploration of the theory in other industries' context is necessary.

Moreover, the findings in regards to the factors from the external environment relate to institutional theory, and coercive (i.e.rules and regulations) and mimetic (i.e. competitors and partners) pressures more specifically. DiMaggio & Powell (1983) highlight that when an organization is faced with uncertainty and ambiguity, it looks at other organizations that have adopted successful practices. Yet, based on this dissertation findings, the role of competitors and government regulations (and guests) were not very significant. Hence, this might bring new perspectives related to institutional theory, particularly in the ski areas context or it might suggest that ski resort employees do not perceive sustainability in the corporate context as an ambiguous or complex idea.

Additionally, this study applied the PoS framework as a lens for measuring CS and confirmed its applicability in tourism research. Moreover, the conceptual framework linking DoI and PoS developed in this dissertation can be used as a holistic framework to think, understand, and analyze CS.

From a methodological standpoint, this paper positioned mixed-methods research as a complement to traditional qualitative and quantitative methods in sustainability and tourism, as it specifically illustrated a complimentarity sequential mixed methods approach. The value of utilizing a mixed-methods approach in this context is exposed as the qualitative data provided a greater understanding of the survey responses, while the quantitative analysis provided detailed assessments of the qualitative response patterns (Driscoll, Appiah-Yeboah, Salib, & Rupert,

2007). Hence, findings highlight challenges involved in organizational change towards corporate sustainability, as well as the importance of examining sustainability issues holistically. One way to do that is through the use of mixed methods. Yet, further research confirming the findings in other geographical areas and among other industries is necessary.

Future Research

Additionally, future research on sustainability in the resort industry should also focus on better understanding the role of institutional mechanisms, leadership and communication. Studies focusing on effective management techniques and leadership skills required to facilitate the diffusion of sustainability innovations should be further explored; factors beyond sustainability diffusion topics such as trustworthy leadership, trusting followers, capable champions, involved management, innovative culture, accountable culture, systems communication and systems thinking (Judge & Elenkov, 2005; Smerecnik & Andersen, 2011).

Nevertheless, a corporation's success in adopting green practices depends not only on corporate attitudes towards environmental issues but also on its employees' personal beliefs and everyday actions (Chou, 2014). Moreover, Sweetman (2007) states that no matter how good the company's policies and practices might look on paper, no changes will occur without the active support of employees across the organization. Hence, the role personal values of resort employees play should also be examined. Future research might focus on supply chain as a factor affecting corporate sustainability. UNGC (2016) points out that supply chain practices are one of the biggest challenges to improving sustainability performance.

Limitations

As with all research, a number of limitations exist in this study. The most significant one is the relatively small data sample for the interviews and the survey questionnaire. The main

reason for it is twofold. First, a few of the ski areas do not have a specific position devoted to sustainability which was possibly a reason for not participating in the study. The second main obstacle was related to the fact that I was trying to recruit individuals holding executive (or relatively high) positions in the business world. Possibly the lack of incentives and limited time availability of those business people might have been a reason for not participating. Yet, considering the fact that the six companies who participated own and manage twelve of the twenty-five ski areas in Colorado, I deem the sample sufficient. Additionally, the study includes participants from smaller and larger ski resorts, which also contributes to the representativeness of the sample.

In regards to the relatively low response rate to the survey questionnaire, it might be due to the time the survey was distributed. Since the primary ski season is between December and March, distributing the survey between March and May 2015 led to low representation of seasonal ski resort employees (approximately twenty percent). Yet, the full time employees are probably more knowledgeable and familiar with sustainability practices of their companies (compared to somebody who had worked at the resort for only 4-5 months, possibly first year). Additionally, it is not clear whether all seasonal employees have company email accounts, and whether they check their emails regularly if they do. Similarly, no incentive for participation was offered due to limited funding, which might have further affected the response rate. Although Internet surveys have been increasing in popularity in recent years (Dillman, Smyth, & Christian, 2009; Vaske, 2011), Dillman (2007) states that few survey undertakings are as difficult as defining, sampling, contacting, and obtaining responses to self-administered questionnaires for businesses or other organizations. One way to compensate for sampling issues is data weighing (Vaske, 2011). Nevertheless, no weighting of data or response-check was possible as all

participants were anonymous (the research team had no access to respondents names or email accounts). I had no access to the email accounts of the prospective respondents, and had to rely solely on the "good will" of my contact person in each resort to distribute the survey, as well as follow up with weekly reminders.

Despite these limitations, this study is one of few attempts to explore the diffusion of CS in a tourism context. The study brings new insights into the tourism field pointing out critical factors affecting the diffusion of sustainability innovation among Colorado ski resorts. Findings support the statement that ski resorts must not look solely to customer demand and competitors for a reason to adopt sustainability initiatives but rather understand the holistic long-term benefits from the adoption of sustainable practices and policies; understand that change towards sustainability can come from within the organization. Results highlight that most of the change towards sustainability stems from within the company and the level of innovativeness of the organization is the ultimate factor affecting CS.

Conclusive Remarks

International tourism arrivals reached a record 1.2 billion in 2015 (WTO, 2016). Nevertheless, as the tourism industry continues to grow, the challenges it faces will also grow. Climate change, a hypermobile society, new models of relationships through social media (Budeanu, 2013), and the shared economy (Dredge & Gyimothy, 2015) all add new layers of complexity to tourism research and practice. In this context, sustainability becomes a fluid and adaptable concept that covers multi-level transformations and challenges (Macbeth, 2005). Thus, no desirable change in the tourism system is viable in isolation from wider societal transformations (Budeanu, Miller, Moscardo, & Ooi, 2016). And at a global level, the

development of the United Nations Sustainable Development Goals, as well as the outcome from the Paris Climate Change Conference 2015 and the scheduled Global Forum on Resppnsible Business Conduct in Paris in June 2016, indicate that the global community is on the path for change towards sustainability.

Einstein once said:"We can't solve problems by using the same kind of thinking we used when we created them." Similarly, Denning (2005) points out that adopting sustainability innovation can act as a "transformational innovation" that can dramatically reshape the way companies from all industries provide products and services and contribute to society's progress toward integrating sustainable lifestyles. So "change is here to stay, with or without our approval" (Kets de Vries, 2009, p. 211). And all of us – customers, business persons, residents, and global community members are key drivers of global change for a bright, sustainable future.

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APPENDICES

Appendix A.
Resort Manager Cover Letter

Colorado State University

Knowledge to Go Places

November, 2014

Dear resort manager,

The Department of Human Dimensions of Natural Resources at Colorado State University is conducting research in organizational change toward corporate sustainability among Colorado ski resorts. The purpose of the study is to explore how and why Colorado ski resorts are changing their organizations towards sustainability. Moreover, its goal is to identify what the main factors which help companies change towards sustainability are or what factors stop them from being sustainable. Thus, it is with hopes that ways of how the changes in the organization contribute to overall company sustainability will be highlighted.

We are asking you to participate in an interview which will take between 45 and 60 minutes. Results from the interview will provide the Principal Investigator with information necessary to identify what institutional mechanisms – at an organizational, multi-stakeholder or governmental/policy level facilitate adoption of sustainable strategies, policies, and operations and to develop resources to facilitate strategic decisions in regards to institutionalizing corporate sustainability of ski resorts.

There are no known risks or benefits in participating, but we hope to provide resorts with useful information about Colorado ski resorts sustainability by the interview and survey results obtained. It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential risks. Your responses will be kept strictly confidential and all interview transcripts and tapes will be stored securely in a locked filing cabinet.

Your participation in this research is voluntary. If you decide to participate in this interview, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

If you have any questions or concerns about your rights as a participant, please call Evelyn

Swiss, Senior IRB coordinator, Research Integrity and Compliance Review Office at Colorado State University at (970) 491-1553. You may contact Dr. Stuart Cottrell (principal investigator) at (970) 491-7074 or Pavlina McGrady (co-principal investigator) at (970) 491-5978 at Colorado State University if you have specific questions. Final results will be available in Fall, 2015 by emailing the Principal Investigator at the Department of Human Dimensions of Natural Resources at Colorado State University at Stuart.Cottrell@colostate.edu or co-principal investigator at Pavlina. Mcgrady@colostate.edu.

Thank you for your participation in this study.

Sincerely,

Stuart Cottrell, PhD, Principal Investigator
Pavlina McGrady, MS, Co-Principal Investigator

Appendix B.
Interview Consent Form

Consent to Participate in a Research Study
Colorado State University

TITLE OF STUDY:
Organizational Change for Corporate Sustainability. An Innovations Diffusion Perspective

PRINCIPAL INVESTIGATOR:
Stuart Cottrell, PhD, Human Dimensions of Natural Resources, Tel: (970) 491-7074, Email: Stuart.Cottrell@colostate.edu.

CO-PRINCIPAL INVESTIGATOR:
Pavlina McGrady, MS*,* Human Dimensions of Natural Resources, Tel: (970) (970) 491-597, Email: Pavlina.Mcgrady@colostate.edu.

WHY AM I BEING INVITED TO TAKE PART IN THIS RESEARCH?
You have been selected to participate in this study as an expert in ski resort sustainability (due to the position you are holding). The research team is interested in learning what you think about changes in your organization (company) in regards to sustainability; what factors influence your company's decisions to adopt sustainable policies and practices.

WHO IS DOING THE STUDY?
Dr. Stuart Cottrell and Pavlina McGrady from the Department of Human Dimensions of Natural Resources at Colorado State University

WHAT IS THE PURPOSE OF THIS STUDY?
The purpose of the study is to explore how and why Colorado ski resorts are changing their organizations towards sustainability. We define sustainability as the practice of ski companies to use resources in a way that they will not run out and the resorts will be able to maintain operations for a long time (continue making profit); and all people related to the company (employees, host community, shareholders, etc.) have their needs satisfied (e.g. income, safety, ethics, diversity, etc.). The goal of our study is to identify the main factors that help companies change towards sustainability or what factors stop them from being sustainable.

WHERE IS THE STUDY GOING TO TAKE PLACE AND HOW LONG WILL IT LAST?
The interview will take approximately 45 to 60 minutes and will take place at a location that is convenient for you (e.g. your office).

WHAT WILL I BE ASKED TO DO?
The procedure of the study will include interviews and surveys. Your participation is needed for the interview phase. You will be asked 10 to 15 questions with some clarifying questions/comments. Notes will be written during the interview. A digital recording of the interview (if allowed by the participant) and subsequent dialogue will be made.

ARE THERE REASONS WHY I SHOULD NOT TAKE PART IN THIS STUDY?
Only participants 18 years of age or older can take part in this study

WHAT ARE THE POSSIBLE RISKS AND DISCOMFORTS?
There are no known risks in participating. It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known and potential, but unknown, risks.

ARE THERE ANY BENEFITS FROM TAKING PART IN THIS STUDY?
There are no direct benefits from taking part in this study. Yet, it is with hopes that this study will be beneficial for ski resorts in Colorado, as well as the researchers and Colorado State University by contributing to academic research and literature.

DO I HAVE TO TAKE PART IN THE STUDY?
Your participation in this research is voluntary. If you decide to participate in the study, you may withdraw your consent and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled.

WHO WILL SEE THE INFORMATION THAT I GIVE?
We will keep private all research records that identify you, to the extent allowed by law. For this study, we will assign a code to your data (e.g. Name of your resort = resort A) so that the only place your name will appear in our records is on the consent and in our data spreadsheet which links you to your code. Only the research team will have access to the link between you, your code, and your data. The only exceptions to this are if we are asked to share the research files for audit purposes with the CSU Institutional Review Board ethics committee, if necessary. When we write about the study to share with other researchers, we will write about the combined information we have gathered. You will not be identified in these written materials. We may publish the results of this study; however, we will keep your name and other identifying information private.

WHAT IF I HAVE QUESTIONS?
Before you decide whether to accept this invitation to take part in the study, please ask any questions that might come to mind now. Later, if you have questions about the study, you can contact the investigators Dr. Stuart Cottrell at (970) 491-7074 or Pavlina McGrady at (970) 491-5978.
If you have any questions about your rights as a volunteer in this research, contact the CSU IRB at: RICRO_IRB@mail.colostate.edu; 970-491-1553. We will give you a copy of this consent form to take with you.

WHAT ELSE DO I NEED TO KNOW?
The interview will be digitally recorded (if permission granted). Please initial below whether you agree to be digitally recorded:

☐ Yes, I agree to be digitally recorded _____ (initials)

☐ No, do not audiotape my interview _____ (initials).

After the initial interview data is analyzed, the research team might need clarifications in regards to some of your answers. Please initial below whether you agree to be contacted by telephone or by email for post interview clarification (if needed).

☐ Yes, I agree to be contacted for a post interview clarification _____ (initials)

☐ No, do not agree to be contacted for a post interview clarification _____ (initials)

Your signature acknowledges that you have read the information stated and willingly sign this consent form. Your signature also acknowledges that you have received, on the date signed, a copy of this document containing 3 pages.

_____   _____
Signature of person agreeing to take part in the study   Date

_____
Printed name of person agreeing to take part in the study

_____   _____
Name of person providing information to participant   Date

_____
Signature of Research Staff

Appendix C.
Interview Protocol

Introduction: Hi, my name is Pavlina McGrady - I am a PhD student at Colorado State University working on a study focusing on organizational change toward corporate sustainability among Colorado ski resorts. The goal of the research is to explore how and why Colorado ski resorts are "orchestrating" change in their organizations; to identify what the main barriers and motivators to change and innovations diffusion are and how this transformation contributes to institutionalizing corporate sustainability

Thank you for your willingness to participate in this interview.

The interview will last approximately 45 minutes to 1 hour.

Will it be OK with you if I record our conversation? The purpose of recording is for us to reflect on your responses to the questions asked. Your name will remain anonymous and confidential. Interview results will be coded and aggregated to help us identify what institutional mechanisms [at an organizational, multi-stakeholder (partnerships and alliances, competitions, etc.), and governmental/policy level] facilitate adoption of sustainable strategies and operations, which will be beneficial for exploring ways of orchestrating corporate sustainability in the long run.

Should you have any questions or concerns, please feel free to ask at any time.

May we begin?

Questions:
1.   Would you tell me a little bit about the company (when it was established, how many employees work [here], maybe how long you have been working for this company)

2.   What is your idea/understanding of sustainability in general?

[Probe – three or four dimensions - economic, environmental, social, and institutional]

3.   Do you consider sustainability to be an innovation in general and for your company specifically [why or why not]?
-       [Probe - is it a "new" concept, difficult to grasp and new to policies and operations (in general and/or for your company) or
-       It has been part of the company's operations and procedures and policies for a long time – it is not new]
4.   How about Corporate Sustainability (Provide a definition) (in relation to your organization)?
5.   Do you believe/think that your company is a "sustainable" company?
[Probe - which stage of the innovation diffusion process are you at: knowledge, persuasion, decision, implementation, confirmation]

-       If yes - would you provide some examples of "sustainable practices"?

(Encourage diversification across the four dimensions of sustainability)

6.   Who initiates those practices/strategies/policies? Why do you adopt those practices/strategies? (institutional mechanisms affecting the decisions)

a.   [Probe - Are they triggered/influenced by/from within the organization (e.g. employee's ideas, leaders, etc.) or from customers' demands, or from competition (partnerships), or government regulations, or any other factors affect it?
b.   How about your company's characteristics – do they affect it to a certain extend – size of the company, age, communication channels used, level of risk taking, "greenness"?
c.   How is the idea and culture of sustainability communicated within the organization (what communication channels are used)
[Probe - email, PowerPoints, personal communication (meetings – expand on the role of the "change agent" – leader), training manuals and other printed materials)
d.   Do you think external or internal factors play a more significant role in the process of institutionalizing sustainability?

7.   What are some obstacles to understanding/embracing/adopting sustainability? (Complexity of the concept (idea), observability of results (long-term), triability (cannot really try it out in advance), relative advantage, compatibility (with organizational culture, policies, etc.)

8.   Do you think that ski resorts will be able continue their business as usual for many years to come? Why or why not?

[Probe – climate change]

Thank you for your time and assistance!

Appendix D.
Code Book

Code	Definition
Sustainability-related position	A statement for commitment to sustainability
Only low-hanging fruit	For now only lighting retrofits, recycling, etc. – initiatives which do not require a lot of funds and are easy to implement
Mainstream/Naturally/Embedded	The idea is to be ingrained in everything the company does; be part of the Core company values; build company culture
Savings/Win-win	Economic benefits are key – everybody is looking for savings. Otherwise there is no buy in (with few exceptions)
Rebates and Incentives	Incentives (as they exist for residential) are needed. Businesses are looking for incentives to adopt sustainability practices.
Green teams	Teams who facilitate communication through regular meetings; ideas sharing
NSAA conferences	All resorts attend but do not find them very beneficial
Sustainability vision	Having long term vision (realizing the long-term benefits – i.e. improved guest satisfaction, employees' retention; nature preservation, etc.
Internal pressure	Mainly internally from leaders, corporate culture, voluntary company initiatives
External pressure	Consumer (guests); employees; regulations
Industry Groups (Colorado Ski Country; NSAA, etc.)	No push; just for marketing purposes.
Leadership/Top-Down	Devoted sustainability-minded leader(s) is a key aspect; changes work only if they happen top-down – from management/executive team and diffused throughout the organization.
Older generation managers	Elderly managers have old-fashioned understanding of business and do not realize benefits from sustainability
Brand reputation/Recognition	Sustainability helps build a better brand/reputation/

	recognition – even internationally (brings a competitive advantage)
Siloed departments	Compartmentalized departments – not enough communication and common goals, vision
Consumer pressure	It is expected that consumers will increasingly require sustainability-related practices and policies; guests have the power to "force" organizations to change (currently not happening yet).
Upfront) Cost	Companies have to spend money to make money through sustainability – the business mindset is a barrier – sustainability doesn't make money, it saves – it is difficult to grasp from a business standpoint
Advocacy/Education/Outreach	Educating and advocating for sustainability – activism among guests, employees, government officials
Win-Win	Most leaders do not realize that being sustainable presents good business opportunities – save money; happy employees equals happy guests; taking care of the community equals also happy guests, which equals revenue.
Momentum/Tipping Point	The momentum for change towards sustainability is here-now is a big tipping point
New hire orientation/manuals	Communicate about sustainability from the beginning
Sense of urgency	No sense of urgency in regards to climate change - primarily short-term thinking for now
Sustainable Slopes – Climate Challenge	All resorts are members but did not find the membership being useful (primarily for marketing purposes)
Weatherizing the business	Adapting to changing circumstances rather than changing (e.g. offer year-around activities)
Bureaucracy/Red tape	Big barrier for public companies especially – They need to go through many levels of approvals before a sustainability initiative can take place
Systemic Change/Restructuring	Integrative holistic strategy; holistic view of the business; Thinking strategically – long-term mission and vision
Change Agent/Champion	It is a key aspect in the change towards sustainability

	– one devoted and passionate person can trigger a big change
Employee turnover/retention	The nature of the industry (seasonality) cause for a big turnover with employees each season (year) which makes integrating sustainability through the company more difficult
Politics	The current elected officials are not sustainability – minded.

Appendix E.
Survey

Sustainability among Colorado Ski Resorts

Colorado State University

Knowledge to Go Places

The goal of this survey is to learn about factors affecting ski resorts' decisions to adopt sustainability initiatives. As you fill out the questionnaire, please think about sustainability considering three aspects – <u>environmentally</u> - ski resorts using natural resources in a way that they will not run out; <u>economically</u> - the resorts will be able to maintain profitable operations for a long time; and <u>socially</u> - all people related to the company (employees, host community, shareholders, etc.) have their needs satisfied, including income, safety, ethics, and diversity. Even if you are unsure how to respond to any of the questions, please respond based on your perceptions as an employee at your company.

Thank you for taking the time to fill out this questionnaire!

1. To what extent are you familiar with the sustainability efforts conducted at your resort? (***Circle the number that best fits your knowledge***)

Not at all	Very little	Somewhat	Quite well	To a great extend
1	2	3	4	5

2. My position with the resort is: (***Check ONE response***)

_____…related to Operations (e.g. lift operator; ski instructor; retail; restaurant; guest services; etc.)
_____…related to Administration (e.g. human resources; marketing; administrative; IT; executive; etc.)
_____…Unsure

Part I. The following section includes questions related to your perceptions of sustainability and related initiatives as part of the resort's operations.

3. To what extent do you agree or disagree with each of the following statements about sustainability.
   (***Circle ONE number for EACH statement***)

| | Strongly | Disagree | Somewhat | Neutral | Somewhat | Agree | Strongly |

	Disagree		Disagree		Agree		Agree
a. Adopting sustainability requires a lot of technical knowledge	1	2	3	4	5	6	7
b. Sustainability is difficult to implement in the resort's everyday operations	1	2	3	4	5	6	7
c. It is difficult to measure sustainability progress	1	2	3	4	5	6	7
d. Before deciding to adopt a sustainability initiative, the resort would need to test the adoption on a smaller scale	1	2	3	4	5	6	7
e. The company is able to forecast the overall effects related to the adoption of sustainability practices	1	2	3	4	5	6	7

4. To what extent do you agree or disagree with each of the following statements about sustainability initiatives.
 (*Circle ONE number for EACH statement)*

Sustainability initiatives…	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
a. …will add market advantage to my resort	1	2	3	4	5	6	7

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
b. … will improve guest satisfaction	1	2	3	4	5	6	7
c. … will improve employee satisfaction	1	2	3	4	5	6	7
d. … will bring financial savings	1	2	3	4	5	6	7
e. … are compatible with existing employee practices	1	2	3	4	5	6	7
f. … are compatible with existing company culture	1	2	3	4	5	6	7
g. … are compatible with existing company organizational structure	1	2	3	4	5	6	7

Part II. The following section includes questions related to the business environment outside of the resort, including other ski resorts, resort guests and government

5. To what extent do you agree or disagree with each of the following statements about the business environment outside of the resort. (***Circle ONE number for EACH statement***)

	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
a. Colorado ski resorts are highly competitive in terms of adopting sustainability practices	1	2	3	4	5	6	7
b. Other resorts are "pushing"	1	2	3	4	5	6	7

my company to adopt sustainability initiatives							
c. My resort leads the way in adopting sustainability initiatives	1	2	3	4	5	6	7
d. Guests are looking for sustainability practices when selecting a resort	1	2	3	4	5	6	7
e. Regulations concerning sustainability have become stricter in the last 5 years	1	2	3	4	5	6	7
f. My resort tries to adopt practices that go beyond regulatory requirements	1	2	3	4	5	6	7

6. My resort is a member of the National Ski Area Association (NSAA) Sustainable Slopes Program.
   (***Check ONE response)***

_____ Yes
_____ Unsure
_____ No (If No or Unsure, skip to question 6)

7. To what extent do you agree or disagree with each of the following statements about the Sustainable Slopes Program? (***Circle ONE number for EACH statement)***

Programs like Sustainable Slopes help my company…	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
a.…learn about new	1	2	3	4	5	6	7

	sustainability initiatives						
b….share sustainability ideas	1	2	3	4	5	6	7
c….improve the resort's reputation	1	2	3	4	5	6	7

Part III. The following section includes questions concerning practices and policies related to sustainability specific to this resort.

8. To what extent do you agree or disagree with each of the following statements about the resort.
   (*Circle ONE number for EACH statement*)

My resort…	Strongly Disagree	Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Agree	Strongly Agree
a. …has a leadership team which is proactive in terms of adopting sustainability initiatives	1	2	3	4	5	6	7
b. …is likely to be consulted by other resorts regarding sustainability practices	1	2	3	4	5	6	7
c. …is generally cautious about implementing new sustainability initiatives	1	2	3	4	5	6	7
d. …will often adopt new sustainability practices before other resorts in the industry	1	2	3	4	5	6	7

e. … is taking measures to minimize pollution in the resort area	1	2	3	4	5	6	7
f. …puts efforts in maintaining a healthy local habitat	1	2	3	4	5	6	7
g. …brings income to the local economy	1	2	3	4	5	6	7
h. …creates job opportunities for local people	1	2	3	4	5	6	7
i. …creates markets for local products	1	2	3	4	5	6	7
j. …is a strong economic contributor to the local community	1	2	3	4	5	6	7
k. …often invests in sustainable technology/processes (e.g. energy efficient snow guns, efficient waste handling, etc.)	1	2	3	4	5	6	7
l. … educates guests about sustainability	1	2	3	4	5	6	7
m. …positively influences cultural values in the area	1	2	3	4	5	6	7
n. …creates more jobs for women and minorities	1	2	3	4	5	6	7
o. …supports maintenance of local museums, sights, events	1	2	3	4	5	6	7
p. …encourages its employees to recycle	1	2	3	4	5	6	7
q. …allows its	1	2	3	4	5	6	7

employees to participate in the decision-making

9. My resort has a written corporate social responsibility policy/report. (***Check ONE response)***

_____ No
_____ Unsure
_____ Yes

10. My resort creates an environmental impact assessment report annually. (***Check ONE response)***

_____ No
_____ Unsure
_____ Yes

11. My resort sends representatives to sustainability-related conferences annually. (***Check ONE response)***

_____ No
_____ Unsure
_____ Yes

12. My resort composts. (***Check ONE response)***

_____ No
_____ Unsure
_____ Yes

13. My resort purchases products (e.g. uniforms; restaurant utensils, etc.) that reduce environmental impacts.
    (Check ONE response)

_____ No
_____ Unsure
_____ Yes

14. My resort purchases products from local companies. (***Circle ONE number)***

None	Some products	About half of its products	Most of the products	All
1	2	3	4	5

15. My resort offsets its CO_2 emissions through alternative energy sources (i.e. produces or buys solar, wind, or other renewable energy). *(Check ONE response)*

_____ No
_____ Unsure
_____ Yes

16. My resort's leadership team communicates with employees about sustainability related initiatives through:
    (Check ALL that apply and circle ONE number for EACH statement)

Forms Used		Never	Once per year	Twice per year	Quarterly	Monthly	Weekly
	a. Employee Training	0	1	2	3	4	5
	b. Staff Meetings	0	1	2	3	4	5
	c. Emails	0	1	2	3	4	5
	d. Events	0	1	2	3	4	5
	e.Other: _____ _	0	1	2	3	4	5

Part IV. The following section includes a few questions about yourself to help us understand the different characteristics of respondents and to allow us to compare your answers with those of other respondents. Your answers are totally

1. What is your position within the resort? *(Check ONE response ONLY)*

_____ Front line (e.g. ticket scanner, lift operator, ski instructor, etc.)
_____ Supervisor
_____ Manager
_____ Director
_____ Other (please specify)

2. My employment with the resort is: *(Check ONE response)*

_____ Seasonal (only for the winter season)
_____ Full-time (full year, including the summer season)

3. How long have you been working for the resort? *(Check ONE response)*

_____ Less than 1 year
_____ 1-3years
_____ 4-5 years
_____ 6-10years
_____ 10+ years

4. What is your age *(WRITE number)* _____?

5. Are you: *(Check ONE response)*

_____ Male
_____ Female

6. What is the **highest** level of education that you have achieved? *(Check ONE response)*

_____ Less than high school diploma
_____ High school diploma or GED
_____ 2-year associates degree or trade school
_____ 4-year college degree (e.g. bachelors degree)
_____ Advanced degree beyond 4-year degree (e.g. masters, Ph.D., medical doctor, law degree)

Any additional comments?

Thank you for your help!