Agritourism operators' decision-making process toward environmental sustainability: The moderating effect of barriers

by

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The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this dissertation. The Graduate College will ensure this dissertation is globally accessible and will not permit alterations after a degree is conferred.

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ABSTRACT

As a viable alternative to agriculture businesses, agritourism has been tied to the concept of sustainable agriculture, which maintains economic viability and enhances the agricultural attractiveness for visitors engaging with the natural environment. Environmental management directed toward sustainability has become an increasingly important topic in the agritourism industry, and agritourism operators in particular play a key role in promoting tourism for sustainability. However, even though agritourism operators are motivated to preserve the natural environment through sustainable agriculture, questions still remain with respect to determining how agritourism operators can enact environmentally responsible practices. Therefore, there is a need to examine the agritourism operators' environmental behaviors to improve environmental operation by applying Value-Belief-Norm (VBN) theory and the concept of perceived barriers.

This study included a sample of agritourism operators who were members of agricultural marketing service-related associations in the U.S., and 366 responses were analyzed using structural equation modeling (SEM) and latent moderated structural equations (LMS). Using SEM, the study found VBN theory to be successful in explaining the environmental decision-making processes through which agritourism operators' environmental values impact their environmental beliefs, and in turn create a moral obligation that eventually leads to environmentally responsible behavioral intention. The study further revealed that the new environmental paradigm (NEP) served as a significant indicator for evaluating the degree of individual environmental concerns and ascribed responsibility for environmental problems.

The LMS analysis also considered two perspectives, internal and external barriers, and revealed interesting and different results. Internal barriers had a negative interactive effect on the

impact of value on the NEP, while external barriers had a positive interaction effect on the impact of personal norms on environmentally responsible behavioral intention. That is, when agritourism operators encounter significant internal barriers (e.g., lack of technical knowledge, resources, and ability) to implementing environmentally responsible practices, their personal values have less influence on their environmental attitudes. On the other hand, agritourism operators with a strong sense of obligation to protect the environment are more likely to engage in environmental behaviors that bypass external barriers such as a lack of external assistance and unclear environmental legislation/policies.

During the environmental decision-making process, it is critical to understand agritourism operators' behaviors and environmental challenges and/ or conditions that contribute to negative environmental impact on natural resources. By looking through the lens of agritourism operators who actually perform environmental sustainability in an agricultural setting, this study extends agritourism development literature by incorporating environmental sustainability and enhancing understanding of agritourism operators' environmental behaviors. This study is meaningful in suggesting how to help operate agritourism businesses and how to protect management from dangerous situations by predicting their environmental behaviors with respect to environmentally sustainable agritourism.

CHAPTER 1. INTRODUCTION

Background of the Study

With the rapid growth of agritourism in recent years, the agritourism sector is expected to revitalize rural communities in the United States (United States Department of Agriculture [USDA], 2012). Agritourism comprises rural businesses by integrating "both a working farm environment and a commercial tourism component" (McGehee, 2007, p. 111) and encompasses various types of activities in on-farm direct sales (e.g., U-pick, farm stands, dairy, wine, beer, products, etc.), accommodations/lodging (e.g., camping, farm stays, etc.), entertainment (e.g., corn mazes, etc.), outdoor recreation (e.g., fishing, hunting, etc.), educational experiences (e.g., learning about wine, etc.), and off-farm facilities (e.g., farmers market, etc.) (University of California Cooperative Extension, 2016).

A total of approximately 29,000 farms in the U.S. offer agritourism and/or related recreational services such as hunting, fishing, farm or winery tours, and hayrides (USDA, 2017). For example, California, considered the biggest farming state in the U.S., with agricultural sales of $45 billion, 12 percent of the U.S. total, has actively engaged in activities related to agritourism and effectively is attracting more than 2.4 million visitors annually (George, Getz, Hardesty, & Rilla, 2011; USDA, 2017). Farm income from agritourism-related services showed a 34.8 percent increase in the same five-year period, although the number of farms declined from 33,161 in 2012 to 28,575 in 2017 (USDA, 2017). This statistic indicates that the agritourism sector can be deemed a suitable alternative source of income for individuals engaged in agriculture businesses.

As a viable alternative to agriculture businesses, agritourism has been tied to the concept of sustainable agriculture, which maintains economic viability (e.g., revenues enhancement) and enhances the location's attractiveness for visitors engaging in the natural environment (Rodriguez et al., 2009). For instance, business owners in the Bahamas, a top tourist destination in the Caribbean, have made great efforts to enhance its sustainability and competitiveness by promoting the country as both as an agriculture and tourism destination (Hepburn, 2008). Agritourism can play a vital role in preventing environmental degradation, sustaining agriculture businesses, and promoting educational and recreational activities, all of which are important to supporting sustainable tourism (Barbieri, 2013). Thus, agritourism could be a vehicle for fostering agricultural awareness and increasing understanding of the environmental horticulture industry (Brumfield & Mafoua, 2002).

Sustainable tourism is defined as "tourism which meets the needs of present tourists and host regions while protecting and enhancing opportunity for the future" (United Nations World Tourism Organization [UNWTO], 2013, p. 43). Tourism researchers have focused on sustainable tourism as an emerging paradigm to reduce the adverse environmental impacts and maximize the socio-economic benefits from tourism for local communities (Bramwell & Lane, 1993). Recent researchers revealed the benefits of agritourism according to three perspectives: economic (e.g., improving financial condition of locals [Nickerson, Black, & McCool, 2001]), social (e.g., preserving agricultural heritage [Getz & Carlsen, 2000]), and environmental (e.g., allocating resources, concerning environmental conditions [Brumfield & Mafoua, 2002]). Thus, agritourism can be a means of promoting sustainable tourism by providing benefits from social, environmental, and economic sustainability, which leads to boosting the economic development of the agriculture industry and encouraging healthy outdoor pursuits.

In particular, environmental management toward sustainability efforts has recently become an increasingly important topic in the agritourism industry (Barbieri, Mahoney, & Butler, 2008). Environmental sustainability can be evaluated through farm operators' environmentally friendly practices such as pest management and conservation efforts of natural habitats (Choo & Jamal, 2009; McGehee, 2007). Farm operators driven by agritourism businesses are considered "the guardians of the rural landscape" (Lane, 1994, p. 105), since their environmental conservation strides are directly linked to the quality of agriculture-based resources (Feather & Amacher, 1994). In other words, environmental sustainability depends on the perceived degree of farm operators' environmental concerns and their willingness to adopt conservation practices (Weaver & Fennell, 1997). For example, farm operators with strong environmental beliefs are more likely to conserve natural resources (Lynne, Shonkwiler, & Rola, 1988). Therefore, agritourism operators' awareness of the environment can transform agritourism into a sustainable entrepreneurial venture (Valdivia & Barbieri, 2014).

Individuals' intentional and unintentional behaviors have caused environmental damage in nature-based settings, thus, becoming important issues in reducing the impact of negative consequences on the environment (Lee, Jan, & Yang, 2013). Value-Belief-Norm (VBN) theory, developed by Stern, Dietz, Abel, Guagnano, and Kalof (1999), is one of the most influential models for explaining individuals' environmental behaviors, and concerns the variables of values (e.g., egoistic, biospheric, and altruistic), beliefs (e.g., new environmental paradigm [NEP], awareness of consequences, and ascription of responsibility), and personal norms. Numerous studies have successfully applied the framework to understand environmental decision-making processes across various settings including tourism, hotels, transportation, and psychology (Han, 2015; Moradhaseli, Ataei, & Norouzi, 2017; Nordlund & Garvill, 2003; Park, Lee, Lee, Kim, &

Kim, 2018). A recent study revealed that landowners' strong altruistic values and environmental beliefs play important roles in developing personal norms for biodiversity conservation (Johansson, Rahm, & Gyllin, 2013). Therefore, it is believed that the VBN theory can be a potential framework to understanding agritourism operators' environmental decision-making process.

Previous studies have indicated that some barriers (e.g., lack of professional advice and resources) could hinder environmentally responsible activities. The concept of perceived barriers has received considerable attention the tourism, psychology, and business management literature (Chan, 2008; Moghimehfar & Halpenny, 2016) in terms of its role in developing pro-environmental behaviors. Hillary (2004) viewed perceived barriers from two perspectives: internal (e.g., emotional factors and environmental attitudes) and external (e.g., limited external possibilities) in adopting environmental management practices. Zhu and Geng (2010) found a significant, negative relationship between internal barriers and environmental practices and concluded that perceived barriers can be considered potential negative factors that hinder individuals' environmental participation. Murillo-Luna, Garcés-Ayerbe, and Rivera-Torres (2011) found that managers' perceived barriers toward environmental management negatively influenced environmental strategies by stakeholders. Chan (2008) noted that perceived barriers such as limitations in financial resources or lack of support from the government, may prevent hotel managers from adopting environmental management initiatives. Thus, it can be assumed that agritourism operators' perceived barriers may have a negative impact on engaging in pro-environmental activities (Zhang, Cai, & Harrill, 2009).

Problem Statements

While growing awareness of sustainable development has increased the importance of sustainable tourism in the agritourism industry (Hegarty & Przezbórska, 2005), little research has attempted to investigate the concepts, issues, and challenges associated with sustainability within the agritourism context (Barbieri, 2013). Some agritourism studies have focused on how farm diversification can lead to social equity or economic viability toward sustainability (Hepburn, 2008; McGehee, 2007). Goodland (1995) emphasized that nature needs to be protected for economic development. However, only a few studies have examined agriculture's sustainability from an environmental perspective (Pimentel & Pimentel, 2003). Valdivia and Barbieri (2014) argued that agritourism as a sustainable adaptation strategy can be considered an essential asset, because it involves the ownership of valuable land and natural resources. A recent study (Ghai & Vivian, 2014) suggested the perceived importance of strategic environmental assessment for sustainability, which can yield strong ties to and benefits regarding environmental health.

Agritourism operators have the resources and capability to provide environmental benefits to farm visitors, as well as commercial benefits with recreational and educational purposes (Sigala, 2008). In particular, agritourism operators play a key role in promoting tourism for sustainability, since their environmental responsibility is clearly related to sustainable agritourism development (Sigala, 2008). In a study on sustainability of agritourism in the U.S., Barbieri (2013) found that agritourism farmers, compared with other farm entrepreneurs, were more likely to care about nature. However, even though agritourism operators have a motivation to preserve the natural environment for sustainable agriculture (Valdivia & Barbieri, 2014), no evidence exists to support how the operators can enact environmentally responsible practices.

In addition, most environmental and tourism behavior studies have paid attention to tourists' behaviors toward environmental conservation, ignoring the role of operators in conducting sustainable practices (Mastronardi, Giaccio, Giannelli, & Scardera, 2015). Thus, the role of operator behaviors is largely unknown, with only a few exceptions (e.g., adoption of environmental supply chain management) (Adriana, 2009). As a result, this gap exists in the agritourism industry, even though agritourism operators have been mainly considered the core channels for facilitating environmental conservation in a nature-based tourism setting (Norby & Retallick, 2012). Hence, there is a need to identify the agritourism operators' environmental behaviors to improve environmental operation and management practices in developing environmentally sustainable agritourism (Brumfield & Mafoua, 2002).

Much agritourism research has employed an exploratory approach to examining agritourism operators' motivations for developing sustainable agritourism (Asciuto, Franco, & Schimmenti, 2013), which leads to a limited understanding of environmental sustainability from a theoretical foundation (Mzoughi, 2011). The lack of theoretical approaches makes it difficult to provide a rationale behind environmental attitudes and behaviors (Barbieri, 2013). While the VBN theory has been broadly employed to predict pro-environmental behaviors as a conceptual framework in tourism research (Luo & Deng, 2008), little known research has applied this theory to the agriculture context. Recently, an agriculture study (Wensing, Carraresi, & Bröring, 2019) employed the VBN theory to adopt novel practices for the bioeconomy, despite the significant impact that individuals' values, beliefs, and norms are related to fostering environmental behaviors (Park et al., 2018). Thus, the current study attempts to adapt the VBN theory to determine if the theory can provide a theoretical foundation for describing agritourism operators' environmental decision-making processes.

While the concept of perceived barriers has been recognized as a negative factor in implementing sustainable practices at an operational level (Pegas, Ollenburg, & Tynon, 2013), little research has employed the concept to evaluate its impacts on operating agritourism businesses from a sustainable practice perspective. Furthermore, perceived barriers can be viewed in two ways: internal (e.g., limitation of resources) and external factors (e.g., lack of awareness on environmental attitudes) (Kay & Jackson, 1991); yet, most studies have primarily used a one-dimensional approach to viewing only one side of the concept (Moghimehfar & Halpenny, 2016). Therefore, there is a need to recognize perceived barriers through both internal and external perspectives. A two-dimensional approach (e.g., internal and external) of perceived barriers is expected to offer a comprehensive understanding of the concept and its role in influencing environmentally responsible behaviors.

Purpose of the Study

Given the importance of environmentally responsible behaviors in agritourism, this study developed a conceptual framework to understand agritourism operators' environmental decision-making processes by applying the VBN theory and the concept of perceived barriers. This study included two specific objectives: (1) to identify if the VBN is an effective framework to investigate agritourism operators' environmental decision-making process concerning personal values, environmental beliefs, and personal norms, and (2) to determine if operators' perceived barriers have a moderating effect on the environmental decision-making processes from the two perspectives of internal and external barriers.

Significance of the Study

This study expands the literature by integrating agriculture and tourism toward environmental sustainability. Since agritourism is associated with small-enterprises, the local community, and the region as a whole (Williams, Paridaen, Dossa & Dumais, 2001), examining agritourism operators' on- and off-farm conservation practices is important in retaining the environmental benefits of agritourism businesses for fostering positive community relations (Schillin, Sullivan, & Komar, 2012). In other words, it can be meaningful for tourism scholars to provide the evidence on the importance of agricultural resources so that agritourism may become an integral asset for farm visitors to enjoy recreation, educational activities, and eco-system services. Moreover, this study will benefit policy makers in evaluating their current environment policies (e.g., law and regulation) and mapping conservation strategies (e.g., environmental justice mapping) through agritourism operations. This integrated approach can provide an effective tool to preserve nature-based areas and develop agritourism businesses in a more tangible, realistic way.

Sustainable agritourism can protect agricultural tourism destinations through environmentally friendly methods and mitigate the negative impacts on the quality of agricultural and tourism environments (Mastronardi et al., 2015). Previous research indicates that agritourism has substantial economic benefits for diversification for agritourism operators (Buhalis & Fletcher, 1995; Middleton & Hawkins, 1998). However, agritourism operations, along with the pursuit of economic benefits, can be the primary cause of environmental degradation (Barbieri, 2013, Buhalis & Fletcher, 1995; Middleton & Hawkins, 1998). While most agritourism studies have mainly observed economic or socio-cultural perspectives for sustainable agritourism development (e.g., McGehee, 2007), this study mainly focuses on environmental operations,

thereby expanding the literature on environmental problems in the agritourism context and drawing researchers' attentions to the importance of agritourism environmental matters. This study will help agritourism businesses to take the environmental issues into serious consideration, integrating environmental management into sustainable operations. Therefore, the knowledge gained from this study will provide managerial insights into environmentally sustainable agritourism development.

Farm operators' environmental actions (e.g., conserving natural resources) are critical for mitigating negative environmental impacts (Valdivia & Barbieri, 2014). However, excessive consumption of natural resources (e.g., flora and fauna) leads to land degradation in agricultural areas (Zhen & Routray, 2002). In addition, environmentally unfriendly practices, such as excessive consumption of natural resources, could be major causes of ecosystem damage in an agricultural setting (Dawson, Stewart, Lemelin, & Scott, 2010). From a managerial perspective, evaluating agritourism operators' environmental performance can assist agritourism businesses in assessing environmentally friendly strategies and integrating sustainable practices into operational performance. Furthermore, farm marketing and agritourism association directors can utilize insights gained from the study to identify effective operators' environmental behaviors to guide agritourism conservation. Thus, this study will show how agritourism operators engage in environmentally responsible behaviors concerning environmental matters (Dibrell, Craig, & Hansen, 2011). In particular, the VBN theory will provide a comprehensive understanding of agritourism operators' decision-making processes by considering various environmental factors (e.g., values, beliefs, and norms) that may help to predict environmental behaviors (Kollmuss & Agyeman, 2002). The theory will visualize agritourism operators' decision-making processes from individuals' environmental values at the personal level to their environmental beliefs in

nature, strongly associated with personal obligation and conservation practices (Kiatkawsin & Han, 2017; van Riper & Kyle, 2014). The theoretical approach will further provide valid and reliable findings for the decision-making process, which will contribute to understanding agritourism operators' perspectives toward sustainable tourism. Therefore, this study will suggest a theoretical framework that can allow academic scholars to examine how individuals make environmental decisions in the agritourism setting.

Despite the continuous efforts to protect the environment, people face political, socio-economic, and technical challenges (e.g., lack of external assistance and financial support) which negatively influence environmental impacts (Moghimehfar & Halpenny, 2016). This study is one of the first to identify the impact of perceived barriers on environmental behaviors in the agritourism context. This research will identify particular perceived barriers that affect current agritourism businesses, which helps agritourism to develop a suitable strategy to overcoming barriers while mitigating negative environmental effects. By allocating perceived barriers into the two categorizations of internal and external, the present study will provide specific information about the role of barriers that might negatively influence environmentally responsible behaviors (Hillary, 2004). This could help agritourism operators seek more concrete ways to overcome the barriers and better implement environmentally responsible behaviors. In other words, this study will empirically analyze a comprehensive model of agritourism operators' environmental behaviors in the tourism context.

Definition of Terms

The following are definitions of the key terms investigated in this study.

Agritourism can be considerd “rural enterprises which incorporate both a working farm environment and a commercial tourism component” (McGehee, 2007, p. 111).

Agritoursm operator is defined as an agricultural farmer working on agritourism farms or providing agriculture-based recreational activities called “guardians of the rural landscape” (Lane, 1994, p. 105).

Altruistic value indicates “altruists who care about other people and species” (Stern, 2000, p.413).

Ascription of responsibility indicates “feelings of responsibility for the negative consequences of not acting pro-socially” (De Groot & Steg, 2009, p. 426).

Awareness of consequences refers to one's level of consciousness of adverse consequences for valued objects when not performing a pro-social action (Schwartz, 1977).

Biospheric value indicates “values emphasizing the environment and the biosphere itself” (De Groot, Steg, & Dicke, 2007, p. 104).

Egoistic value indicates “self-interest such as wealth, dominance, influence over others (Stern et al., 1999, p. 95).

Environmental sustainability implies “sustainable levels of both production (sources), and consumption (sinks), rather than sustained economic growth” (Goodland, 1995, p. 5).

Environmentally responsible behaviors can be described as individuals’ any action toward the minimization of environmental problems (Sivek & Hungerford, 1990).

New environmental paradigm indicates the “propensity to take actions with pro-environmental intent” (Stern, 2000, p. 411).

Perceived barriers refer to the "events or conditions, either within the person or in his or her environment, that make progress difficult" (Swanson & Woitke, 1997, p. 446).

Internal barriers describe adverse perceptions and experiences with environmental protection and with limited knowledge and skills (Hillary, 2004).

External barriers are obstacles raised from outside the firms that may hinder environmental protection and prevent environmentally sensitive management practices (Hillary, 2004).

Personal norms refer to the "moral obligation to perform or refrain from specific actions" (Schwartz & Howard, 1981, p. 191).

Sustainable tourism refers to "tourism which meets the needs of present tourists and host regions while protecting and enhancing opportunity for the future" (UNWTO, 2013, p. 43).

Values refer to "a desirable trans-situational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity" (Schwartz, 1992, p. 21).

Value-Belief-Norms theory depicts values and beliefs, as well as personal norms, significant elements influencing environmentally responsible behaviors (Stern et al., 1999).

CHAPTER 2. LITERATURE REVIEW

This chapter provides both a general background to agritourism and a theoretical foundation for the conceptual model based on the VBN theory. The first section initiates a cohesive and thorough description of agritourism, including aspects such as definitions and types of agritourism. The second section presents a view of sustainable agritourism focused on environmental sustainability and reviews key factors that influence agritourism operators' environmentally responsible behavioral intention – values, beliefs, and norms in the VBN theory. The third section discusses agritourism operators' perceived barriers, especially internal and external barriers. The last section provides a theoretical framework for understanding how agritourism operators influence their environmentally responsible behavioral intention with moderating roles of the internal and external barriers.

Agritourism

Agritourism has long been used as a hybrid concept in tourism and agriculture disciplines that "merges elements of two complex industries- agriculture and travel/tourism - opens up new, profitable markets for farm products and services, as well as provides travel experience for a large regional market" (Das & Rainey, 2010, p. 265). Agritourism has also been shown to serve as "rural enterprises which incorporate both a working farm environment and a commercial tourism component" (McGehee, 2007, p. 111). Agritourism is also regarded as a sector in recreation and tourism fields (Barbieri, 2013) and related to processes of attracting tourists to agriculture sites (e.g., farms, orchards, and agricultural areas) (Evans & Ilbery, 1992). From an agricultural perspective, agritourism is as a diversified form of an entrepreneurial business to

maintain economic viability or the farms' values (Barbieri et al., 2008). Agritourism has been important in achieving farm business goals, including creating potentially new revenue sources, increasing direct farm sales, and educating the public about agriculture (Pilar et al., 2012).

Agritourism contains numerous recreational and educational services involving direct interactions with tourists and consumers (Leeds & Barrett, 2004; Phillip, Hunter, & Blackstock, 2010; Srikatanyoo & Campiranon, 2010). For example, agritourism includes a diversity of agricultural and tourism activities such as farm-based accommodations, agricultural festivals, recreational self-harvest, bird-watching, and farm tours (Barbieri & Mshenga, 2008; McGehee & Kim, 2004). The capacity of agritourism to provide alternative uses of farmland as potential tourism destinations is further recognized as a viable alternative to agriculture businesses (Geisler, 2008; Jensen, Lindborg, English, & Menard, 2006). By incorporating two disciplines, agritourism can be developed as one of several types of new agricultural enterprises involving interaction with working farms for education or enjoyment as well as for generating supplemental farm income (Ou & Shih, 2002). Some examples of agritourism take form in small farms and rural tourism development for alternative agriculture, rural community development, and direct farm marketing (Pilar et al., 2012).

Types of Agritourism

Agritourism encompasses a wide and diverse range of topics combining non-agriculture-oriented with agriculture-oriented activities (Wick & Merrett, 2003). Agritourism provides recreational, educational, and entertaining activities in a variety of settings, including farm-based direct sales (e.g., farm stands, U-pick, dairy, wine, beer, and products), accommodations/lodgings (e.g., farm stays and camping), entertainment (e.g., corn mazes),

agriculture-related recreation (e.g., fishing and hiking), education (e.g., learning about wine), and off-farm facilities (e.g., farmer's market) (University of California Cooperative Extension, 2016). Thus, agritourism can be broadly classified into two categories: farm-based activities (e.g., specialist products, crop products, and direct marketing) and off-farm-based activities (e.g., farmers market) (McGehee, Kim, & Jennings, 2007).

Farm-based agritourism

Extant literature on farm diversification has viewed agritourism as a form of farm services available within farm limits (Bowler, Clark, Crockett, Ilbery, & Shaw, 1996). Kormar (2008) also focused on the wide range of agritourism activities related to accommodations (bed & breakfast establishments, camping sites, and nature retreats), leisure activities (corn mazes, nature walks, horseback riding, hay rides, hiking, U-pick, hunting, and fishing), and educational programs (wine and farm produce tasting). Evans and Ilbery (1989) discussed evolution of two types of agritourism: (1) farm-based accommodation (e.g., hostel, bed & breakfast, and caravans) and (2) farm-based recreation (e.g., hunting, shooting, and fishing). Sharpley and Sharpley (1997) expanded the number of agritourism types to include farming-associated activities (e.g., specialty crops, livestock, and farm stands) provided in an agricultural setting for entertainment and educational purposes. For example, visiting a farm for a wine class could be considered an educational activity. The most common agritourism activities have been found to be farm tours (50%), recreational self-harvests (38%), and agricultural observation or participation (35%) (Tew & Barbieri, 2012). Generally, these activities can be divided into agritourism activities into farm-based agritourism products (e.g., specialist products and organic products) and non-farm-based services (e.g., use of outdoor recreational facilities, accommodations, and hire/contract services).

Off-farm-based agritourism

Fleischer and Tchetchik (2005) discussed off-farm activities from tourist perspectives. Importantly, off-farm-based agritourism can serve off-farm facilities as an important linkage to agriculture. Wicks and Merrett (2003) described non-farm services offered by off-farm facilities such as farmer's markets, that redirected customers from an agricultural setting. Other examples of off-farm-based activities include heritage farm museums and exhibits, historical attractions, water-based agricultural recreation, and newer farm marketing activities (e.g., farmers' markets).

Combined on- and off-farm agritourism

Recent research has described perceptible growth of agritourism activities that include both farm-based and off-farm-based businesses (McGehee et al., 2007). McGehee and Kim (2004) claimed that "agritourism can include various types of overnight accommodations but also encompasses day visits to on-farm attractions like festivals and educational events" (p. 162). Agritourism covers a variety of particularly focused activities, including picking self-grown products (e.g., U-pick and Christmas trees), farm-based weddings and festivals, and many other activities (e.g., petting zoos, cider mills, and rodeo-related activities) (Brown & Reeder, 2007; LaPan & Barbieri, 2013; McGehee & Kim, 2004;).

Phillip, Hunter, and Blackstock (2010) divided agritourism activities into five categories that combine on- and off-farm functions: (1) non-working-farm agritourism serving only scenic purposes (e.g., wildlife viewing), (2) working farms with only minimal interaction between visitors and the farm site (e.g., farm weddings), (3) working farms with indirect agritourism contact (e.g., enjoying agricultural products), (4) working farms with direct contact, staged

agritourism (e.g., cider mills), and (5) working farms with direct contact, farm-based agritourism (e.g., U-pick). These segments of farming-associated activities distinguish between direct engagement in an agricultural process and indirect experiences with agricultural activities.

Agritourism can be categorized into the following farm-based agritourism operations: (1) farms with limited interaction (e.g., farm stands), (2) farms with complex and sophisticated operations (e.g., farm tours), and (3) farms with more complex activities (e.g., farm and table restaurants). The approach provides additional insight into the role of a specific dimension in engaging leisure operations and related activities (Leeds & Barrett, 2004).

Sustainable Agritourism

Sustainable Tourism

The concept of sustainable tourism has been discussed in the context of sustainable development in the last decade (Hunter, 1997; Repetto, 1986; Sharpley, 2000). Sustainable development is regarded as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987, p. 43). Repetto (1986, p. 15) stated that "sustainable development is a development strategy that manages all assets, natural resources, and human resources, as well as financial and physical assets, for increasing long-term wealthy and well-being."

Previous researchers have viewed sustainable tourism as an emerging paradigm to minimize its environmental impact and to maximize the socio-economic benefits at tourist destinations (Bramwell & Lane, 1993). Sustainable tourism is regarded as "tourism which meets the needs of present tourists and host regions while protecting and enhancing opportunity for the

future" (UNWTO, 2013, p.43), emphasizing environmental, socio-cultural, and economic aspects (Mihalic, 2016). The development of sustainable tourism aims to promote fair distribution of economic benefits to residents by supporting training programs, low-interest loans, and cooperation among various organization and residents (Choi & Sirakaya, 2005).

The development of sustainable tourism plays a vital role not only in minimizing adverse impact on environment (e.g., reinforcement of management) (Fennell, 2001), but also in enhancing economic and social-cultural impact. Sustainable tourism can be a link with alternative development by combining environmental sustainability and development theory in allocating resources, identifying concerning environmental conditions, and promoting economic health (Sharpley, 2000). It can also provide a stable economic contribution to emphasize the importance of accessing natural resources through leisure activities, eco-system services, and instructional courses (Stokowski, 2002). In summary, sustainable tourism can be considered an important alternative developmental framework for relieving adverse impacts of unsustainable tourism (Choi & Sirakaya, 2005).

However, sustainable tourism has been criticized because of its a tourism-centric focus in contributing to economic development (Hunter, 1997), even though environmental issues have been treated as important in the tourism industry (Erdogan & Baris, 2007). Many scholars have been focused only on economic benefits without concern for natural-based resources and the environment (Gössling, Hall, & Weaver, 2009). Specifically, tourism stakeholders have been accused of being slow to practice sustainability (Mihalic, 2016), because their goal is to improve economic rather than environmental performance (Blackstock, White, McCrum, Scott, & Hunter, 2008). Enterprises that focus on economic goals have a propensity to be reluctant to discuss socio-cultural and environmental goals related to sustainability (Mihalic, 2014).

Previous research has also primarily focused on environment and economic development while disregarding stakeholder perspectives (Hardy, Beeton, & Pearson, 2002), even though the role of stakeholders has the possibility to contribute to sustainable tourism development; maintaining unspoiled nature of reserves should be one of the most important considerations when considering sustainable revenue generation (Sheldon & Park, 2011). Therefore, there is a need to develop to identify how tourism operators have accepted environmentally responsible behaviors.

Environmentally Sustainable Agritourism

A growing number of farm operators have initiated diversification of their farms to maintain businesses for sustainable development (Nickerson et al., 2001). Agritourism has become an important element of the diverse agricultural and tourism activities in rural areas (Kuo & Chiu, 2006). As an adaptive strategy, agritourism can provide farmers and locals with both economic and environmental sustainability (Tew & Barbieri, 2012). Some researchers have found that reasons for agritourism development are mainly based on economic or financial considerations (Weaver & Fennell, 1997). Economic sustainability can be considered to be among the positive economic effects of agritourism operations, including variant agriculture income, additional income, and tax incentives (Nickerson et al., 2001). These economic benefits could help generate supplemental income and improve local economic situations (Barbieri, 2013).

However, although there is growing interest in the benefits of economic growth in farming (McGehee et al., 2007), the literature holds significant gaps with respect to considering environmental consequences (Veeck, Che, & Veeck, 2006). With regard to environmental

performance, most studies highlight a number of significant negative and positive environmental impacts (Kuo & Chiu, 2006; Tschopp, Frey, & Zimmermann, 2005). For example, agritourism can lead to serious environmental problems, including air, soil, and water pollution (Kuo & Chiu, 2006), even while contributing overall to the economic health of rural areas. Therefore, it is important to fully assess environmental impacts caused by poor management of agritourism operation to increase environmental awareness required for environmentally sustainable development.

Environmental sustainability is, in particular, attracting increasing attention in agricultural industries (Mastronardi et al., 2015). Environmental sustainability improves the quality of life of residents, visitors, and farmers (Goodland, 1997). Due to growing concerns about various environmental changes representing some of the biggest challenges facing agriculture (Arbuckle, Morton, & Hobbs, 2013), the agriculture industry has tried to minimize the level of harmful impacts in an environmentally responsible way (Shen, Cottrell, Hughey, & Morrison, 2009). Agritourism, in pursuit of eco-friendly agricultural diversification, tends to adopt more environmentally beneficial practices that is positively related to ecological resources and landscapes (Mastronardi et al., 2015). Unlike some entrepreneurial farm ventures that may cause environmental harm (e.g., excessive consumption and use of water, energy, natural resources), agritourism enterprises seem likely to pay greater attention to environmental matters (Mastronardi et al., 2015).

Agritourism is strongly related to positive effects on environmental sustainability (Veeck et al., 2006). Agritourism development in the direction of environmental sustainability highlights the role of operators seeking environmental or ecological values during their operations. Farming plays a vital role in nature-based and landscape conservation, especially with endangered fauna

and flora. It is believed that agritourism could contribute to significant environmental sustainability by minimizing the negative environmental impacts through the conservation of water, energy, and biodiversity, as well as reducing pesticide use during some phases of their productive processes (Nickerson et al., 2001). In other words, visitors in natural areas pay more attention to the principles of environmental performances associated with minimal environmental impacts (Moore, Smith, & Newsome, 2003).

Recognizing environmental benefits, agritourism operators can develop sustainable agriculture practices and strategies (Mastronardi et al., 2015). Sustainable agritourism represents a marketing and innovation paradigm describing how agritourism operators could be involved in environmentally friendly ways of developing agritourist products, services, and experiences. Encouraging agritourism operators to perform environmentally friendly activities is considered the next frontier in achieving competitive effectiveness, reflecting a major agenda shift from agri-centered to tourism-centered logic in agriculture and tourism. Consequently, developing a framework for identifying agritourism operators' environmental practices is important, and such environmental-oriented decision-making processes should be implemented.

Environmentally Responsible Behaviors

Environmentally responsible behaviors are foundational indicators of sustainable tourism that minimize the adverse environmental impacts of human activities (Moeller, Dolnicar, & Leisch, 2011). Environmentally responsible behaviors have been defined as any environmental actions to protect/conserve the environment (Sivek & Hungerford, 1990). Kollmuss and Agyeman (2002) also described environmentally responsible behaviors as those exhibited by individuals who engage in actions to protect the environment.

Many tourism researchers have developed to measure individuals' environmentally responsible behaviors (Lee et al., 2013; Park et al., 2018) such as education, civil, financial, physical, legal, and persuasive environmental actions (Smith-Sebasto & D'costa, 1995). Stern et al. (1999) used a 17-item Likert scale to quantify environmentally significant behaviors, including consumers' behaviour, environmental citizenship, and willingness to make sacrifices for environmental protection. Their behavior scales were, however, developed to measure an individual's environmental behaviors from a general perspective, although it is undoubtable these researchers provide a clear conceptualization of individual site-specific pro-environmental practices (Lee et al., 2013).

Accordingly, Lee et al. (2013) measured general and site-specific pro-environmental behaviors. Examples of environmentally responsible behaviors include civil actions, (e.g., support for environmental organization), financial actions (e.g., purchase eco-friendly packaging goods), physical actions (e.g., water conservation), persuasive actions (e.g., convincing someone to purchase eco-friendly packaging goods), sustainable behaviors (understanding residents' life style), pro-environmental behaviors (e.g., voluntarily visiting), and environmentally friendly behaviors (e.g., intention to conserve fauna and flora).

Environmental management toward sustainability has become an important issue in the agritourism industry (Valdivia & Barbieri, 2014). Barbieri et al. (2008) asserted that farm diversification is highly associated with the propensity to be engaged in environmentally friendly land management. In Canada, for example, environmentally friendly pest control has been used to maintain sustainable land management, which in turn, enabled minimization of greenhouse gas emission (Statistics Canada, 2002). Gosling and Williams (2010) suggested that environmental strategies can increase conservation practices among farmers. From the farmers' perspective, environmentally responsible behaviors appear as an environmentally sustainable goals to preserve nature-based resources (Middleton & Hawkins, 1998). Therefore, this study examines agritourism operators' environmentally responsible behaviors at a farm destination.

Value-Belief-Norm (VBN) Theory

Researchers have tried to describe the complex underlying processes of environmentally responsible behaviors that enhance environmental attitudes and concerns for other people, species, or ecosystems (e.g., Han, Hwang, Kim, & Jung, 2015; Kollmuss & Agyeman, 2002). As adverse impacts of human activities on the natural environment have become increasingly evident, previous studies have examined how to enhance environmentally responsible behaviors through tourism activities (Chen & Tung, 2014). Juvan and Dolnicar (2014) investigated why individuals who engage in environmental behaviors at home may engage in negative environmental behaviors at tourism destinations, and they found that it is difficult to motivate travellers to reduce their adverse environmental impacts while traveling; still, minimizing environmentally unfriendly behaviors using a Norm Activation Model (NAM) and the Values-Beliefs-Norms (VBN) theory of environmentalism could be a promising starting point.

The norm activation model (NAM) was developed to investigate various environmentally responsible behaviors (Schwartz, 1977). The NAM includes three major concepts in forming individuals' environmental behaviors, including awareness of consequences, ascribed responsibility, and personal norms. Its variables can be used to examine a hierarchical process (awareness of consequences -> ascribed responsibility -> norms) of explaining environmental behaviors (Park et al., 2018). That is, personal norms play an important role in connecting environmental beliefs to environmentally responsible behaviors.

The NAM has been used to examine causal relationships among awareness of consequences, ascription of responsibility, and personal norms by determining the decision-making processes of guests (Han et al., 2015), employees' electricity-saving behaviors (Zhang, Wang, & Zhou, 2013), and travel mode choice behaviors (Hunecke, Blobaum, Matthies, & Hoger, 2001). For instance, when individuals are more aware of the negative consequences of specific actions, their sense of responsibility for alleviating adverse consequences is enhanced, resulting in a feeling of moral obligation to adopt environmental behaviors (Han, 2015). However, these three constructs may be limited with respect to explaining total environmental behavior (Harland et al., 2007). Previous studies have identified that the impact of moral obligation in promoting specific motivational foundation depends on the antecedents of personal norms (e.g., social norms and attitude) (De Ruyter & Wetzels, 2000; Onwezen Antonides, & Bartels, 2013). To better predict environmental behavioral intention and/or behaviors, an abundance of extant literature has proposed various NAM modifications (Hunecke et al., 2001).

In particular, by linking values and the NEP to the NAM, Stern et al. (1999) proposed the VBN theory (Figure 2.1.), an extended version of the NAM that better predicts environmental behavioral intention and/or behaviors and includes two concepts (values and the NEP) regarding

the environment. The theory is comprised of these newly-integrated constructs, values, and the NEP, including the three variables originally established in the NAM (De Groot et al., 2007). Previous studies have suggested the VBN theory as the best available theoretical method for predicting environmental behavioral intention and/or behaviors (Han et al., 2015; Park et al., 2018). The theory is a hierarchical model, sequenced as personal values, beliefs, and moral obligation to explain individuals' environmental decision-making process (Aguilar-Luzón, García-Martínez, Calvo-Salguero, & Salis, 2012; Stern, 2000). For example, Aguilar-Luzónet al. (2012) assessed how Spanish housewives' values, beliefs, and norms with respect to the environment led to recycling behaviors.

Values

Values are defined as "a desirable trans-situational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity" (Schwartz, 1994, p. 21). Values, detailed as biospheric, altruistic, and egocentric, are directly associated with the NEP (Stern, 2000). A biospheric value is connected to the ecosystem, an altruistic value concerns human welfare for others, and an egoistic value considers personal benefits as individual interests (van Riper & Kyle, 2014). In particular, biospheric and altruistic values are positively associated with NEP in human-environment interactions (van Riper & Kyle, 2014), while people who are materialistic show behavioral tendencies that are negatively related to environmental problems. As environmental problems become considerably more visible, a distinct biospheric value would be considered vital in explaining individuals' environmental decision-making processes (Klöckner, 2013). Han (2015) found that a biospheric value increased awareness of negative environmental impacts (e.g., pollution and global warming).

New environmental paradigm (NEP)

The NEP reflects a person's "propensity to take actions with pro-environmental intent" (Stern, 2000, p. 411). According to the VBN theory, such values influence the formation of ecological worldviews ((López-Mosquera & Sánchez, 2012). The NEP is similarly strongly associated with the rise of the environmental movement (Lee & Moscardo, 2005). The NEP is based on general environmental beliefs related to human–environment interdependence, that humans have an impact on the nature, that natural resources are limited, and that humans have a right to preserve nature (Klöckner, 2013). Previous studies had revealed that NEP beliefs cause an individual to be aware of the consequences of their actions on the environment (e.g., Raymond, Brown, & Robinson, 2011; Wynveena, Wynveenb, & Suttonc, 2015).

Awareness of consequences

The concept of awareness of consequences is regarded as another environmental belief that environmental conditions can more or less threaten other people, other species, and the biosphere (Stern, 2000). Awareness of consequences measures issues with respect to specific perceptions of environmental condition beliefs (Steg, Dreijerink, & Abrahamse, 2005). In other words, environmental concern refers to individuals perceived environmental beliefs that negative environmental problems occur when not performing an environmentally responsible action (Wynveena et al., 2015). Individuals must be aware of consequences for the welfare of others (Schwartz, 1977). The VBN's causal link of the awareness-of-consequences variable to the ascribed-responsibility variable has received widespread support for use in developing personal norms that, in turn, create environmentally responsible behaviors (Han, 2015; Han et al., 2015).

Ascription of responsibility

Awareness of consequences precedes ascribed responsibility, defined as “feelings of responsibility for the negative consequences of not acting pro-socially” (De Groot & Steg, 2009, p. 426). Individuals place a higher priority on preventing environmental degradation when they are aware of environmental issues. Gärling, Gärling, and Jakobsson (2003) showed that ascribed responsibility is significantly associated with a feeling of moral obligation to preserve natural resources. Schwartz and Howard (1981) indicated that ascription of responsibility is vital in creating individuals’ personal norms that trigger environmentally responsible behaviors.

Personal norms

Individuals’ ascription of responsibility for preventing adverse consequences facilitates a feeling of moral obligation, called personal norms, to act in environmentally responsible ways (Park et al., 2018). Personal norms are developed by individuals’ accountability for consequences (Steg et al., 2005), which is a powerful antecedent of environmentally responsible behaviors (Thøgersen, 2002). Strong personal obligation to take environmentally responsible action protects the environment (Johansson, Rahm & Gyllin, 2013). For example, Chen and Tung (2014) revealed that individuals with a higher degree of moral obligation show strong concern for the adverse environment. Harland et al. (2007) found that individuals who had previously performed volunteer work are likely to feel a greater sense of personal norms with respect to volunteering for an environmental organization.

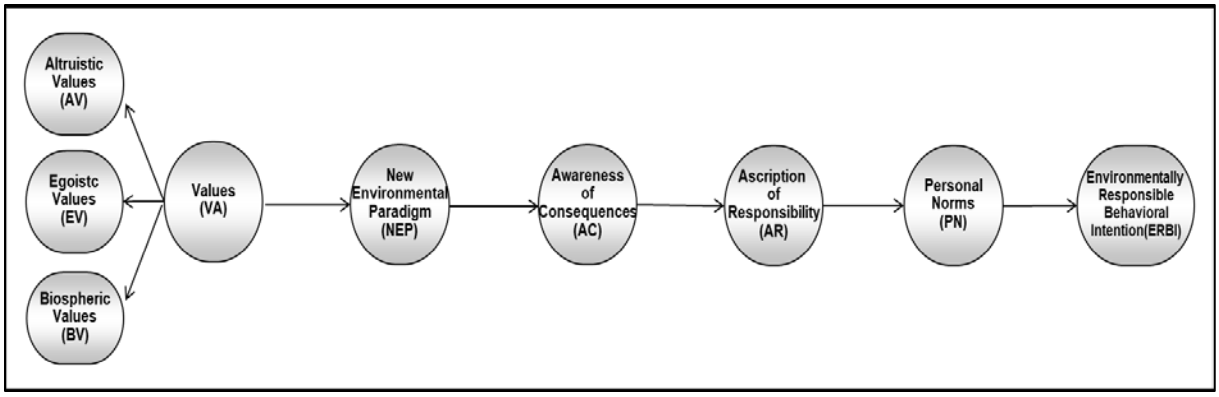

Figure 2.1. Value-Belief-Norm (VBN) Theory

Perceived Barriers

Perceived barriers are threats that may prevent individuals from engaging in an action (Alexandris & Carroll, 1997). Perceived barriers are "events or conditions, either within the person or in his or her environment, that make progress difficult" (Swanson & Woitke, 1997, p. 446). In particular, perceived barriers to prevent environmentally responsible behaviors refer to constraints that may potentially cause adverse outcomes and little or no benefit to operation or management (Hillary, 2004). The concept of perceived barriers has been applied to understanding the impact of such barriers on decision-making processes related to engaging in environmental bahaviors in a variety of settings, including leisure activities (e.g., Moghimehfar & Halpenny, 2016), management systems (e.g., Hillary, 2004), and the lodging industry (e.g., Chan, 2008; Chan, 2011).

Chan (2008) found six types of barriers to achieving environmental management such as insufficient knowledge, professional assistance, maintenance costs, operations, and resources. Van Hemel and Cramer (2002) also identified three types of barriers for small- and medium-sized firms, including uncertainty of environmental benefits, a lack of perception, and unavailable alternatives. For the leisure industry, Blake (1999) introduced three barriers between environmental concerns and environmental behaviors from the perspectives of individuality (lack of perception), responsibility (e.g., uncertainty of management), and practicality (e.g., lack of resources). In particular, insufficient resources and capabilities are the most relevant barriers to environmental practices (Dahlmann, Brammer, & Millington, 2008).

Regarding barriers to pro-environmental behaviors, Steg and Vlek (2009) stated that "in environmental psychology so far, except for a few studies […], contextual factors have not been examined systematically, nor are contextual factors included in the theoretical approaches" (p.

312). Previous studies have been developed to seek a better understanding of individuals' environmental needs (Tanner, 1999), and have resulted in the identification of three types of barriers (objective, subjective, and ipsative). Objective barriers are defined as "factors that influence the performance of an action (e.g., lack of time, income, knowledge, or social rules)" (Moghimehfar & Halpenny, 2016, p. 363). Subjective barriers refer to "psychological barriers that influence individuals' intention to participate in pro-environmental activities (e.g., lack of motivation or interest)" (Moghimehfar & Halpenny, 2016, p. 363). Finally, ipsative barriers refer to factors such as "barriers that prevent the activation of the alternative" (Tanner, 1999, p. 147). Examples of these resources are information or resource limitations that inhibit conservation efforts in a response to environmental exposure.

However, past studies have not adequately covered social and psychological factors (e.g., norms). With respect to the influence of social and individual levels, Lorenzoni, Nicholson-Cole, and Whitmarsh (2007) determined obstacles that include lack of knowledge, climate-change scepticism, lack of trust, reluctance to change lifestyles, and fatalism or helplessness at individual levels. While examining the effects of different constraints at both social and individual levels, Manolas (2014) recognized seven specific barriers from the environmental perspective: lack of knowledge, technological uncertainty, reluctance in lifestyle change, fatalism, helplessness, habits, and denial resulting from fear.

Extensively, the concepts of barriers to adopting agritourism have been developed to achieve better understanding of operators' motivations for sustainable agritourism development (Pegas, Ollenburg, & Tynon, 2013). Pegas et al. (2013, p. 47) found that the primary barriers in adopting the agricultural diversification are "liability and insurance, lack of time, regulations, lack of financial assistance and resources, and lack of personnel." Some of these barriers are

typically related to refraining from agritourism business and discouraging farm tourism (Iorio & Corsale, 2010; Yang, 2012; Zhang et al., 2009). From the perspective of the environment and ecosystem, Valdivia and Barbieri (2014) emphasized that climate change and market shift formed the main constraints for sustainable agritourism development (Valdivia & Barbieri, 2014).

However, an integrated theoretical framework for categorizing the perceived barriers, especially in terms of internal and external barriers, to environmental sustainability has not been reached for agritourism studies. In the agritourism settings, lack of knowledge, limited financial resources, and tourism seasonality are mainly regarded as constraints to directing agritourism towards sustainability (Yang, 2012). However, there are still other potential barriers, such as limited government policies and regulations, to understanding the needs of agritourism operators and destination marketing organizations for achieving sustainable agritourism development (McGehee, 2007). Therefore, finding approaches to following up on sustainable practices and policies is important (Carlsen, Getz, & Ali-Knight, 2001). This study used a classification suggested by Hillary (2004), who suggested that barriers have both internal and external dimensions for adopting environmental management practices in both farm operations and policy perspectives. This study presents the main obstacles that are related to external and internal barriers within agritourism operations.

Internal Barriers

Internal barriers describe individuals' negative perceptions of environmental issues and limited knowledge, skills, and abilities in terms of environmental implementation (Hillary, 2004). Internal barriers are obstacles raised within a firm that simultaneously inhibit

environmental management practices. Internal factors include lack of personality traits, emotional factors and attitudes, and environmental consciousness. Individuals perceive obstacles as the internal level that affects personal knowledge and skill process about environmental values. Such barriers as a lack of environmental consciousness or concerns for feasibility can enlarge external barriers to inhibiting environmental practices. Hillary (2004) approached internal barriers by grouping them into four categories: resources (e.g., lack of training, staff, and management), perception (e.g., lack of self-awareness), uncertainty (e.g., unclear maintenances and operations), and company culture (e.g., insufficient management support for environmental management). In particular, Goodchild (1998) stated that psychological characteristics, such as limited knowledge and an ambiguous attitude toward the environment, are the major barriers to hindering environmental management practices.

Implementing environmentally friendly practices might be limited in regular work process, depending on a firm's size. Small- and medium-sized enterprises may encounter operational barriers when they adopt environmental practices, but internal barriers may surface several major barriers with respect to impeding environmental progress (Hillary, 2004). For example, inconsistent management support is frequently found to be an internal barrier to the implementation of environmental management systems by small firms (Chan, 2008). Chan (2011), in particular, found that the perceived cost of environmentally compliant implementation was the main barrier to environmentally responsible practices. In line with this finding, Shi, Peng, Lui, and Zhong (2008) also described primary internal barriers to facilitating environmental behaviors, such as disassociation between environmental attitudes and environmental performance.

External Barriers

External barriers to environmental management are linked to economic factors or the lack of funding or other types of support from institutions and organizations (Hillary, 2004). External barriers are obstacles raised from outside the firms that may hinder environmental protection and prevent environmentally sensitive management practices. Hillary (2004) categorized external obstacles to sustainable practices by grouping them into four categories: certifiers/verifiers (e.g., lack of experienced verifiers, high cost of certification), economic (e.g., insufficient economic benefits), institutional weaknesses (e.g., insufficient financial support), and insufficient support and guidance (e.g., lack of assistance). The external barriers also include social, economic, cultural conditions, and infrastructure situation (Zhu & Geng, 2010; Zilahy, 2004).

Individuals perceive obstacles on an external level, which refers to a lack of encouragement from organization. For example, insufficient external assistance or incentives from governments or organizations with economic pressures could have a negative impact on firms' operation and its strategy, thereby potentially affecting environmentally responsible practices (Dummett, 2006). Massoud, Fayad, El-Fadel, and Kamleha (2010) also revealed insufficient support from the government as main external barriers of environmentally responsible practice. Barriers such as these could impede firms' environmentally responsible implementation. Still, supporting economic growth in operations could change firms' establishment of profit priority over that of environmental performance, as economic factors and institutional pressures can significantly affect sustainable management and practices (Ferreira & Gustafson, 2014; Karassin & Bar-Haim, 2016). In the hospitality industry, institutional and regulation-related pressures can also serve as major barriers to adopting environmentally responsible practices (Chan, 2011; Scanlon, 2007).

Conceptual Framework

Purpose Model

Based on the purpose of the study, a model based on the VBN theory (Figure 2.2) was proposed to illustrate how agritourism operators engage in environmentally responsible behaviors. In addition, this study introduced internal and external barriers as moderators of agritourism operators' decision-making process. This study utilized the VBN model because of its potential for contributing to the agritourism area by improving understanding of agritourism operators' environmental behaviors governed by values, beliefs, and norms. Based on the VBN framework, it is assumed that environmental behaviors are influenced by values, beliefs, and norms in hierarchical and causal relationships (Stern et al., 1999). The significance of this sequence can be validated by observing that personal values create the NEP, in turn leading to awareness of adverse consequences and ascribed responsibility and facilitating moral obligation as a strong antecedent of environmentally significant behavior (Wynveen et al., 2015).

Biospheric and altruistic values have been found to be positively correlated with the environment (Stern, 2000), while egoistic values are seen as negatively related to the environmental condition, a reflection of personal costs and benefits (De Groot & Steg, 2008). Although all VBN values have been taken into consideration, it is still possible to modify the construct to explain individuals' environmental behaviors. Many scholars (e.g., Han, 2015; Park, et al., 2018) have used values, such as unidimensional or multidimensional factors, in tourism and hotels contexts. For example, Han (2015) found that a separate biospheric value increased the capacity of the NEP. Therefore, the research model in this study has been developed to investigate whether the values, beliefs, and norms can predict environmentally responsible behavioral intention through hierarchical and causal relationships.

Agritourism operators were assumed to engage in various environmental decision-making processes that depend on their levels of perceived barriers. Based on previous studies, it can be assumed that environmentally responsible behaviors are strongly associated with perceived barriers. There still may not be engagement with environmentally responsible behaviors due to a lack of opportunities to participate in the behaviors, even though a positive attitude toward the environment may be maintained (Tanner, 1999). A study of a lodging setting conducted by Chan (2008) elaborated that internal and external barriers toward the environmental management are related to individuals' pro-environmental implementation. That is, internal and external barriers form obstacles to individuals' specific behaviors toward a specific goal (Moghimehfar & Halpenny, 2016).

Existing literature has investigated the moderating role of perceived barriers on individuals' engagement with the natural world in an environmentally friendly way (González-Benito & González-Benito, 2005), however, more recent research suggests that environmental behaviors can be systematically investigated through perceived barriers, especially in various points of views such as psychological and sociological aspects (Nordlund et al., 2010). While scholars have studied to identify specific barriers in predicting pro-environmental behaviors (Moghimehfar & Halpenny, 2016), little empirical research has used a holistic model to explore the degree of perceived barriers as moderating roles of internal and external barriers on ways in which individuals engage in the behaviors. Thus, there is a need to examine the roles of internal and external barriers in the decision-making process from agritourism operators' perspectives.

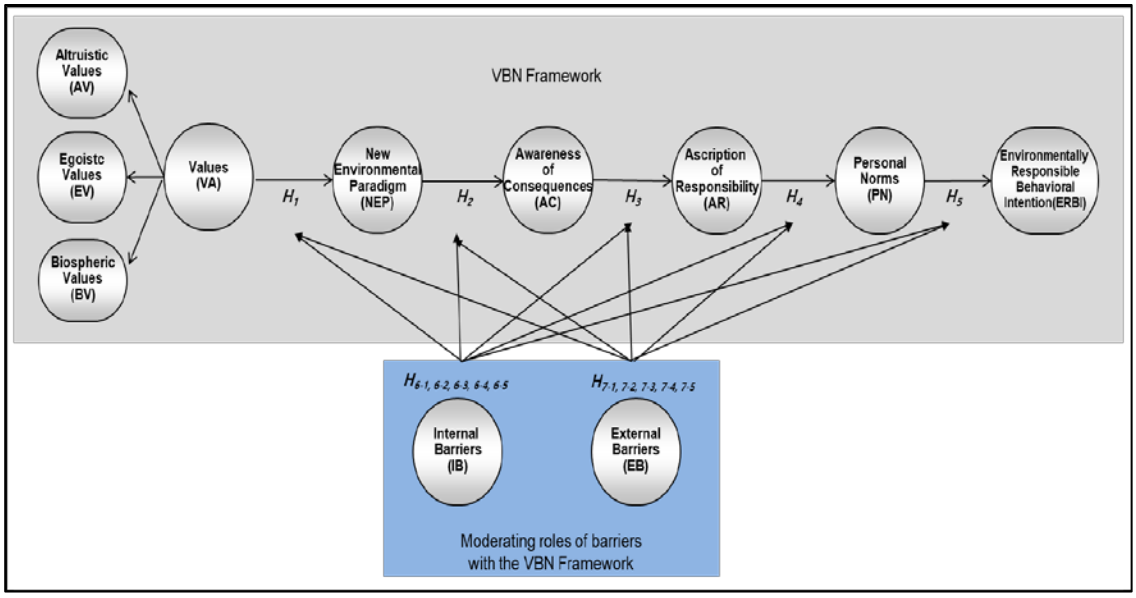

Figure 2.2. Proposed Model

Hypothetical Relationships

Values, most often called personal values, have received increasing attention as personal values in environmental psychology (Aguilar-Luzón, et al., 2012; Sahin, 2013; Stern et al., 1999). Stern (2000) stated that personal values are strongly associated with general environmental attitudes toward human–nature relationships, called the NEP. Specifically, egoistic value is negatively associated with NEP, while biospheric and altruistic values would be expected to positively influence NEP.

These three categories of values, in terms of environmental concern, should be quite distinct in stronger environmentalist populations (Merchant, 1992), although differences between altruistic and biospheric values have yet to be demonstrated. Steg et al. (2005) stated that individuals show environmental concern in each dimension depending on their degree of personal value development. Biospheric-altruistic values are also considered environmental values in explaining environmentalism by evaluating human environmental interaction

(Kiatkawsin & Han, 2017). In particular, biospheric value is vital in forming individuals' environmental attitudes (Han, 2015; Park et al., 2018). Thus, the following hypothesis was formed for this study:

H_1. Personal values have different effects on the NEP.

When individuals become more aware of environmental problems, they become concerned about environmental issues (Park et al., 2018). Steg, De Groot, Dreijerink, Abrahamse, and Siero (2011) stated that the NEP is strongly related to awareness of negative environmental consequences to performing pro-environmental behaviors. The NEP influences, another environmental belief, awareness of consequences toward environmental protection (Stern et al., 1999). For example, travellers who perceive general environmental beliefs to be important with respect to human-environmental relations are more likely to be aware of environmental problems (Han, 2015). In present day, concern about climate change has become a big issue in the agricultural industry. This concern can be an important predictor of general environmental attitudes of human-agriculture environmental relationships (Juana, Kahaka, & Okurut, 2013). Thus, the following hypothesis was formed:

H_2. The NEP significantly influences awareness of consequences.

Awareness of consequences measures issues related to specific perceived environmental beliefs (Steg et al., 2005). Awareness of adverse environmental problems has a significant impact on ascribed responsibility (Han, 2015). That is, individuals feel strong personal responsibility in connection to their awareness of severe environmental conditions (Aguilar-Luzón et al., 2012; Bamberg & Schmidt, 2003; Stern et al., 1999).

Furthermore, when problems are perceived, people have a propensity to change their behavior to relieve them (Park et al., 2018; Stern et al., 1999). For example, Steg et al. (2011)

revealed that travellers with a strong perceived environmental awareness generate feelings of environmental accountability to relieve the threat of the negative consequences. Thus, the following hypothesis was formed:

H_3. Awareness of consequences significantly influences ascription of responsibility.

Ascription of responsibility plays a most significant role in fostering personal norms (Ebreo, Vining, & Cristancho, 2003). Steg et al. (2005) confirmed that individuals develop strong personal norms when they perceive environmental responsibility caused by unfriendly environmental actions. To protect the environment, individuals have a propensity to develop a sense of ascribed responsibility, in turn leading to establishment of personal norms (Nordlund & Garvill, 2003; Schwartz, 1977). Therefore, ascribed responsibility can be a direct predictor with respect to personal norms (Bamberg & Schmidt, 2003). Thus, the following hypothesis was formed:

H_4. Ascription of responsibility significantly influences personal norms.

Environmental psychological research has verified that personal norms lead to individuals' prosocial behaviors (Han et al., 2015; Klöckner, 2013). Klöckner (2013) found that moral obligation played a role in individuals' environmentally responsible behaviors. Personal norms have also been documents as a direct antecedent of pro-environmental behavior (Bamberg & Möser, 2007). For example, individuals with stronger personal norms have a propensity to support pro-environmental policies such as reducing CO_2 (Steg et al., 2005). In other words, a feeling of moral obligation is strongly associated with environmentally responsible behaviors (Zhang et al., 2014). Thus, the following hypothesis was formed:

H_5. Personal norms significantly influence environmentally responsible behavioral intention.

A growing number of studies have adopted different segmentation approaches to exploring individuals' perceived barriers to overcoming specific behaviors (Castellani & Sala, 2010; Kaiser & Schultz, 2009). Previous studies have supported that perceived barriers play a moderating role in facilitating individuals' behaviors with respect to specific objects (Ajzen, 1991; Britt et al., 2008). Taken together, it is argued that individuals with a low degree of perceived barriers show favorable attitudes and behaviors toward the environmental behaviors (Castellani & Sala, 2010). Constraints to specific behaviors can be created depending on the situation people face from internal and external perspectives (Kaiser & Schultz, 2009). However, empirical research on the moderating roles of internal and external barriers on specific paths from environmental values and beliefs toward the environment and moral obligation to behavioral intention has been limited in tourism research.

It is still challenging to develop agritourism based on sustainability, because agritourism operators may involve different environmental attitudes and behaviors depending on individuals' social and personal circumstances, which may include limitations of knowledge, financial resources, tourism seasonality, and infrastructure on agritourism operations (Valdivia & Barbieri, 2014; Yang, 2012). There is, therefore, a need to categorize agritourism operators based on their degree of internal and external barriers related to environmentally responsible behaviors in agritourism settings. To be consistent in the present study, it would be plausible to assume that, at similar levels of values, beliefs, and sense of obligation, agritourism operators who perceive low internal and external barriers are more likely to engage in environmentally responsible behavioral intention.

There are other important factors, such as internal motivation or barriers, that inhibit or enable business success (Gaskill, van Auken, & Manning, 1993). Empirical evidence across a number of areas have noted the moderating impacts of perceived barriers between behaviors and psychological perceptions. In a military context, Britt et al. (2008) found that individuals' stressors and related psychological symptoms are stronger when perceived barriers to caring are high. In a business management context, Sonnentag, Moza, Demerouti, and Bakker (2012) found that the strength of relationships between the day-specific work engagement during the work day and the recovery level at the end of the work day is significantly weakened by perceived barriers. González-Benito and González-Benito (2005) found that when the importance of environmental issues is recognized, individuals tend to implement environmentally responsible behaviors.

Environmental behaviors may be inhibited, particularly when they perceive internal difficulties, including lack of time and understanding of environmental awareness (Moghimehfar & Halpenny, 2016). For example, travellers are hesitant to engage in environmental behaviors when they perceive the cost of such behaviors as being too high (Vining & Ebreo, 1990). Barbieri (2013) argued that agritourism plays a vital role in reducing environmental impacts; however, the lack of professional skills and training lead to serious obstacles to sustainable agritourism operations. Strong internal barriers that inhibit implement of environmental practices have a greater negative impact on the sustainable strategies than external barriers (Murillo-Luna et al., 2011).

In addition, Kaiser and Schultz (2009) suggested behavioral difficulty as a moderator between attitudes and behaviors. Psychological factors, such as individuals' laziness or lack of motivation, prevent people from facilitating environmental awareness in their behaviors (Blake, 1999). Internal barriers, like emotional and psychological difficulties, play an important

moderating role in affecting the environmental states of consumers (Kaiser & Schultz, 2009). Thus, the following hypotheses were proposed:

H_6: Internal barriers have a negatively significant moderating impact on the relationships among the VBN constructs for agritourism operators decision-making process with high perceived internal barriers.

$H_{6\text{-}1}$: Internal barriers have a significant negative interaction effect with values on the NEP.

$H_{6\text{-}2}$: Internal barriers have a significant negative interaction effect with the NEP on awareness of consequences.

$H_{6\text{-}3}$: Internal barriers have a significant negative interaction effect with awareness of consequences on ascription of responsibility.

$H_{6\text{-}4}$: Internal barriers have a significant negative interaction effect with ascription of responsibility on personal norms.

$H_{6\text{-}5}$: Internal barriers have a significant negative interaction effect with personal norms on environmentally responsible behavioral intention.

From the perspective of environmental behaviors, predictions of environmental behaviors can be limited by external factors that underestimate the effects of positive attitudes on the behaviors (Yoon, Kyle, van Riper, & Sutton, 2013). A number of areas have examined the moderating impacts of perceived barriers between behaviors and environmental challenges. Baron and Byrne (1997) suggested that the relationships between attitudes and behaviors are moderated by situational constraints. For example, Wittmer et al. (2013) identified that lack of resources plays a moderator role in the relationship between shared concerns for aggression and student performance. Student would achieve less when perceived barriers are high. Similarly, Han, Kim, and Hyun's (2011) study revealed that hotel guests who perceived high level of costs are more likely to show negative satisfaction on intention to switch to another hotel.

As a whole, it can be reasoned that individuals' attitudes significantly influence behaviors when the situational costs are minimized and the actions are relatively easy to execute (Diekmann & Preisendörfer, 1998). For example, Sutton and Tobin (2011) reported that although individuals may be aware of environmental problems, the relationship between attitudes and behaviors was negative due to external barriers such as lack of financial resources for support. Despite the importance of external barriers to small business success, Sutton and Tobin (2011) concluded that government financial assistance programs should not be seen as an exclusive remedy for preventing business failure rate. Active support and counseling from the government and other associations may help to engage in environmental practices, as Chan (2011) found that financial support from the government can prove to be an important role in satisfying the minimum environmental requirements. Thus, the following hypotheses were proposed:

H_7: External barriers have a negatively significant moderating impact on the relationships among the VBN constructs for agritourism operators decision-making process with high perceived internal barriers.

$H_{7\text{-}1}$: External barriers have a significant negative interaction effect with values on the NEP.

$H_{7\text{-}2}$: External barriers have a significant negative interaction effect with the NEP on awareness of consequences.

$H_{7\text{-}3}$: External barriers have a significant negative interaction effect with awareness of consequences on ascription of responsibility.

$H_{7\text{-}4}$: External barriers have a significant negative interaction effect with ascription of responsibility on personal norms.

$H_{7\text{-}5}$: External barriers have a significant negative interaction effect with personal norms on environmentally responsible behavioral intention.

CHAPTER 3. RESEARCH DESIGN AND METHODOLOGY

This chapter explains research design, pilot test, sampling and data collection, and data analysis procedures used to investigate the influence of environment-associated factors on environmentally responsible behavioral intention. The first section describes the research design, including the survey instrument and the use of human subjects. The second section describes pilot-test procedures used to verify questionnaire clarity and reliability by employing exploratory factor analysis. The third section explains data collection procedures, including sampling and data collection. The final section addresses a relevant series of data analysis processes, including data normality, structural equation modeling, and latent moderated structural equations.

Research Design

This study used a quantitative method approach through a survey questionnaire, commonly used in quantitative research, to explore agritourism operators' environmental decision-making processes. The survey was used to collect information about the target population of interest (Silverman, 2006). Survey use is usually associated with a deductive approach, which means that a hypothesis can be developed based on existing theory and hypothetical relationships among constructs can be established (Neuman, 2003). The survey findings were used to draw conclusions about how agritourism operators engage in environmentally responsible behavioral intention.

Measurement Instrument

The survey was comprised of eight constructs: internal barriers, external barriers, values (egoistic, biospheric, and altruistic), the new ecological paradigm (NEP), awareness of consequences, ascription of responsibility, personal norms, and environmentally responsible behavioral intention. All measurements were adapted from previous studies and modified for an agritourism setting. Value items were assessed on a five-point scale ranging from 1 (very unimportant) to 5 (very important) while the rest of the measurements were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Internal barriers were measured using three-items to evaluate how significant the associated barriers were in preventing agritourism operators' environmentally responsible behavioral actions, adapted from Hillary (2004) and modified to fit the agritourism context of this study. Examples of statement items included were *My agritourism business does not have enough management and/or staff time for implementation and maintenance in an environmentally responsible way* and *My agritourism business does not have adequate technical knowledge and skills to implement environmentally responsible practices.*

External barriers were also measured by adapting Hillary's (2004) scale and slightly modifying it for the agritourism setting. The measurement was evaluated using a three-item scale, including the statements *There is lack of external assistance (e.g., consulting services) for environmentally responsible practices, There is lack of accessible financial support for environmentally responsible practices,* and *There is lack of promotion of environmental legislation/policies for environmentally responsible practices.*

Values were measured by adapting the notion of personal values developed by Schwartz (1994) and modified by Stern, Dietz, and Guagnano (1998). Values included three dimensions --

altruistic, egoistic, and biospheric -- and each dimension was evaluated with respect to three items, yielding a nine-item scale. Examples of items included *Free of war and conflict* as an altruistic value, *Live in harmony with other species* as a biospheric value, and *Control over others, dominance* as an egoistic value.

The NEP was measured in terms of general environmental concern represented. It was developed by Dunlap and Van Liere (1978) and modified by Dunlap, Van Liere, Mertig, and Jones (2000). The measurement was evaluated using a three-item scale, including the statements *Humans are severely abusing the environment, If things continue on their present course, we will soon experience a major ecological catastrophe,* and *The earth is like a spaceship with limited room and resources.*

Awareness of consequences was measured with respect to belief in negative environmental consequences using the pro-environmental approach adapted from Raymond et al. (2011) with a format specifically modified for the agritourism setting. A three-item measure was used to evaluate agritourism operators' awareness of consequences, including the statements *The agritourism industry can help generate the positive environmental impacts on neighboring areas and wider environment* and *The agritourism industry can help minimize environmental degradation.*

Ascription of responsibility, adapted from Wynveen et al. (2015) and slightly modified for the agritourism setting, was measured in terms of accountability to reflect a feeling of responsibility for the environment. A three-item measure was used to evaluate agritourism operators' ascription of responsibility. Examples of items included were *I think that every agritourism operator is jointly responsible for environmental issues* and *I think that every agritourism operator is partly responsible for global warming*.

Personal norms were measured in terms of moral obligation, with items adapted from Stern et al. (1999) and modified to fit the agritourism context of this study. A three-item measure was used to evaluate agritourism operators' moral obligation. Examples of items included were *I feel morally obliged to minimize human impact on nature-based resources within my business site* and *I feel a sense of personal obligation to not damage environmental structures on my business site.*

Measurement of environmentally responsible behavioral intention was adapted from Park and Lee's study (2018) that identified behavioral items through a three-stage process of (1) generating measurement items using a Delphi method, (2) testing the measurement scale, and (3) assessing cross-validation of the environmentally-responsible behavior scale. This study used three items, including *Conserve soil and water resource, Convince visitors to behave in a way that will not harm plants and animals,* and *Conserve natural habitats and biodiversity.*

Lastly, the demographic section elicited participants' personal information (e.g., gender, age, education, and household income) and agritourism business information (e.g., geographical location, number of employees, agritourism operation, total gross sales in 2017, agritourism activities, time involved in agriculture, and time involved in agritourism).

Use of Human Subjects

Prior to collecting data, this study was approved by the Iowa State University Human Subject Review Committee (Institutional Review Board [IRB] ID 17-111; see Appendix A). The first page of the survey questionnaire clearly explained the research purposes and confidentiality with respect to participations' responses (Appendix B). The authors involved in research obtained the certificate of human subjects' research training authorized by Iowa State University.

Pilot Test

The purpose of the pilot test was to (1) evaluate the clarity of the wording of the directions provided in the questionnaire and (2) ensure internal measurement consistency. The two-step pilot study was completed before conducting the final study (Moser & Kalton, 1996). The first step involved a thorough review of questionnaire items adopted and modified from previous studies. Three academic faculty members at Iowa State University reviewed the items to determine the suitability of the measurement scales, and a few modifications of the items were made to improve the clarity of questions. For example, an item designed to measure the variable ascription of responsibility, *I think that every agritourism operator is jointly responsible for the environmental deteriorations caused by the agritourism industry* was changed to *I think that every agritourism operator is jointly responsible for environmental issues.*

The second step of the pilot study, the pre-test, was performed on February 27th and March 14th, 2018 to test construct validity and reliability of the measurement scales in the online survey questionnaire. The pilot study included a sample of agritourism operators who belong to agricultural marketing service-related associations in the U.S. The survey link was sent to 1,066 agritourism businesses registered in the national/regional/state-wide agritourism associations through an online survey system using Qualtrics. A total of 69 people participated in the pilot survey and only 37 completed it.

Exploratory Factor Analysis (EFA)

EFA was undertaken to determine whether each questionnaire item represented a factor consistent with acceptable factor loadings. The procedure was performed to diminish multicollinearity or error variance correlations among indicators prior to confirmatory factor analysis (CFA) used to test a measurement model (Yoon & Uysal, 2005). Specifically, the principal components method with a varimax rotation was employed to reduce the number of dimensions and maximize differences among the dimensions extracted. Item inclusion decisions were based on achievement of eigenvalues greater than 1.0, factor loadings with a cut-off value of .40, a Kaiser-Meyer-Olkin (KMO) value greater than .50, and value of communality above .40 (Fabrigar, Wegener, MacCallum, & Strahan, 1999; Hair, Anderson, Tatham, & Black, 2006).

The internal reliability of each dimension was examined using Cronbach's Alpha coefficients. While a Cronbach's Alpha score above .70 is generally required to represent an acceptable level of reliability (Nunnally, 1978), the value of .60 is also usually regarded as acceptable in social psychology research (Hair et al., 2006). In addition, as an alternative to Chronbach's Alpha (Sijtsma, 2009), the greatest lower bound (GLB), was also calculated to estimate the reliability (Jackson & Agunwamba, 1977). The EFA results of each variable are shown in Table 3.1 through Table 3.8.

Internal barriers

Internal barriers included three items. It was important to verify that each item was loaded on only one component with the factor loadings suggested by previous researchers (Chen & Hsu, 2001). Factor loadings ranged from .791 to .872 with an eigenvalue of 2.088. The communalities show that the amount of variance in each item has been accounted for by internal

barriers. For example, 62.6% of the variance in the lack of environmental specialist staff was accounted for while 76% of the variance in insufficient technical knowledge and skills was accounted for. The Cronbach's Alpha value was .774 and the GLB estimates showed .775. The variance associated with each indicator was greater than 69% and the KMO value was greater than .60, as shown in Table 3.1.

Table 1.1. The EFA Results of Internal Barriers

Indicators/Items	Loadings	Communalities
Internal Barriers (GLB: .775, α = .774, E = 2.088, %Var = 69.589)		
My agritourism business does not have adequate technical knowledge and skills to implement environmentally responsible practices.	.872	.760
My agritourism business does not have enough management and/or staff time for implementation and maintenance in an environmentally responsible way.	.838	.702
My agritourism business does not have environmental specialist staff members for implementing and maintaining environmentally responsible practices	.791	.626

Note. KMO = .682, $\boldsymbol{x}^2$ (3) = 29.848, $p < .001$; 69.589% Explained; GLB: Greatest Lower Bound; α = Cronbach's Alpha; E = Eigenvalues; %Var = % Variance explained.

External barriers

External barriers included three items. Factor loadings ranged from .746 to .822 with an eigenvalue of 1.799. The communalities indicate that 55.7% of the variance in the lack of promotion of environmental legislation/policies was accounted for while 67.6% of the variance in the lack of accessible financial support was accounted for. The Cronbach's Alpha value was .663 and the GLB estimates showed .670. The variance explained by each indicator was greater than 59% and the KMO value was greater than .60, as shown in Table 3.2.

Table 2.2. The EFA Results of External Barriers

Indicators/Items	Loadings	Communalities
External Barriers (GLB: .670, α = .663, E = 1.799, %Var = 59.960)		
There is lack of accessible financial support for environmentally responsible practices.	.822	.676
There is lack of external assistance (e.g., consulting services) for environmentally responsible practices.	.752	.566
There is lack of promotion of environmental legislation/policies for environmentally responsible practices.	.746	.557

Note. KMO = .642, $\boldsymbol{x}^2$ (3) = 15.421, $p < .001$; 59.960% Explained; GLB: Greatest Lower Bound; α = Cronbach's Alpha; E = Eigenvalues; %Var = % Variance explained.

Values

Values were designed to measure three perspectives -- biospheric, altruistic, and egoistic-- using nine items, with three items for each dimension. Factor loadings ranged from .928 to .656 with an eigenvalue of 2.588 for biospheric value, from .666 to .857 with an eigenvalue of 2.131 for altruistic value, and from .675 to .779 with an eigenvalue of 1.628 for egoistic value.

Table 3.3. The EFA Results of Values

Indicators/Items	Loadings	Communalities
Biospheric Value (GLB: .845, α = .841, E = 2.588, %Var = 28.751)		
Protecting the environment: preserving nature	.928	.896
Preventing pollution, conserving natural resources	.886	.839
Respecting the earth: living in harmony with other species	.656	.533
Altruistic Value (GLB: .764, α = .764, E = 2.131, %Var = 23.677)		
A world at peace: free of war and conflict	.857	.778
Equality: equal opportunity for all A world at peace: free of war and conflict	.798	.711
Social justice: correcting injustice, care for the weak	.666	.684
Egoistic Value (GLB: .562, α = .547, E = 1.628, %Var = 18.094)		
Influential: having an impact on people and events	.779	.710
Authority: the right to lead or command	.696	.600
Social power: control over others, dominance	.675	.597

Note. KMO = .629, $\boldsymbol{x}^2$ (36) = 141.811, $p < .001$; 70.522% Explained; GLB: Greatest Lower Bound; α = Cronbach's Alpha; E = Eigenvalues; %Var = % Variance explained.

The communalities indicate that 53.3% of the variance in respecting the earth was accounted for while 89.6% of the variance in protecting the environment was accounted for by biospheric value. In addition, 68.4% of the variance in social justice was accounted for while 77.8% of the variance in a world at peace was accounted for by altruistic value. Furthermore, 59.7% of the variance in social power was accounted for while 71% of the variance in influential was accounted for by egoistic value.

However, all Cronbach's Alpha and the GLB coefficients, except those for egoistic values, were considered acceptable, exceeding .70, indicating adequate internal consistency (Nunnally, 1978). Egoistic values reflected low reliability, less than .60, reflecting a need to analyze the measurement model results more carefully. In addition, the variance associated with each indicator was greater than 70% and the KMO value was greater than .60, as presented in Table 3.3.

The NEP

The NEP included three items. It was important to verify that each item was loaded on only one component with the factor loadings suggested by previous researchers (Chen & Hsu, 2001).

Table 4.4. The EFA Results of the NEP

Indicators/Items	Loadings	Communalities
New Environmental Paradigm (GLB: .885, α = .811, E = 2.186, %Var = 72.881)		
If things continue on their present course, we will soon experience a major ecological catastrophe.	.947	.896
Humans are severely abusing the environment.	.869	.756
The earth is like a spaceship with limited room and resources.	.731	.534

Note. KMO = .550, χ^2 (3) = 51.170, $p < .001$; 72.881% Explained; GLB: Greatest Lower Bound; α = Cronbach's Alpha; E = Eigenvalues; %Var = % Variance explained.

Factor loadings ranged from .731 to .947 with an eigenvalue of 2.186. The communalities were found to range from 53.4% to 89.6%. The Cronbach's Alpha value was .811 and the GLB estimates showed .885. The variance associated with each indicator was greater than 72% and the KMO value was greater than .50, as shown in Table 3.4.

Awareness of consequences

Awareness of consequences included three items. Factor loadings ranged from .841 to .947 with an eigenvalue of 2.362. The communalities were found to range from 70.7% to 89.7%. The Cronbach's Alpha value was .864 and the GLB estimates showed .902. The variance explained by each indicator was greater than 78% and the KMO value was greater than 0.60, as shown in Table 3.5.

Table 5.5. The EFA Results of Awareness of Consequences

Indicators/Items	Loadings	Communalities
Awareness of Consequences (GLB: .902, α = .864, E = 2.362, %Var = 78.727)		
The agritourism industry can help reduce pollution, climate change, and exhaustion of natural resources.	.947	.897
The agritourism industry can help minimize environmental degradation.	.870	.758
The agritourism industry can help generate the positive environmental impacts on the neighboring areas and wider environment.	.841	.707

Note. KMO = .633, x^2 (3) = 58.054, $p < .001$; 78.727% Explained; GLB: Greatest Lower Bound; α = Cronbach's Alpha; E = Eigenvalues; %Var = % Variance explained.

Ascription of responsibility

Ascription of responsibility included three items. Factor loadings ranged from .871 to .904 with an eigenvalue of 2.372. The communalities were found to range from 75.9% to 81.8%. The Cronbach's Alpha value was .867 and the GLB estimates showed .868. The variance associated with by each indicator was greater than 79% and the KMO value was greater than .70, as shown in Table 3.6.

Table 6.6. The EFA Results of Ascription of Responsibility

Indicators/Items	Loadings	Communalities
Ascription of Responsibility (GLB: .868, α = .867, E = 2.372, %Var = 79.057)		
I think that every agritourism operator is jointly responsible for environmental issues.	.904	.818
I think that every agritourism operator is partly responsible for global warming.	.891	.794
Every agritourism operator must take responsibility for environmental problems.	.871	.759

Note. KMO = .733, $\boldsymbol{x}^2$ (3) = 50.294, $p < .001$; 79.057% Explained; GLB: Greatest Lower Bound; α = Cronbach's Alpha; E = Eigenvalues; %Var = % Variance explained.

Personal norms

Personal norms included three items. Factor loadings ranged from .669 to .859 with an eigenvalue of 1.908. The communalities were found to range from 44.8% to 73.8%. The Cronbach's Alpha value and the GLB estimates showed .631 respectively. The variance associated with each indicator was greater than 63% and the KMO value was greater than .60, as shown in Table 3.7.

Table 7.7. The EFA Results of Personal Norms

Indicators/Items	Loadings	Communalities
Personal Norms (GLB: .631, α = .631, E = 1.908, %Var = 63.612)		
I feel that it is important to reduce the harm to the environment on my business site.	.859	.738
I feel a sense of personal obligation to not damage environmental structures on my business site.	.850	.723
I feel morally obliged to minimize human impact on nature-based resources within my business site.	.669	.448

Note. KMO = .620, $\boldsymbol{x}^2$ (3) = 23.060, $p < .001$; 63.612% Explained; GLB: Greatest Lower Bound; α = Cronbach's Alpha; E = Eigenvalues; %Var = % Variance explained.

Environmentally responsible behavioral intention

Environmentally responsible behavioral intention included four items. Factor loadings ranged from .597 to .881 with an eigenvalue of 2.306. All communalities values, except for the item *Convince visitors to behave in a way that will not harm plants and animals*, showed acceptable level of .40 or higher (Nunnally, 1978). In addition, the Cronbach's Alpha value was .658 and the GLB estimates showed .701. The variance explained by each indicator was greater than 57% and the KMO value was greater than .60, as shown in Table 3.8.

Table 8.8. The EFA Results of Environmentally Responsible Behavioral Intention

Indicators/Items	Loadings	Communalities
Environmentally Responsible Behavioral Intention (GLB: .701, α = .658, E = 2.306, %Var = 57.660)		
Conserve soil and water resources.	.881	.777
Conserve natural habitats and biodiversity.	.829	.688
Post environmental protection information in my business site.	.697	.486
Convince visitors to behave in a way that will not harm plants and animals.	.597	.356

Note. KMO = .670, $\boldsymbol{x}^2$ (6) = 39.341, $p < .001$; 57.660% Explained; GLB: Greatest Lower Bound; α = Cronbach's Alpha; E = Eigenvalues; %Var = % Variance explained.

The EFA results confirmed that eachindicator properly was accounted for by the corresponding factors and the factor loadings were acceptable. However, the Cronbach's Alpha and the GLB coefficients for the egoistic value was found to be less than .60, reflecting lower internal consistency (Hair et al., 2006). In addition, the communality value for the item *Convince visitors to behave in a way that will not harm plants and animals* in environmentally responsible behavioral intention was found to be less than .40, reflecting lower internal consistency; however, Child (2006) suggests that the communality value below 0.2 should be removed. Therefore, there is a need to analyze the measurement model through CFA to confirm the reliability and validity of the measures used in the pilot study.

Sampling and Data Collection

Sampling

This study population was comprised of agritourism business entities within the territory of the U.S. For the purposes of the study, an agritourism operator was defined as a person working on an agritourism farm or an entity providing agriculture-based recreational activities. The study obtained a list of approximately 10,000 agritourism farms, along with operators' email addresses, phone numbers, and business addresses, with the help of national/regional agricultural marketing service-related associations (e.g., Dude Ranchers Association of America) and 49 state-wide agritourism associations (e.g., Kansas Agritourism and North Dakota Agritourism).

Each association has an agritourism farm directory including information such as email addresses, phone numbers, and business addresses, etc. for farmers or farm tourists who are interested in agriculture-based recreational activities. The list of agritourism businesses is also available via an online tool with the operating details on the associations' websites. To ensure the inclusion of agritourism operators, participants in this study were asked this study was asked a screening question: *Do you operate any types of agritourism businesses?* The majority of participants, about 89%, indicated that they are engaged in agritourism businesses. Therefore, agritourism farms belonging to these associaitons were identified as ideal participants for this study.

Data Collection

An online survey was distributed through Qualtrics to 9,699 agritourism operators in the time interval of April 4 to May 18, 2018. The first survey announcement, including a survey link, was sent on April 4th to the agritourism operators registered in national/regional agricultural

marketing service-related associations, 49 state-wide agritourism associations, and five associations' directors (e.g., Dude Ranchers Association of America and California Agricultural Tourism). Eight following reminder emails were sent in the interval between April 13th through May 18th. Survey participants had a chance to win a $10 Amazon gift card as an incentive if they both agreed to participate in the survey and completed a valid survey. Following a random drawing procedure, 20 participants were selected and received such gift card incentives.

A total of 599 questionnaires were collected, equaling a 6.18 percent response rate. In general, the response rate for online surveys was 11% lower than for other survey type (Fan & Yan, 2010). Stewart and Williams (2005), for example, indicated that their online surveys received only a 7% reponse rate compared to a 21% response rate for their mail surveys. Thus, the low response rate in this study was considered typical of online surveys. A total of 599 surveys were obtained and, of these, 230 responses deemed incomplete were eliminated.

Several studies have recommended that one way to test for non-response bias in social science research is to compare the number of early to the number of late respondents (Lindner, Myrphy, & Briers, 2001; Newman, 1962). Respondents who reply late are categorized as non-respondents (Lindner et al., 2001), as Helasoja et al. (2002) asserted that a pattern of late respondents showed some similarities with typical characteristics of non-respondents. The non-response bias test is statistically estimated to control the response error by comparing early respondents to late respondents (Lindner et al., 2001). Therefore, this study conducted a non-response bias test to assess response differences between early and late respondents for the two groups, revealing insignificant differences between the two groups ($p > .01$). Thus, this finding suggested no signficant differences between respondents and non-respondents (Lin & Huang, 2008). The final result was a total of 369 responses deemed to be valid for data analysis.

Data Analysis

Data Normality

Normality assumptions were made in two steps: 1) checking the set of data for outliers and 2) checking the data set for normality and multicollinearity of observed variables. SPSS Statistics 18 was employed to identify outliers of measured variables in the data file, and some outliers were detected at both univariate and multivariate levels. At the univariate level, univariate normality tests were conducted by examining skewness, kurtosis, and z-scores for constructs. Acceptable values of skewness and kurtosis are between ±1.0, and ±3.0, respectively, for structural equation modeling (SEM) (Kline, 2005), and a Z-score of ±3.29 was used as a cut-off for identifying outliers (Tabachnick & Fidell, 2001).

To further detect outliers at a multivariate level, multivariate normality tests were performed using EQS multivariate sample statistics (Bentler, 1989). The EQS multivariate sample statistics consist of Mardia's coefficient and multivariate Z-statistic with the criteria of normality lying in a range between ±5.0 (Bentler & Wu, 2005) and, ±3.29, respectively. Bentler (1989) suggests that large positive/negative values of Mardia's normalized estimates reflect significant positive/negative kurtosis. The multicollinearity assumption was also evaluated through tolerance values and variance inflation factors (VIF) of observed variables. All VIF values among the variables were less than 10, ranging from 1.474 to 5.094, so the variables showed no problems with multicollinearity.

Structural Equation Modeling (SEM)

SEM is a powerful multivariate analysis tool that includes linear structural relationship models, covariance structure analysis, latent variable analysis, and CFA (Hair, Anderson, Babin, & Black, 2010). Over the past two decades, SEM has been recognized as a powerful statistical technique used in many disciplines, including psychology, sociology, and tourism research (e.g., Han, 2015; Park et al., 2018).

SEM uses two steps of model estimation for examining a measurement model and a structural model (Byrne, 2006). In this study, the measurement model was examined through CFA. Measurement model fit was tested to determine whether the latent construct items adequately represented the corresponding latent constructs, after which the structural model was estimated to identify causal relationships among exogenous and endogenous variables (Hair et al., 2006). These variables can be unobserved constructs derived from theory (Byrne, 2006).

In order to evaluate the model adequacy, goodness-of-fit test was based on Chi-square statistics ($\chi 2$), the comparative fix index (CFI), the Tucker Lewis index (TL), the root-mean-square error of approximation (RMSEA), and the confidence interval (CI) found in testing the measurement and structural models. The results from modification indices were used to identify misspecification parameters in the process of model modification (Byrne, 2006). This study employed Mplus 7 statistical software to test the hypothesized relationships through SEM. In particular, maximum likelihood parameter estimates with robust standard errors (MLR) is an effective analytical method for samples not normally distributed.

Measurement model

CFA was conducted to test goodness-of-fit and present confirmatory validity of the measurement model (Anderson & Gerbing, 1988). The primary function of CFA is to confirm relationships between observed and latent variables (Teo, Tsai, & Yang, 2013). Observed variables also denoted indicator variables, while latent variables are sometimes also called unobserved factors; structured loading of an observed variable is not allowed to be significant with respect to other latent variables (Bagozzi & Yi, 1988). The factor loading between the observed and latent variables should be greater than .50 (Nunnally, 1978).

Internal reliability

Reliability analysis was used to assess internal consistency or item homogeneity using EQS package for computing Cronbach's Alpha, the greatest lower bound of reliability (GLB), and composite reliability (CR). Nunnally (1978) suggested that the cut-off value of a Cronbach's Alpha coefficient should be .7 at minimum to reflect high internal consistency. However, such an approach may no longer be considered sufficiently warranted, because all components of a scale are likely to be given equal weight in the formation of a measurement scale, possibly causing major reliability underestimation in the violation of the assumptions of tau-equivalence and normality (Green & Yang, 2009). Therefore, the GLB, the most accurate estimate of reliability (Revelle & Zinbarg, 2009), was estimated to evaluate the reliability in the non-normal conditions or asymmetrical distributions. In addition, CR was also used to measure the overall reliability of a set of latent constructs (Bentler & Wu, 2005). The latent constructs can be efficiently measured from observed variables if the CR value is greater than .70 and, while it is usually greater than the Cronbach's Alpha values, the difference is inconsequential (Peterson & Kim, 2013).

Construct validity

Construct validity refers to whether the scales used in a study adequately measure constructs with respect to the corresponding theoretical constructs. Construct validity is determined by using convergent and discriminant validity (Hair et al., 1998). Convergent validity evaluates how closely the measurement scale is related to other variables. Factor loadings and AVEs were used in this study to estimate the convergent validity of the latent constructs (Fornell & Larcker, 1981). Acceptable goodness-of-fit measures for a model indicate convergent validity when the extracted coefficients and AVE values are at least .50 (Bagozzi & Yi, 1988). Discriminant validity refers to measurement scale dissimilarities in different constructs (Byrne, 2006). AVE can further be used to determine discriminant validity of a measurement model by comparing the AVE and the squared correlation between a pair of latent constructs (Hair et al., 1998). The AVE value should be greater than each squared correlation with other constructs in the model to verify discriminant validity (Fornell & Lacker, 1981).

Structural model

A structural model was estimated to investigate the goodness-of-fit indices of the hypothesized model and identify causal relationships among its constructs. To obtain accurate estimates of the structural model, goodness-of-fit indices in the structural model with latent variables were assessed to identify whether the data could explain the proposed model. A modification indices test was also used to determine whether model fit could be improved by including additional variable(s) or path(s) to account for meaningful relationships among the constructs in the model modification process.

Latent Moderated Structural Equations (LMS)

Latent moderated structural equations (LMS) is a new statistical method for estimating main and interaction effects between latent variables (Klein & Moosbrugger, 2000). LMS has practical advantages of testing same-level interaction by requiring an estimation of only one parameter that is not attenuated by measurement error, which serves to decrease bias and increase statistical efficiency (Maslowsky, Jager, & Hemken, 2015). The LMS method uses a two-step estimation procedure to determine the moderation effects.

The first step was to estimate the structural model that includes the main effect, which excludes interaction effects. The model was regarded as a baseline model. The baseline model was included to examine the model fit indices such as the $\boldsymbol{x}^2$, CFI, NNFI, RMSEA, and CI of the model. If the baseline model provided a satisfactory fit to the data, the analysis proceeded to the next step. The second step was to estimate the structural model that includes the interaction effects. The model was referred to as a nested model. The nested model was then compared with the baseline model to identify the interaction effects for moderation. Particularly, the simultaneous estimation of interaction effects increases the negative effects of multicollinearity (Kreft & deLeeuw, 1998). Therefore, each interaction term should be separately specified by multiplying each latent predictor by another latent predictor on the predicted variable (Kreft & Deleeuw, 1998). In this study, a log-likelihood ratio, interaction effect of coefficient value, effect size, and simple slope analysis was calculated, because model fit indices, such as $\boldsymbol{x}^2$, CFI, NNFI, and RMSEA, are not available for the nested model.

A log-likelihood difference with the MLR estimator was used to validate model fit by comparing the log-likelihood values between the baseline and nested models. Muthén and Muthén (1998-2010) suggested calculating the robust likelihood difference statistic when using the MLR. The robust chi-square difference test is based on the log-likelihood values (L) and scaling correction factors (c) for the models. To compute the difference test scaling correction (cd), cd is given by: cd = (number of free parameter for baseline model [P0] * scaling correction factors for baseline model [c0] - number of free parameter for nested model [P1] * scaling correction factors for nested model [c1]) / (number of free parameter for baseline model [P0] - number of free parameter for nested model [P1]). Then, the chi-square difference test (TRd) is evaluated as follows: TRd = -2 * (log-likelihood for baseline model [L0] - log-likelihood for nested model [L1] / cd). The value of TRd is referred to as the robust chi-square difference. The significance of the value TRd is the distributed chi-square with the two degrees of freedom using a chi-square table (Muthén & Muthén, 1998-2010). If there is a significant difference in the model fit between the baseline and nested models, it indicates that the nested model demonstrated a better fit (Satorra & Bentler, 2010).

The effect size of the interaction effect was estimated to explain how much the interaction yields using the changes in R^2 between the two models. The effect size is regarded as the ratio of variance explained by the inclusion of the interaction term in the nested model to the unexplained variance in the baseline model without the interaction term (Dawson, 2014). Measuring the effect size of a moderation effect is helpful for understanding the nature of the interaction (Dawson, 2014). The effect size is evaluated as follows: f^2 = (R^2 for nested model [$R^2$1] - R^2 for baseline model [R^2]) / (1 - R^2 for nested model [$R^2$1]) (Selya et al., 2012). Cogen (1988) further suggested a small effect of .02, a medium effect size of .15, and a large effect size

of .35, which is explained by the interaction factors on the predicted variables. In addition, Aguinis, Beaty, Boik, and Pierce (2005) suggested that the small effect size is quite common as a typical average size in assessing moderating effects in social science journals.

Lastly, a simple slopes analysis was conducted to interpret the interaction effect by plotting the interaction between the two variables. When an interaction term in the nested model is significant (Preacher, Zhang, & Zyphur, 2016), the simple slopes analysis should be assessed to understand a moderator's influence of the predicted variables at the high (e.g., 0 [mean] + 1 [SD] = +1 Standard deviation) and low (e.g., 0 [mean] - 1 [SD] = -1 Standard deviation) values (Aiken & West, 1991; Edwards & Lambert, 2007). Although the overall shape of the plots was similar, it clearly reflected a difference in the slopes of the lines across the values. When presenting the high and low values, regression coefficients for the moderation were obtained from the nested model (Maslowsky et al., 2015).

CHAPTER 4. RESULTS

This chapter presents results in terms of data gathered from agritourism operators across the U.S. in four sections. The first section describes respondent characteristics, including data screening, sociodemographic information, and agritourism operators' business information, based on respondents' demographic backgrounds. The second presents descriptive statistics, including means, standard deviations, skewness, kurtosis, and factor loadings, of items for each construct. The third section provides results from a statistical analysis of the measurement and structural models. The final section examines the moderating effects of internal and external barriers on the value-belief-norm (VBN) constructs through the latent moderated structural equations (LMS) method.

Respondent Characteristics

Data Screening and Respondents

A total of 369 responses were determined to represent usable data. However, a univariate normality test revealed that the samples exceeded the criteria of normality, because their skewness ranged from -3.137 to .529 and their kurtosis ranged from -1.230 to 9.476. In particular, items of environmentally responsible behavioral intention were significantly skewed. In addition, an examination of the Z-statistic for the variables revealed three cases to be outliers, with Z-scores greater than ±3.29 (Tabachnick & Fidell, 2001). A multivariate normality test using EQS multivariate sample statistics confirmed that three cases were considered to reflect exclusively non-normal characteristics. Therefore, these three cases were removed from the data set prior to data analysis.

A total of 366 responses were used for data analysis, reflecting a 61.1% usable data rate. An appropriate sample size for the SEM test was determined by the ratio of cases to the number of free parameters, with a value of at least 5:1 considered safe in terms of yielding unbiased estimates (Tanaka, 1987). Thus, a sample size of 366, with 73 parameters in the SEM model, was considered adequate with respect to statistical precision of the results. The values of Kurtosis (-1.222 to 10.117) and skewness (-3.226 to .520) in Table 4.1 indicate that the data were skewed (Bentler & Wu, 2005). Also, Mardia's coefficient (202.002) and multivariate Z-statistic (59.46) from the SEM analysis indicated a non-normality data. Therefore, an MLR estimator was used for data analysis.

Table 4.1. Results of Descriptive Analysis and CFA First and Second Order Factor Loadings

Constructs and items	λ	M	SD	SK	KU
Internal Barriers					
-My agritourism business does not have enough management and/or staff time for implementation and maintenance in an environmentally responsible way.	.770	2.53	1.143	.197 .	-.893
-My agritourism business does not have adequate technical knowledge and skills to implement environmentally responsible practices.	.827	2.20	1.046	520	-.561
-My agritourism business does not have environmental specialist staff members for implementing and maintaining environmentally responsible practices.	.608	2.87	1.374	.074	-1.222
External Barriers					
-There is lack of external assistance (e.g., consulting services) for environmentally responsible practices.	.636	2.86	1.293	-.154	-.977
-There is lack of accessible financial support for environmentally responsible practices.	.783	3.46	1.122	.089	-.676
-There is lack of promotion of environmental legislation/policies for environmentally responsible practices.	.733	3.14	1.162	-.464	-.539

Notes: M = Mean. SD = Standard Deviation; SK = Skewness; KU = Kurtosis; λ = Factor loading.

Table 4.1. (continued)

Constructs and items	λ	M	SD	SK	KU
Values					
Altruistic	***.849***				
-Social justice: correcting injustice, care for the weak.	.749	3.81	1.05	-.638	-.219
-Equality: equal opportunity for all.	.780	4.11	.958	-.854	.153
-A world at peace: free of war and conflict.	.813	4.09	1.03	-.816	-.317
Biospheric	***.957***				
-Protecting the environment: preserving nature.	.925	4.38	.788	-1.265	1.553
-Preventing pollution, conserving natural resources.	.929	4.37	.785	-1.259	1.831
-Respecting the earth: live in harmony with other species.	.795	4.29	.903	-1.144	.809
Personal Norms					
-I feel morally obliged to minimize human impact on nature-based resources within my business site.	.796	4.10	.954	-1.009	.739
-I feel a sense of personal obligation to not damage environmental structures on my business site.	.836	4.36	.762	-1.222	1.825
-I feel that it is important to reduce the harm to the environment on my business site.	.801	4.47	.731	-1.511	2.763
Environmentally Responsible Behavioral Intention					
-Conserve soil and water resources.	.841	4.53	.989	-2.876	8.818
-Conserve natural habitats and biodiversity.	.880	4.50	1.07	-2.843	8.254
-Convince visitors to behave in a way that will not harm plants and animals.	.535	4.59	1.06	-3.226	10.117
-Post environmental protection information in my business site.	.533	3.62	1.38	-1.053	.694

Notes: M = Mean. SD = Standard Deviation; SK = Skewness; KU = Kurtosis; λ = Factor loading.

Respondents' Demographic Characteristics

Table 4.2 presents the demographic profiles of the respondents, 56.3% of whom were male and 43.5% female. Approximately 56.7% of the respondents were aged between 51 and 70 years, followed by 25.4% aged between 25 and 50 years, with 18% more than 71 years old. In terms of education, 42.6% of respondents had completed a bachelor's degree, 31.4% had completed a post-graduate degree, 13.7% had some college or technical school education, and 12% held only a high school diploma. With respect to yearly earnings, 30.3% of the respondents reported an annual household income in the range of $20,000 to $59,999, 29.3% were in the range of $60,000 to $99,999, 20.4% reported incomes greater than $140,000.

Table 4.2. Sociodemographic Characteristics of Respondents

		Frequency (N)	Percentage (%)
Gender	Female	198	56.3
	Male	153	43.5
	Other	1	.3
Age	25-30 years old	9	2.5
	31-40 years old	41	11.6
	41-50 years old	40	11.3
	51-60 years old	103	29.2
	61-70 years old	97	27.5
	71 years old or older	63	18
Education	Less than high school diploma	1	.3
	High school diploma	42	12.0
	Associate degree	48	13.7
	Bachelor's degree	149	42.6
	Graduate degree	110	31.4
Household Income	Less than $20,000	9	2.9
	$20,000 to $59,999	95	30.3
	$60,000 to $99,999	92	29.3
	$100,000 to $139,999	54	17.2
	$140,000 and/or more	64	20.4

Agritourism Operators' Profile

Table 4.3 presents profiles of the responding agritourism operators. A total of 275 people reported their agritourism business profiles, with about 75% of respondents indicating that they had been in agriculture for more than 10 years, while 25% had operated for less than 10 years. Furthermore, only 54.8% had been operating their agritourism businesses for more than 10 years while 45.2% had run such businesses for less than 10 years. Among the respondents, 38.5% were located in the Midwestern region, followed by the Southern region (25.0%), the Western region (21.4%), and the Northeastern region of the U.S. (15.1%).

Respondents, in general, owned small agritourism operations, about 54% with three employees or less and 46% with more than three employees. About 46.5% of respondents regarded agritourism as a part-time activity and agritourism income as a secondary source, with only 20.7% indicating agritourism as a primary income source. With respect to their 2017 total gross sales, 33.2% reported less than $20,000, 22.0% reported between $20,000 and $79,999, 15.7% reported between $80,000 and $159,999, a similar proportion (16.3%) claimed gross sales between $160,000 and $259,000, and only a small number of respondents (12.8%) mentioned sales greater than $260,000. The most popular activities described by respondents operating agritourism businesses were youth and/or adult education programs (25.6%), recreational activities (21.7%), tourism-enhanced direct marketing (18.3%), overnight stays (15.3%), and special events and festivals (8.8%).

Table 4.3. Agritourism Operators' Profile Sociodemographic Characteristics of Respondents

		Frequency (N)	Percentage (%)
Time involved in agriculture	0-10 years	69	25.1
	11-20 years	61	22.2
	21-30 years	42	15.3
	More than 31 years	103	37.5
Time involved in agritourism	0-10 years	164	45.2
	11-20 years	106	29.2
	21-30 years	60	16.5
	More than 31 years	33	9.1
Geological location	Northeastern U.S.	55	15.1
	Midwestern U.S.	140	38.5
	Southern U.S.	91	25.0
	Western U.S.	78	21.4
Number of employees	1 person	42	15.6
	2 persons	58	21.5
	3 persons	45	16.7
	4 persons	24	8.9
	5 persons	24	8.9
	6 persons and/or more	77	28.5
Agritourism operation	Full-time with all income from agritourism	56	20.7
	Part-time, agritourism income primary and others secondary	30	11.1
	Part-time, agritourism income secondary and others primary	126	46.5
	Part-time, agritourism and others equal importance	32	11.8
	Hobby interest, agritourism income not critical	27	10.0
Total gross sales in 2017	Less than $20,000	112	33.2
	$20,000 to $79,999	74	22.0
	$80,000 to $159,999	53	15.7
	$160,000 to $259,000	55	16.3
	$260,000 and/or more	43	12.8
Agritourism activities	Overnight stays	293	15.3
	Special events and festivals	168	8.8
	Off the farm	197	10.3
	Recreational activities	415	21.7
	Tourism-enhanced direct marketing	351	18.3
	Youth and/or adult education	491	25.6

Descriptive Analysis

This study included eight constructs: internal barriers, external barriers, values, NEP, awareness of consequences, ascription of responsibility, personal norms, and environmentally responsible behavioral intention. Table 4.1 provides an overview of each variable in terms of factor loading, means, standard deviation, skewness, and kurtosis of each item for the eight constructs. The item *Convince visitors to behave in a way that will not harm plants and animals* in the environmental responsible behavioral intention construct received the highest mean score (M = 4.59, SD=1.06), while the item with lowest mean value was *My agritourism business does not have adequate technical knowledge and skills to implement environmentally responsible practices* (M = 2.20, SD=1.046) among the internal barrier construct. In particular, the item *Convince visitors to behave in a way that will not harm plants and animals* also exhibited extremely negative skewness and positive kurtosis, with -3.226 and 10.117, respectively.

Structural Equation Modeling (SEM)

Measurement Model

A measurement model was evaluated for estimating the measurement of overall model fit and assessing goodness-fit indices before identifying reliability and validity of the eight constructs. This study was based on seven first-order constructs, internal barriers, external barriers, the NEP, awareness of consequences, ascription of responsibility, personal norms, and environmentally responsible behavioral intention), and one second-order construct of values with three primary dimensions: altruistic, egoistic, and biospheric. The initial measurement model achieved a good fit to the data: $\boldsymbol{x}^2 = 736.085$, $df = 403$, $p < .001$, TLI =.921, CFI =.932 and RMSEA =.048 (CI: .042~.053). All standardized factor loadings to the corresponding constructs

were found to be significant ($p < .001$) (Table 4.1.). However, the egoistic value exhibited a low factor loading (λ=-.058), low reliability (GLB: .631; α=.606; CR=.611), and low AVE score (.350), all of which were less than the cut-offs. In particular, EFA also showed similar findings in the pilot test, indicating low reliability (GLB: .562, α = .547). Several studies have reported similar findings that egoistic value yielded overall low scores when measured with other values (e.g., altruistic and biospheric), thus the researchers excluded the egoistic value dimension in their models (Howell, 2013; López-Mosquera & Sánchez, 2012; Park et al., 2018; van Riper & Kyle, 2014). Therefore, this study decided to exclude the egoistic value dimension from its proposed model. The modified measurement model fit presents $\boldsymbol{x}^2 = 561.458$, $df = 320$, $p < .001$, TLI = .938 CFI = .947 and RMSEA = .045 (CI: .039~.052), all of which were significantly improved from the initial measurement model. Thus, this study selected this model as the final measurement model.

Reliability

Reliability was determined using Cronbach's Alpha, the greatest lower bound to reliability (GLB), and composite reliability (CR) (Nunnally, 1978; Pallant, 2010). As shown in Table 4.4, Cronbach's Alpha values of the eight constructs ranged from .758 to .882 with a cut-off of .70 (Hair et al., 2010), achieving satisfactory internal consistency reliability. In addition, the GLB values for all constructs showed good reliability, ranging from .759 to .884 (Hardt, 2015)**.** Lastly, CR values ranged from .762 to .900, exceeding the recommended threshold level of .70 (Fornell & Larcker, 1981). Therefore, the results confirmed reasonable construct reliability of the measurement model.

Construct validity

Construct validity was measured using convergent validity and discriminant validity (Fornell & Larcker, 1981). As shown in Table 4.1, the first-order constructs' factor loadings ranged from .533 to .929, values that were significant with $p < .01$ (Nunnally, 1978). For the second-order construct, values, all loadings were found to be significant ($p < .01$), ranging from .849 to .957 (Table 4.1). Table 4.4 also shows that AVEs of all constructs ranged from .518 to .818, exceeding the required minimum value of .50 (Anderson & Gerbing, 1988). The overall findings indicate satisfactory convergent validity (Hair et al., 2006).

Table 4.4. Correlations, Reliability, and Validity

	IB	EB	VA	NEP	AC	AR	PN	ERBI
IB	**.549**	.325***	-.278***	-.116*	-.175**	-.164*	-.315***	-.154*
EB	.106	**.518**	.230**	.333***	.054	.210**	.132	-.033
VA	.077	.053	**.818**	.691***	.389***	.611***	.740***	-.080***
NEP	.013	.111	.477	**.714**	.393***	.677***	.637***	.380***
AC	.031	.003	.151	.154	**.715**	.429***	.434***	.422***
AR	.027	.044	.373	.458	.184	**.580**	.701***	.288***
PN	.099	.017	.548	.406	.188	.491	**.658**	.362***
ERBI	.024	.001	.006	.144	.178	.083	.131	**.513**
GLB	.759	.763	.864	.884	.883	.800	.842	.804
α	.758	.756	.863	.879	.882	.799	.840	.770
CR	.782	.762	.900	.881	.883	.805	.852	.800

Notes: *p <.05, **p < 01, ***p < 001.

The values of AVE are bold, along the diagonal; all correlations are presented in the upper right triangle and the squared correlations are presented in the lower left triangle; GLB: the Greatest Lower Bound to Reliability (GLB); Cronbach's Alpha (α); Composite Reliability (CR); Internal Barriers (IB); External Barriers (EB); Values (VA); New Environmental Paradigm (NEP); Awareness of Consequences (AC); Ascription of Responsibility (AR); Personal Norms (PN); Environmentally Responsible Behavioral Intention (ERBI).

Discriminant validity was assessed by comparing AVEs and squared correlations of corresponding constructs (Fornell & Larcker, 1981). The AVEs of all constructs were greater than the squared correlations of corresponding constructs, which provided evidence of discriminant validity (Bagozzi & Yi, 1988). The overall results confirmed satisfactory construct validity of the measurement, permitting further analysis.

Structural Model

The structural model exhibited an acceptable fit to the data: $\boldsymbol{x}^2 = 567.961$, $df = 202$, $p < .001$, TLI = .883, CFI = .898 and RMSEA = .070 (CI: .064~.077). However, the modification indices test indicated a statistically significant direct link between the NEP and ascription of responsibility. Previous studies revealed that the NEP was a significant element related to development of a strong sense of responsibility with respect to the environment (Park et al., 2018; Sahin, 2013). Therefore, the link between the NEP and ascription of responsibility was added to the proposed model. The fit indices of the modified model revealed significant improvement, representing a good fit to the data: $\boldsymbol{x}^2 = 454.132$, $df = 201$, $p < .001$, TLI= .919, CFI = .929 and RMSEA = .059 (CI: .051~.066). Therefore, the modified model was determined as the final structural model.

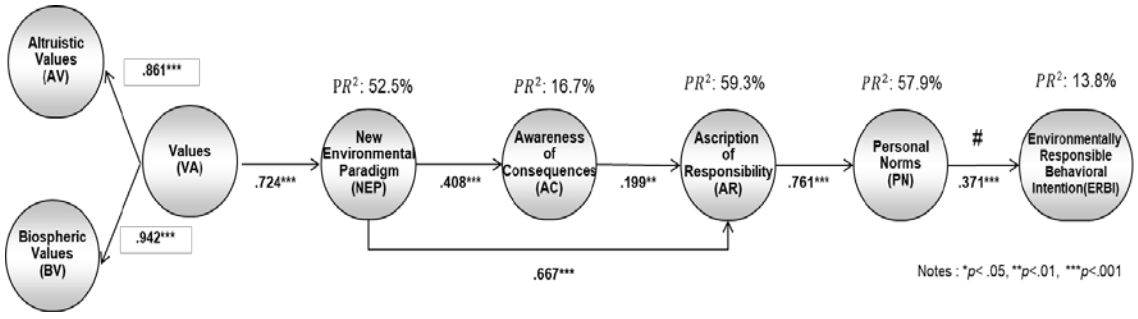

Figure 4.1. Final Model

The hypothesized relationships in the final model were examined. As shown in Figure 2, values ($r_{VA\rightarrow NEP}$= .724, p < .001) showed a significant effect on the NEP (PR^2 = *.525*), supporting H_1. In addition, there was also a significant effect of the NEP on awareness of consequences ($\beta_{NEP\rightarrow AC}$= .408, p < .001, PR^2 = .167), awareness of consequences on ascription of responsibility ($\beta_{AC\rightarrow AR}$= .199, p < .001, PR^2 = .593), ascription of responsibility on personal norms ($\beta_{AR\rightarrow PN}$ = .761, p < .001, PR^2 = .579), and personal norms on environmentally responsible behavioral intention ($\beta_{PN\rightarrow PBI}$= .371, p < .001, PR^2 = .138), supporting H_2, H_3, H_4, and H_5, respectively. The findings indicate that, within the VBN theory, all elements were significant in predicting agritourism operators' environmental behaviors through the hierarchical process. The NEP also had a significant direct impact on ascription of responsibility ($\beta_{NEP\rightarrow AR}$= .667, p <.001), which represented a new addition to the proposed model.

Latent Moderated Structural Equations (LMS)

The LMS method was conducted to investigate whether perceived barriers moderate the relationships among the VBN constructs. Perceived barriers were measured in the two perspectives of internal and external barriers, thus the moderating effect of each barrier was evaluated separately through the LMS approach.

Moderating Effect of Internal Barriers

Main effects

A baseline model without an interaction term between internal barriers and each of the VBN constructs was first analyzed to identify the model fit of the main effect model. In particular, each path between internal barriers and the VBN constructs was separately examined to estimate the main effect of internal barriers on each of the VBN constructs to avoid the multicollinearity problems in a model (Kreft & de Leeuw, 1998).

Table 4.5. Model Fit Indices for Main Effects of Internal Barriers on the VBN constructs

Main effects	Model Fit Indices
IB → NEP	$\boldsymbol{x}^2$ = 552.776, *df* = 265, *p* < .001, TLI = .920, CFI = .929 and RMSEA = .054 (CI: .048~.061)
IB → AC	$\boldsymbol{x}^2$ = 551.208, *df* = 265, *p* < .001, TLI = .920, CFI = .930 and RMSEA = .054 (CI: .048~.061)
IB → AR	$\boldsymbol{x}^2$ = 551.280, *df* = 265, *p* < .001, TLI = .920, CFI = .930 and RMSEA = .054 (CI: .048~.061)
IB → PN	$\boldsymbol{x}^2$ = 537.600, *df* = 265, *p* < .001, TLI = .924, CFI = .933 and RMSEA = .053 (CI: .047~.059)
IB → ERBI	$\boldsymbol{x}^2$ = 554.652, *df* = 265, *p* < .001, TLI = .919, CFI = .929 and RMSEA = .055 (CI: .048~.061)

Internal Barriers (IB); Values (VA); New Environmental Paradigm (NEP); Awareness of Consequences (AC); Ascription of Responsibility (AR); Personal Norms (PN); Environmentally Responsible Behavioral Intention (ERBI).

As shown in Table 4.5, the model fit indices for the main effect of internal barriers on each of the VBN constructs provided a satisfactory fit to the data. The $\boldsymbol{x}^2$ test was significant, but in general, the $\boldsymbol{x}^2$ statistic is sensitive to sample size and the number of indicators (Hair et al., 1998). Table 4.6 shows that internal barriers had a significant main effect on awareness of consequences (r = -.130, p < .05), ascribed responsibility (r = -.111, p < .05), and personal norms (r = -.224, p < .001). These findings indicate that internal barriers played a negative role in facilitating agritourism operators' environmental awareness, a sense of ascribed responsibility, and feelings of moral obligation toward the environment.

Interaction effects

Upon the satisfactory model fit of each baseline model, a nested model that included an interaction term between internal barriers and the corresponding VBN construct each was evaluated one at a time. Table 4.6 shows the results of coefficients of main and interaction effects, log-likelihood ratio, R^2(%), and effect size (f^2).

First, a significant interaction effect was found between internal barriers and values on the NEP only. The nested model yielded a log-likelihood value of -10,798.840, while the baseline model had a log-likelihood value of -10,801.187. Given the difference in degrees of freedom being one (df =1), the difference test (TRd) with the two models was 4.260, which is significantly greater than a critical value, 3.84 (Awang, 2012; Gerhard et al., 2015). The result indicates that the nested model was better fit to the data than the baseline model. The coefficient value of the interaction of internal barriers and values on the NEP was significant, but negative (β = -.207, p < .05), supporting $H_{6\text{-}1}$. Therefore, the findings partially supported H_6 that internal barriers had a significant interaction effect with values on the NEP. This finding implies that

internal barriers had a partial moderating effect on the environmental decision-making process, particularly in the impact of value on the NEP.

Table 4.6. Main and Interaction Effects of Internal Barriers on the VBN Constructs and Test Statistics for a Log-Likelihood Difference and Effect Size Tests

Interaction effects	Estimates		Log-likelihood difference			Effect size		
	M0	M1	L0	L1	TRd	$R^2 0$ (%)	$R^2 1$ (%)	f^2
IB × VA → NEP	.072	-.207*	-10801.19	-10798.84	4.260*	57.9	59.6	.042
IB × NEP → AC	-.130*	-.047	-10799.75	-10799.60	.254	7.4	7.7	.003
IB × AC → AR	-.111*	.049	-10799.69	-10799.34	.426	1.5	2.1	.006
IB × NEP → AR	-.111*	.040	-10799.69	-10799.48	.290	42.9	43.0	.002
IB × AR → PN	-.224**	.261	-10791.43	-10788.75	3.057	39.0	45.4	.117
IB × PN → ERBI	-.067	-1.305	-10801.63	-10798.64	3.436	8.7	10.1	.016

Notes: *p <.05, **p < 01.

M0: Values for Main Effect; M1: Values for Interaction Effect; L0: Log-Likelihood for Baseline Model; L1; Log-Likelihood for Nested Mode; TRd: Log-likelihood Difference; $R^2 0$ for Baseline Model; $R^2 1$ for Nested Model; f^2: effect size; Internal Barriers (IB); Values (VA); New Environmental Paradigm (NEP); Awareness of Consequences (AC); Ascription of Responsibility (AR); Personal Norms (PN); Environmentally Responsible Behavioral Intention (ERBI).

The effect size further confirmed the significant interaction effect between internal barriers and value in forming the NEP. The explained variance (R^2) in NEP increased to 59.6% in the nested model from 57.9% in the baseline model. This increased portion (ΔR^2 = 1.7%) corresponds to f^2 = .042: 59.6 % – 57.9% / 1 – 59.6%, which represents a small effect size (Cohen, 1988) or a far greater than a median effect size. Therefore, the finding describes that the nested model better predicted the NEP than the baseline model, which implies that the interaction effect between internal barriers and value was significant in influencing the NEP.

Figure 4.2 shows the relationship between the NEP and values at the high internal barriers (one standard deviation above the mean) versus low internal barriers (one standard deviation below its mean). The relationship between the two variables was statistically significant both at the high internal barriers (β =.823, $p < .001$) and at the low internal barriers (β = 1.237, $p < .001$). This indicates that the effect of values on NEP was consistently positive at both high and low levels. This finding confirms the H1 that tourists who have a high degree of values showed high NEP.

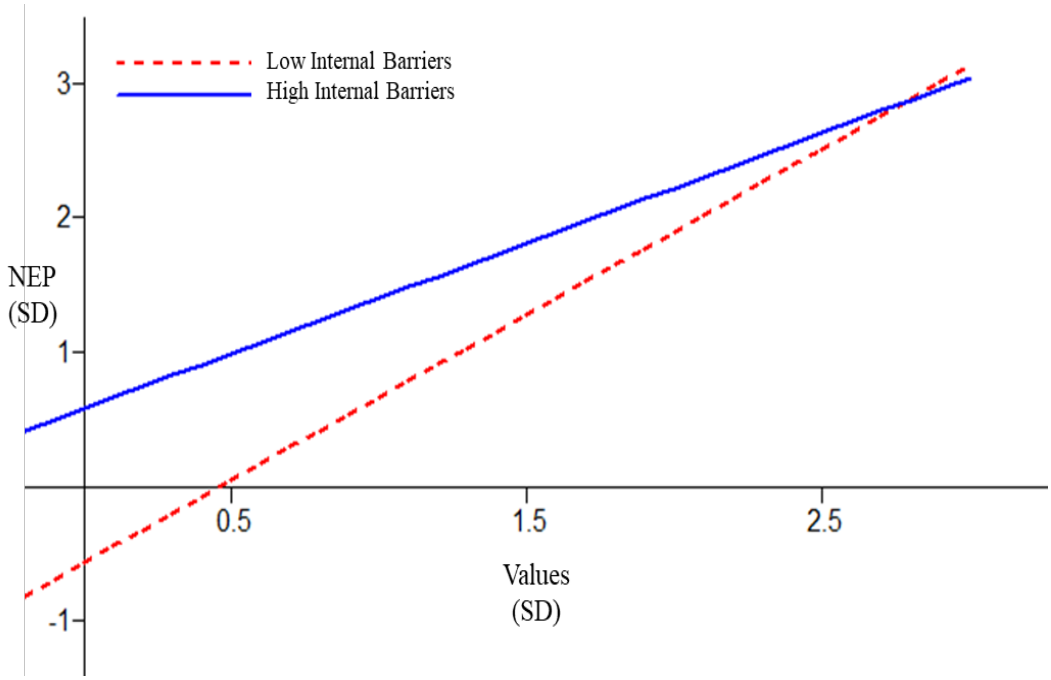

Figure 4.2. Interaction Effect of Internal Barriers on the Relation between Values (VA) and the NEP

However, the slope of the low internal barriers was steeper than that of the high internal barriers, which indicates that there was an interaction effect between internal barriers and values. The slope difference between the two implies that the effect of values on NEP at the low internal barriers is greater than that at the high barriers. In other words, as internal barriers increase, the impact of values on NEP decreases, which means that internal barriers had a negative impact on

the relationship between values and NEP. This finding supports the significant negative interaction effect (β = -.207) between values and internal barriers found in the LMS. The negative, significant interaction effect implies that when internal barriers are presented at a higher level, values have less an impact on NEP. That is, for agritourism operators who perceived high internal barriers, their value was less impactful to develop the NEP.

Moderating Effect of External Barriers

Main effects

A baseline model without an interaction term between external barriers and each of the VBN constructs was first examined to determine goodness of fit. In particular, each path between external barriers and the VBN constructs was separately created to reduce the risk of multicollinearity in the model (Kreft & de Leeuw, 1998). As shown in Table 4.7, the model fit indices for the main effect of external barriers on each of the VBN constructs displayed a satisfactory fit to the data.

Table 4.7. Model Fit Indices for Main Effects of External Barriers on the VBN constructs

Main effects	Model fit indices
EB → NEP	x^2 = 566.724, *df* = 265, *p* < .001, TLI = .916, CFI = .926 and RMSEA = .056 (CI: .049~.062).
EB → AC	x^2 = 575.204, *df* = 265, *p* < .001, TLI = .914, CFI = .924 and RMSEA = .057 (CI: .050~.063)
EB → AR	x^2 = 576.881, *df* = 265, *p* < .001, TLI = .913, CFI = .923 and RMSEA = .057 (CI: .050~.063)
EB → PN	x^2 = 576.669, *df* = 265, *p* < .001, TLI = .913, CFI = .923 and RMSEA = .057 (CI: .050~.063)
EB → ERBI	x^2 = 574.351, *df* = 265, *p* < .001, TLI = .914, CFI = .924 and RMSEA = .056 (CI: .050~.063)

External Barriers (EB); Values (VA); New Environmental Paradigm (NEP); Awareness of Consequences (AC); Ascription of Responsibility (AR); Personal Norms (PN); Environmentally Responsible Behavioral Intention (ERBI).

Interaction effects

A nested model that included an interaction term between external barriers and each corresponding VBN construct was evaluated one at a time, since each baseline model displayed a satisfactory model fit. Table 4.8 shows that there was a significant interaction effect between external barriers and personal norms on environmentally responsible behavioral intention.

Table 4.8. Main and Interaction Effects of External Barriers on the VBN Constructs and Test Statistics for a Log-Likelihood Difference and Effect Size Tests

Interaction effects	Estimates		Log-likelihood difference			R^2		
	M0	M1	L0	L1	TRd	$R^2 0$	$R^2 1$	f^2
EB × VA → NEP	.179**	-.282	-10811.63	-10808.80	4.190*	62.4	64.9	.071
EB × NEP → AC	-.093	.098	-10816.82	-10816.29	1.200	13.5	14.5	.012
EB × AC → AR	-.005	-.090	-10817.45	-10816.87	.713	8.5	10.2	.019
EB × NEP → AR	-.005	.046	-10817.45	-10816.26	.227	52.1	52.2	.002
EB × AR → PN	-.018	-.132	-10817.40	-10816.55	.980	57.1	57.9	.019
EB × PN → ERBI	-.074	.220*	-10816.72	-10814.68	5.696*	16.0	21.6	.071

Notes: *p <.05, **p < 01.

M0: Values for Main Effect; M1: Values for Interaction Effect; L0: Log-Likelihood for Baseline Model; L1; Log-Likelihood for Nested Mode; TRd: Log-likelihood Difference; $R^2 0$ for Baseline Model; $R^2 1$ for Nested Model; f^2: effect size; External Barriers (EB); Values (VA); New Environmental Paradigm (NEP); Awareness of Consequences (AC); Ascription of Responsibility (AR); Personal Norms (PN); Environmentally Responsible Behavioral Intention (ERBI).

The nested model showed a log-likelihood value of -10,816.72, whereas the baseline model yielded a value of -10,814.68 in the log-likelihood ratio. The log-likelihood difference between the two models accounted for a value of 5.696 in degrees of freedom being one (df =1), exceeding the critical values of 3.84 at p <.05 (Awang, 2012; Gerhard et al., 2015). This result indicates that the nested model for interaction effect of external barriers on environmentally responsible behavioral intention was much more superior to the baseline models. The coefficient value of the interaction term between the external barriers and personal norm (β = .220, p < .05)

was positively significant in explaining environmentally responsible behavioral intention. That is, the positive relationship between personal norms and environmental practices was stronger among agritourism operators when external barriers existed.

In addition, this study also estimated the effect size of the interaction effect of external barriers on environmentally responsible behavioral intention. The baseline model explained 16% of the variances in environmentally responsible behavioral intention, while the nested model achieved 21.6%. The increased R^2 values (ΔR^2 = 5.6%) explained in environmentally responsible behavioral intention reflected the effect size (f^2 = .071: 21.6 % – 16% / 1 – 21.6%). The value (f^2 = .071) is regarded as a small effect size based on Cogen's (1988) guideline. The finding indicates that the nested model enhanced the capability for predicting environmentally responsible behavioral intention, which implies that the moderating effect between external barriers and personal norms was significant in influencing the behavioral intention. Overall, the findings partially supported H_7 that external barriers played a moderating role in facilitating the relationship particularly between personal norms and environmental behaviors ($H_{7\text{-}5}$).

Figure 4.3 shows the relationship between personal norms and environmentally responsible behavioral intention at the high external barriers (one standard deviation above the mean) versus low external barriers (one standard deviation below its mean). The relationship between the two variables was statistically significant both at the high external barriers (β =.660, $p < .001$) and at the low external barriers (β = .220, $p < .001$). This indicates that the effect of personal norms on environmentally responsible behavioral intention was consistently positive at both high and low levels. This confirms the $H_{7\text{-}5}$ that tourists who have a high degree of personal norms exhibited high environmental behaviors. However, the slope of the high internal barriers was steeper than that of the low internal barriers, which indicates that there was a positive

interaction effect between external barriers and personal norms. The slope difference between the two implies that the effect of personal norms on environmentally responsible behaviors at the high external barriers is greater than that at the low barriers. In another word, as external barriers increase, the impact of values on NEP increases, which means that external barriers had a positive impact on the relationship between personal norms and environmentally responsible behavioral intention.

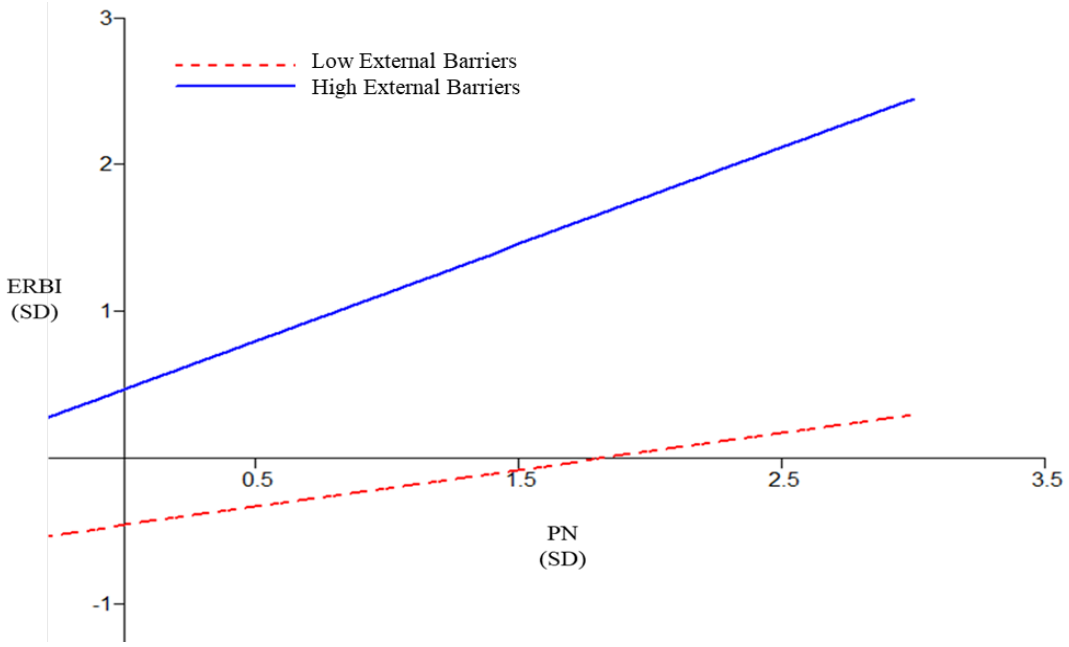

Figure 4.3. Interaction Effect of External Barriers on the Relation between Personal Norms (PN) and Environmentally Responsible Behavioral Intention (ERBI)

This finding supports the significant negative interaction effect (β = .200) between personal norms and external barriers found in the LMS. The positive, significant interaction effect implies that when external barriers are presented at a higher level, personal norms have a stronger impact on environmental behaviors. That is, for agritourism operators who perceived high external barriers, their personal norms were much more impactful in developing their environmentally responsible behaviors.

CHAPTER 5. DISCUSSION AND CONCLUSION

This chapter consists of the discussion of the results, and implications and limitations of the current study. The first section reviews study results including a summary and interpretation of the findings presented in Chapter 4. The second section discusses theoretical contributions that can enhance the literature on the agritourism operators' environmental decision-making process in tourism research. The third section addresses practical implications and suggestions for environmental practices in sustainable agritourism businesses. The last section addresses the study's limitations and makes suggestions for future research.

Review of the Study Results

This study presented a theoretical framework to investigate agritourism operators' environmental decision-making process by applying the VBN theory and examined moderating roles of internal and external barriers to the implementation of agritourism operators' environmental practices. The findings of this study support significant causal relationships in the VBN theory from past studies and further expand the scope of the research to an agritourism setting. Overall, the hypothesized model fit the data well and each variable (e.g., values, the NEP, awareness of consequences, ascribed responsibility, and personal norms) has a significant relationship in a hierarchical structure, supporting the predictability of making an environmental decision. In addition, both internal and external barriers have moderating effects on the decision-making process in agritourism businesses.

The measurement model showed that all factor loadings of constructs were statistically significant, ranging from .533 to .957. Furthermore, this current study confirmed satisfactory construct validity and internal consistency of environment-related measurement scales (e.g., perceived barriers, environmental values, moral obligation, and environmentally responsible behavioral intention) applicable to the agritourism industry. The structural model showed significant, hierarchical relationships among variables based on the hypothesized model. The findings of this study, therefore, confirm that all environment-related elements in the VBN theory were significant in predicting environmentally responsible behavioral intention in the causal process. The findings reflect that the agritourism operators' environmental decision-making process is developed as a hierarchical sequence from values (e.g., altruistic and biospheric), beliefs (e.g., NEP and awareness of consequences), and norms to environmentally responsible behaviors, which is consistent with previous studies (Chen, 2015; Han, 2015; Kiatkawsin & Han, 2017; Park et al., 2018; Stern et al., 1999).

From the overall significant relationships, this study found the VBN theory to be successful in explaining the environmental decision-making process of how agritourism operators' environmental values develop their environmental beliefs, which, in turn, creates moral obligation and eventually leads to environmentally responsible behavioral intention. The constructs of the VBN were effective in predicting agritourism operators' intention to engage in environmental behaviors. Therefore, the variables' hierarchical order in VBN theory was affirmed to predict environmentally responsible behavioral intention.

Particularly, this study identified the significant effect of the NEP in agritourism operators' environmental decision-making process. While the VBN model proposes that the NEP has only a direct impact on awareness of consequences (Chen, 2015; Stern et al., 1999; Wynveen

et al., 2015), this study further revealed that the NEP had a significant impact on ascription of responsibility (β = .664) as well as awareness of consequences (β = .408). These findings may suggest that the NEP could be a predictor of beliefs such as awareness of consequences and ascribed responsibility (Park et al., 2018). Furthermore, an interesting finding is that the NEP made the largest unique contribution to explaining agritourism operators' sense of responsibility rather than problem awareness. That is, when agritourism operators perceive general environmental concerns, agritourism operators may feel more responsibility to protect the environment. This finding is different from previous research that suggested that environmental concerns had a strongest positive influence on the ascription of responsibility (Sahin, 2013). Therefore, this study recommends that the NEP be considered one of the significant indicators for evaluating the degree of individuals' ascribed responsibility for environmental problems.

However, even though, agritourism is heavily related to environmental attractiveness, individuals may face challenges in implementing sustainable practices, contributing to the negative environmental impacts to natural resources (Buhalis & Fletcher, 1995). Contrary to studies indicating that individuals experience perceived barriers that hinder environmental practices (Chen, 2008). This study examined differences on the two perspectives of perceived barriers: internal and external. In the descriptive analysis, lack of environmental specialist staff members (M= 2.87) among the internal barriers was the most critical barriers raised within a firm to inhibit environmental management practices, whereas insufficient financial support from the external agency or government (M= 3.46) was perceived to be the strongest external barriers, a finding consistent with previous studies (Chan, 2011; Clarkson, Li, Richardson, & Vasvari, 2011). This finding reflects that these perceived barriers can be important inhibitors for agritourism operators to engage in environmental behaviors (Scanlon, 2007).

This study further investigated the moderating effects of internal and external barriers on environmental decision-making processes. It was revealed that internal barriers negatively moderated the impact of values on the NEP. In other words, the positive impact of values on the NEP is likely to be weaken due to strong internal barriers. That is, when agritourism operators greatly encounter internal barriers, such as lack of technical knowledge, resources, and ability, to implement environmentally responsible practices, their values have less influence on their environmental attitudes. This finding is supported by Valdivia and Barbieri's (2014) and Sharpley's (2002) arguments that the lack of professional skills and training are likely to bring serious obstacles to successful sustainable agritourism operations. Murillo-Luna et al. (2011) point out that internal barriers have a greater negative impact on environmentally sustainable strategies than external barriers, especially in small and medium businesses. Thus, internal barriers should be recognized to be a critical factor prohibiting agritourism operators from developing the environmental beliefs and implementing environmental practices (Blake, 1999).

On the other hand, external barriers had a significant moderating effect on increasing the impact of personal norms on environmentally responsible behavioral intention. That is, external barriers reinforced a positive relationship between personal norms and environmentally responsible behavioral intention. This finding is interesting and unexpected, because it opposes the impact of internal barriers. Still, this result describes how external barriers and personal norms interact in a positive way toward environmentally responsible behaviors. This finding is consistent with a previous study that personal norms lead to adopting green products while the barriers exist (Glem, Smith, Andrews, & Cronin, 2013). The relationship can be supported by previous empirical evidence. Wang, Chen, and Chen (2012) found that when external environmental conditions (e.g., market and technological turbulences) exist, they act as external

challenges, given the uncertainty from competitors and the customer, a factor that will reinforce the capability of employees' performance in a positive way. Also, Post and Altman (1992) claim that these external barriers can facilitate stakeholders' knowledge and behaviors to overcome the main constraints. Davison, Littleford, and Ryley (2014) revealed that perceived barriers are strongly associated with enviornment-related factors, including beliefs and norms, in a postive way. That is, the constraints can play a positive role in stimulating individuals' moral obligation (Klöckner & Ohms, 2009). In other words, personal norms play a regulating role in facilitating environmental behaviors when high external barriers are present. Thus, given conditions, such as a lack of external assistance and unclear environmental legislation/policies, agritourism operators who possess a strong sense of obligation to protect the environment will even strongly engage in environmental behaviors in order to bypass external barriers.

Theoretical Contribution

There are significant findings from this study that contribute to prior literature on sustainable agritourism in several ways. First, this study expands the literature on agritourism research by focusing on environmental sustainability. Despite the increasing environmental concerns in both agriculture and tourism, agriculture-related tourism research has rarely paid attention to the environmental impacts toward sustainable development (e.g., Hepburn, 2008; Pimentel & Pimentel, 2003). While most tourism research has investigated economic and/or social perspectives toward sustainable agritourism (e.g., McGehee, 2007), this study highlighted the importance of environmentally friendly agritourism operation from the perspective of agritourism operators that have paid little attention to sustainable agritourism development (Han, 2015; Lee, 2011; Sigala, 2008). Therefore, through the lens of agritourism operators that actually

perform environmental sustainability in an agricultural setting, this study extends agritourism development literature by incorporating environmental sustainability and enhancing our understanding of agritourism operators' environmental behaviors.

Particularly, this study used a sample of agritourism operators that provide agritourism and recreational services in the U.S. While most research has investigated agritourism operators at a state level (e.g., Damianos & Skuras, 1996; McGehee et al., 2007), this survey included agritourism operators registered in the national/regional/state-wide agritourism associations with five regions (Northeastern [15.1%], Midwestern [38.5%], Southern [25%], and western [21.4%]) of the U.S. This sample represented members of statewide agritourism associations (e.g., Kansas Agritourism and North Dakota Agritourism) and national/regional agricultural marketing service-related associations (e.g., Dude Ranchers Association of America). By selecting the agritourism operators at a national level, the sample provided demographic characteristics that match those of the population. Therefore, the design of this survey helped strengthen generalizability of the results and increased our depth of understanding on the environmentally responsible behaviors with a sample of agritourism operators as a representative agritourism population throughout the U.S.

More importantly, the present study provides new theoretical insights into understanding the niche segment from the agritourism operators' perspective by employing the VBN framework in the context of agritourism. While most research on agritourism has adopted an exploratory approach with an emphasis on the economic and social benefits of agritourism businesses (McGehee & Kim, 2004; McGehee et al., 2007), this study took a theoretical approach for enacting agritourism businesses' sustainability from the environmental perspective. This work successfully provided a theoretical framework for agritourism operators'

environmentally responsible behavioral intention based on the VBN theory (Han et al., 2015; van Riper & Kyle, 2014). Therefore, this research expands the application of the VBN theory in the body of literature by offering a theoretical perspective to examine agritourism operators' environmental decision-making.

Furthermore, this study highlights a multifunctional role of the NEP in facilitating agritourism-related environmental beliefs such as environmental concerns and responsibility. With the presence of strong relationships among the NEP, awareness of consequences, and ascribed responsibility, the findings suggest that ascribed responsibility in the VBN should be considered as the most significant direct antecedent to evaluating the degree of the NEP. Accordingly, it can be theorized that when agritourism operators are concerned about current environmental issues, they tend to become aware of negative consequences on environmentally unfriendly operations and admit the responsibility for the environmental problems (Park et al., 2018). Therefore, by exploring the additional relationship between the NEP and ascription of responsibility in the decision-making process, this study enhances our limited understanding about the importance of connection to nature and the environment in the agritourism context, especially for environmentally responsible operations.

This study has attempted to contribute to the body of knowledge regarding perceived barriers that impede environmental behaviors in the agritourism settings. The results of this study showed that agritourism operators held two different views of perceived barriers: a negative moderating effect of internal barriers in the relationship between value and the NEP, and a positive moderating effect of external barriers in the relationship between personal norms and environmentally responsible intention. This study further describes the potential machnism -- how agritourism operators make an enviornmental decision depending on the degree of

percieved barriers from the perspectives of internal and external. The literature on environmental management operations is enhanced through this empirical examination of the moderating roles of each internal and external barrier to the implementation of agritourism operators' environmental practices. Therefore, this research generates meaningful insights into predicting agritourism operators' environmental behaviors, depending on the degree of barriers, while simultaneously presenting new avenues to understanding their environmental decision-making processes in the presence of such perceived barriers.

Practical Implications

This research suggests the importance and applicability of agritourism operators' environmental practices for sustainable agritourism development. First, this study contributes to advancing the understanding of the complicated relationships in how agritourism operators make environmental decisions in the VBN model. The findings of this study show that agritourism operators were generally influenced by their perceived values, beliefs (e.g., NEP, awareness of consequences, and ascribed responsibility), and norms in a hierarchical manner to take environmental actions. It is suggested that an agritourism operator may be a potential agriculture conservationist with greater environmental values, awareness of harmful outcomes, and moral obligation as major factors for sustainable agritourism operations (Kiatkawsin & Han, 2017; Van Riper & Kyle, 2014). Therefore, farm marketing and agritourism association directors should treat agritourism operators as an important pro-environmental group and develop eco-friendly agritourism guidelines (e.g., water, soil, waste, and tourism management) for sustainable operations for the next stage, making greater efforts to assess the impacts of the environmental decisions of agritourism operators. For example, farm-related service managers encourage

agritourism operators to mitigate negative impacts on the quality of the agricultural environment by providing specific examples of sustainable tourism and eco-friendly farming practices such as natural habitat conservation, water conservation, and environmental protection area signs for tourists (Mastronardi et al., 2015).

In particular, agritourism operators with strong NEP exhibited high levels of environmental awareness and responsibility for environmental issues. Farm marketing and agritourism association directors should educate agritourism operators about the importance of being environmentally responsible using eco-friendly bulletin board designs. For example, environmental bulletin boards can be designed through diverse online (e.g., Facebook, Instagram, and Twitter) and off-line communication channels (e.g., information campaigns and signages). The social communication approaches help farm marketing and agritourism association directors translate growing environmental concerns among agritourism operators into effective environmentally responsible practices (Maibach, 1993). Moreover, farm-related service managers can inform current/potential agritourism operators about the environmental issues (e.g., water quality and climate change) caused by unsustainable agritourism operations (e.g., excessive use of natural habitats) using information campaigns to promote environmental awareness and responsibility for environmental harm. By creating agritourism-related environmental outcomes and related effects of social media and communicating effectively with others about current issues toward the environmental protection, agritourism operators may become more aware of the need for and responsibility to protect the environment.

However, this study identified perceived barriers, two dimensions, internal and external barriers, and such perceived barriers presented different views of agritourism operators' perceived barriers in the first (e.g., moderating impact of internal barriers between values and the

NEP) and last (moderating impact of external barriers between personal norms and environmental behavioral intention) stages during their environmental decision-making processes. In order to overcome the specific barriers (e.g., internal and external) of agritourism operators' sustainable operations, this study suggests that environmental sustainability is required simultaneously and a mutually reinforcing top-down and bottom-up initiatives to farm service managers and political decision-makers (Friedman, 2009).

As the most internal barriers, agritourism operators perceived the lack of professional staffs towards achieving sustainability during the operation of agritourism businesses. In order to overcome the barriers within the agritourism businesses, agritourism operators should collaborate with national/regional/state-wide agritourism association directors to eliminate technical difficulties and business challenges within the farm business and, in turn, to recheck their current management in terms of implementation of environmentally responsible practices. In particular, as the moderating role of internal barriers among the VBN constructs, this study revealed that agritourism operators were more likely to show positive values toward the appropriate environmental attitudes when they had a low level of internal barriers. It is important to help operators become more aware of negative environmental impacts (e.g., depletion of natural resources and pollution) caused by the agritourism industry (Han, 2015). In other words, farm marketing and agritourism association directors should examine means for improving agritourism operators' internal aspects related to managing resources and capabilities (e.g., lack of money and inadequate technical knowledge and skills) in the agritourism operations, which hinder them from environmental practices. At the same time, farm marketing-based associations, by working with policy-makers, should develop environmental strategies (e.g., recycling programs and media literacy) to promote operators' environmental knowledge levels and alter

their ecological preferences. These efforts may increase the perceived level of environmental beliefs for sustainable agritourism operations. Therefore, it is recommended that farm service-related managers identify the operational difficulties and obstacles within the agritourism businesses for implementation and maintenance in an environmentally responsible way.

In addition, agritourism operators perceived insufficient financial support from an external agency as the greatest external barrier for environmentally responsible practices. In order to overcome the challenges in the agritourism businesses, active support from external stakeholders, such as USCD, USDA, and agritourism associations, may help to decrease the external barriers. If properly implemented, policy makers may help support for the eco-friendly efforts through the certification, inspection (e.g., emissions audits), and investigation and develop policy relevant for sustainable businesses (e.g., incentives), which will be an effective tool to help their environmentally sustainable agritourism operations.

Moreover, this study found that, as a moderating role of external barriers, agritourism operators' sense of moral obligation was much stronger in formulating environmentally responsible behaviors, despite the high external barriers. In other words, facilitating individuals' personal norms can be a main component in the successful enhancement of environmentally responsible behavioral intention (Han et al., 2015). Therefore, farm marketing and agritourism association directors should recognize personal norms as a critical key to engaging in environmentally responsible behaviors and reinforce this understanding in agritourism operators' environmental decision formation. This study expands to overcome perceived barriers on how to help operate agritourism businesses and protect management from dangerous situations by predicting their environmental behaviors for operations and assessing operations for environmentally sustainable agritourism.

Limitations and Future Research

There are several limitations that could be suggested future research. First, this study identified agritourism operators' environmental decision-making processes through the VBN (e.g., values, beliefs, and norms) theory. While this study measured the VBN constructs at a unidimensional level, it was found that values should be considered at a multidimensional level. In the measurement model, values consisted of two dimensions of altruistic and biospheric, excluding egoistic values, because of low factor loading, reliability, and AVE scores. This finding implies that the egoistic value may be not suitable for the measurement of values with other values (e.g., altruistic and biospheric). Therefore, this suggests that future research is needed to address the issue of the value scales' dimensionality and examine if the findings are consistent with the results of the current study for validating the value measurement scale.

Second, each agritourism business has its own characteristics and features. Some agritourism businesses are focused only on u-pick operations, while others offer a wider variety of agritourism activities. By comparing the environmental decision-making process depending on the operation types of operators' agritourism operations, future research can improve the generalizability of the findings of the current study. In particular, this study examined agritourism operators' environmental decision-making based on the levels of perceived barriers from the perspectives of internal and external barriers. Perceived barriers were adapted from Hillary's (2004) study and modified to fit the agritourism context of this study. Future research should consider specific barrier scales (e.g., attitudinal, situational, and operational) from other agritourism-related research papers (e.g., Sharpley &Vass, 2006; Yang, 2012) to identify and avoid barriers by incorporating the concept of perceived barriers in the agritourism setting.

Third, the perceived barriers, internal and external barriers, had significant moderating effects on the impact of values on the NEP and personal norms on environmentally responsible behavioral intention, respectively. Future researchers may expand our understanding of agritourism operators' environmental practices by further examining the perceived barriers as playing a mediating role in the VBN theory and integrate the barriers into the theoretical framework. In addition, other constructs, such as place attachment (Lee, Busser, & Yang, 2015) and motivation toward the environment (Pelletier, Tuson, Green-Dermers, Noels, & Beaton, 1998), may also help determine how to promote environmentally responsible behavioral intention and behaviors. Identifying the relationships with new constructs and integrating them into the theoretical framework would be a meaningful extension of this study.

Fourth, environmentally responsible behavioral intention was measured with four items at a unidimensional level. In the agritourism context, agritourism operators' environmental behaviors can be divided into two categories: agriculture and tourism (Park & Lee, 2018). While the use of a four-item measure is not problematic on its own (Bollen, 1989), identifying environmentally responsible behaviors at a multidimensional level helps evaluate diverse facets of sustainable agritourism operations. Future research should aim to include more items to precisely assess the role of specific dimensions in predicting environmentally responsible behavioral intention and behaviors. For example, Bamberg and Mőser (2007) stated that there was a significant gap between behavioral intention and actual behaviors. Therefore, future research is recommended to estimate actual behaviors to test further agritourism operators' behavior changes between intention and actual behaviors, which could identify the environmental decision formation concerning how environmental attitudes and behaviors are developed (Hausman, 2000).

Furthermore, agritourism operators' environmentally responsible behaviors can differ across respondent demographic characteristics and/or their level of environmental values (Klöckner, 2013; Tarrant & Cordell, 1997). Future research is suggested to classify agritourism operators into sub-groups categorized by various factors such as values, education, and gender. If there exist differences between agritourism operators in the distinctive levels, findings will help agritourism association directors and policy makers establish which group is more influential to facilitate agritourism in more environmentally responsible ways.

Lastly, this study utilized a quantitative method to understand agritourism operators' environmental decision-making processes. Future research may further employ a qualitative research method, such as focus group interviews or an experimental design, into the study design to obtain detailed information about agritourism operators' pro-environment-related feelings, perceptions, and opinions. The mix-method research design develops a broader set of quantitative and qualitative skills and helps advance deeper theoretical understanding of agritourism operators' environmental values, beliefs, norms, and behaviors within an agritourism setting (Molina-Azorín & Font, 2016).

REFERENCES

Adriana, B. (2009). Environmental supply chain management in tourism: The case of large tour operators. *Journal of Cleaner Production, 17*(16), 1385-1392.

Aguilar-Luzón, M. C., García-Martínez, J. M. Á., Calvo-Salguero, A., & Salinas, J. M. (2012). Comparative study between the theory of planned behavior and the value–belief–norm model regarding the environment on Spanish housewives' recycling behavior. *Journal of Applied Social Psychology, 42*(11), 2797-2833.

Aguinis, H., Beaty, J. C., Boik, R. J., & Pierce, C. A. (2005). Effect size and power in assessing moderating effects of categorical variables using multiple regression: A 30-year review. *Journal of Applied Psychology, 90*, 94–107. doi:10.1037/0021-9010.90.1.94

Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions.* Thousand Oaks, CA: Sage Publications.

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*(2), 179-211.

Alexandris, K., & Carroll, B. (1997). Demographic differences in the perception of constraints on recreational sport participation: Results from a study in Greece. *Leisure Studies, 16*(2), 107-125.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*(3), 411-423.

Arbuckle, J. G., Morton, L. W., & Hobbs, J. (2013). Farmer beliefs and concerns about climate change and attitudes toward adaptation and mitigation: Evidence from Iowa. *Climatic Change, 118*(3-4), 551-563.

Asciuto, A., Franco, C. P. D., & Schimmenti, E. (2013). An exploratory study of sustainable rural tourism in Sicily. *International Journal of Business and Globalisation, 11*(2), 149-158.

Awang, Z. (2012). *Structural equation modeling using Amos graphic*. Shah Alam: UiTM Press.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science*, *16*(1), 74-94.

Bamberg, S., & Möser, G. (2007). Twenty years after Hines, Hungerford, and Tomera: A new meta-analysis of psycho-social determinants of pro-environmental behaviour. *Journal of Environmental Psychology, 27*(1), 14-25.

Bamberg, S., & Schmidt, P. (2003). Incentives, morality, or habit? Predicting students' car use for university routes with the models of Ajzen, Schwartz, and Triandis. *Environment and Behavior, 35*(2), 264-285.

Barbieri, C. (2013). Assessing the sustainability of agritourism in the US: A comparison between agritourism and other farm entrepreneurial ventures. *Journal of Sustainable Tourism, 21*(2), 252-270.

Barbieri, C., Mahoney, E., & Butler, L. (2008). Understanding the nature and extent of farm and ranch diversification in North America. *Rural Sociology, 73*(2), 205-229.

Barbieri, C., & Mshenga, P. M. (2008). The role of the firm and owner characteristics on the performance of agritourism farms. *Sociologia Ruralis, 48*(2), 166-183.

Baron, R.A., & Byrne, D. (1997). *Social psychology* (8th ed.). Boston: Allyn & Bacon.

Bentler, P. M. (1989). *EQS structural equations program manual.* Los Angeles: BMDP Statistical Software.

Bentler, P. M., & Wu, E. J. (2005). *EQS 6.1 for windows*: Encino, CA: Multivariate Software INC.

Blackstock, K. L., White, V., McCrum, G., Scott, A., & Hunter, C. (2008). Measuring responsibility: An appraisal of a Scottish National Park's sustainable tourism indicators. *Journal of Sustainable Tourism, 16*(3), 276-297.

Blackwell, B.(1992). Sick-role susceptibility. *Psychotherapy and Psychosomatics, 58*(2), 79-90.

Blake, J. (1999). Overcoming the 'value action gap' in environmental policy: Tensions between national policy and local experience. *Local Environment, 4*(3), 257-278.

Bollen, K. A. (1989). A new incremental fit index for general structural equation models. *Sociological Methods & Research, 17*(3), 303-316.

Bowler, I., Clark, G., Crockett, A., Ilbery, B., & Shaw, A. (1996). The development of alternative farm enterprises: A study of family labour farms in the Northern Pennines of England. *Journal of Rural Studies, 12*(3), 285-295.

Bramwe, B., & Lane, B. (1993). Sustainable tourism: An evolving global approach. *Journal of Sustaianble Tourism, 1*(1), 1-5.

Britt, T. W., Bennett, E. A., Crabtree, M., Haugh, C., Oliver, K., McFadden, A., & Pury, C. L. (2011). The theory of planned behavior and reserve component veteran treatment seeking. *Military Psychology, 23*(1), 82-96.

Brown, D. M., & Reeder, R. J. (2007). *Farm-based recreation: A statistical profile*. Retrieved from https://www.uvm.edu/~snrvtdc/publications/ERR53.pdf

Brumfield, R. G., & Mafoua, E. K. (2002) *Agric tourism as income based risk management strategy for greenhouse and nursery producers*. Retrieved from http://www.linkbc.ca/torc/downs1/agritour. pdf?PHPSESSID=dfb8c15b25bcbfb9345baa5d0781d05f.

Buhalis, D., & Fletcher, J. (1995). Environmental impacts on tourism destinations: An economic analysis. In H. Coccosis, & P. Nijkamp, *Sustainable Tourism Development* (pp. 3-24). England: Avebury.

Byrne, B. M. (2006). *Structural equation modeling with AMOS: Basic concepts, applications, and programming*. New York, NY: Routledge.

Carlsen, J., Getz, D., & Ali-Knight, J. (2001). The environmental attitudes and practices of family businesses in the rural tourism and hospitality sectors. *Journal of Sustainable Tourism, 9*(4), 281-297.

Castellani, V., & Sala, S. (2010). Sustainable performance index for tourism policy development. *Tourism Management, 31*(6), 871-880.

Chan, E. S. W. (2008). Barriers to EMS in the hotel industry. *International Journal of Hospitality Management, 27*(2), 187-196.

Chan, E. S. W. (2011). Implementing environmental management systems in small-and medium-sized hotels: obstacles. *Journal of Hospitality& Tourism Research, 35*(1), 3-23.

Chen, M. F. (2015). An examination of the value-belief-norm theory model in predicting pro-environmental behaviour in Taiwan. *Asian Journal of Social Psychology, 18*(2), 145-151.

Chen, J. S., & Hsu, C. H. C. (2001). Developing and validating a riverboat gaming impact scale. *Annals of Tourism Research, 28,* 459–476.doi: 10.1016/S0160-7383(00)00059-1

Chen, M. F., & Tung, P. J. (2014). Developing an extended theory of planned behavior model to predict consumers' intention to visit green hotels. *International Journal of Hospitality Management, 36*, 221-230. doi: 10.1016/j.ijhm.2013.09.006

Child, D. (2006). *The essentials of factor analysis.* (3rd ed.). New York, NY: Continuum International Publishing Group.

Choo, H., & Jamal, T. (2009). Tourism on organic farms in South Korea: A new form of ecotourism. *Journal of Sustainable Tourism, 17*(4), 431-454.

Choi, H. S. C., & Sirakaya, E. (2005). Measuring residents' attitude toward sustainable tourism: Development of sustainable tourism attitude scale. *Journal of Travel Research, 43*(4), 380-394.

Clarkson, P. M., Li, Y., Richardson, G. D., & Vasvari, F. P. (2011). Does it really pay to be green? Determinants and consequences of proactive environmental strategies. *Journal of Accounting and Public Policy, 30*(2), 122-144.

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences*. Hillsdale, NJ: Erlbaum.

Colton, J. W., & Bissix, G. (2005). Developing agritourism in Nova Scotia: Issues and challenges. *Journal of Sustainable Agriculture, 27*(1), 91-112.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297-334.

Dahlmann, F., Brammer, S., & Millington, A. (2008). Barriers to proactive environmental management in the United Kingdom: Implications for business and public policy. *Journal of General Management, 33*(3), 1-20.

Damianos, D., & Skuras, D. (1996). Farm business and the development of alternative farm enterprises: an empirical analysis in Greece. *Journal of Rural Studies, 12*(3), 273-283.

Das, B. R., & Rainey, D. V. (2010). Agritourism in the Arkansas delta byways: Assessing the economic impacts. *International Journal of Tourism Research, 12*(3), 265-280.

Davison, L., Littleford, C., & Ryley, T. (2014). Air travel attitudes and behaviours: The development of environment-based segments. *Journal of Air Transport Management, 36*, 13-22. doi: /10.1016/j.jairtraman.2013.12.007

Dawson**,** J. F. **(**2014). Moderation in management research: What, why, when, and how. *Journal of Business and Psychology, 29*(1), 1–19.

Dawson, J., Stewart, E. J., Lemelin, H., & Scott, D. (2010). The carbon cost of polar bear viewing tourism in Churchill, Canada. *Journal of Sustainable Tourism, 18*(3), 319-336.

De Groot, J. I., & Steg, L. (2008). Value orientations to explain beliefs related to environmental significant behavior: How to measure egoistic, altruistic, and biospheric value orientations. *Environment and Behavior, 40*(3), 330-354.

De Groot, J. I., & Steg, L. (2009). Morality and prosocial behavior: The role of awareness, responsibility, and norms in the norm activation model. *The Journal of Social Psychology, 149*(4), 425-449.

De Groot, J. I. M., Steg, L., & Dicke, M. (2007). *Morality and reducing car use: Testing the norm activation model of prosocial behavior.* In F. Columbus (Ed.), Transportationresearch Trends. New York, NY: NOVA Publishers.

De Ruyter, K., & Wetzels, M. (2000). Customer equity considerations in service recovery: A cross-industry perspective. *International Journal of Service Industry Management, 11*(1), 91-108.

Dellis, A. E., Keeley Jr, F. X., Manolas, V., & Skolarikos, A. A. (2014). Role of α-blockers in the treatment of stent-related symptoms: A prospective randomized control study. *Urology, 83*(1), 56-62.

Dibrell, C., Craig, J., & Hansen, E. (2011). Natural environment, market orientation, and firm innovativeness: An organizational life cycle perspective. *Journal of Small Business Management, 49*(3), 467-489.

Diekmann, A., & Preisendörfer, P. (1998). Environmental behavior: Discrepancies between aspirations and reality. *Rationality and Society, 10*(1), 79-102.

Dummett, K. (2006). Drivers for corporate environmental responsibility (CER). *Environment, Development and Sustainability, 8*(3), 375-389.

Dunlap, R. E., & Van Liere, K. D. (1978). The "new environmental paradigm". *The Journal of Environmental Education, 9*(4), 10-19.

Dunlap, R. E., Van Liere, K. D., Mertig, A. G., & Jones, R. E. (2000). New trends in measuring environmental attitudes: measuring endorsement of the new ecological paradigm: a revised NEP scale. *Journal of Social Issues, 56*(3), 425-442.

Ebreo, A., Vining, J., & Cristancho, S. (2003). Responsibility for environmental problems and the consequences of waste reduction: A test of the norm-activation model. *Journal of Environmental Systems, 29*(3), 219-244.

Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Method, 12*, 1-22. doi: 10.1037/1082-989X.12.1.1

Erdogan, N., & Baris, E. (2007). Environmental protection programs and conservation practices of hotels in Ankara, Turkey. *Tourism Management, 28*(2), 604-614.

Eriksson, L., Nordlund, A. M., & Garvill, J. (2010). Expected car use reduction in response to structural travel demand management measures. *Transportation Research Part F: Traffic Psychology and Behaviour, 13*(5), 329-342.

Ernst, G., Zimmermann, S., Christie, P., & Frey, B. (2008). Mercury, cadmium and lead concentrations in different ecophysiological groups of earthworms in forest soils. *Environmental Pollution, 156*(3), 1304-1313.

Evans, N. J., & Ilbery, B. W. (1989). A conceptual framework for investigating farm-based accommodation and tourism in Britain. *Journal of Rural Studies, 5*(3), 257-266.

Evans, N. J., & Ilbery, B. W. (1992). Farm-based accommodation and the restructuring of agriculture: evidence from three English counties. *Journal of Rural Studies, 8*(1), 85-96.

Gaskill, L. R., van Auken, H. E., & Manning, R. A. (1993). A factor analytic study of the perceived causes of small business failure. *Journal of Small Business Management, 31*(4), 18-31.

Gerhard, C., Klein, A. G., Schermelleh-Engel, K., Moosbrugger, H., G¨ade, J., & Brandt, H. (2015). On the performance of likelihood-based difference tests in nonlinear structural equation models. *Structural Equation Modeling, 22*, 276-287. doi: 10.1080/10705511.2014.935752

Goodchild, E. (1998). *The business benefit of EMS approaches* (Doctoral dissertation). Retrieved from ProQuest Dissertations & Theses (PQDT).

Howell, R. A. (2013). It's not (just) "the environment, stupid!" values, motivations, and routes to engagement of people adopting lower-carbon lifestyles. *Global Environmental Change, 23*(1), 281-290.

Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods, 4*(3), 272-299.

Fan, W., & Yan, Z. (2010). Factors affecting response rates of the web survey: A systematic review. *Computers in Human Behavior, 26*(2), 132-139.

Feather, P., & Amacher, G. (1994). Role of Information in the adoption of best management practices for water quality improvement. *Agricultural Economics, 11*, 159-170. doi: 10.1016/0169-5150(94)00013-1

Fennell, D. A. (2001). A content analysis of ecotourism definitions. *Current Issues in Tourism, 4*(5), 403-421.

Fennell, D. A., & Weaver, D. B. (1997). Vacation farms and ecotourism in Saskatchewan, Canada. *Journal of Rural Studies, 13*(4), 467-475.

Ferreira, R. R., & Gustafson, C. M. (2014). Memberships levels in US private clubs during the 2008–2010 economic downturn. *International Journal of Hospitality & Tourism Administration, 15*(1), 38-59.

Fleischer, A., & Tchetchik, A. (2005). Does rural tourism benefit from agriculture? *Tourism Management, 26*(4), 493-501.

Fornell, C., & Larcker, D. F. (1981). S*tructural equation models with unobservable variables and measurement error: Algebra and statistics.* CA: Sage Publications.

Frideman, T. L. (2009). *Hot, flat, and crowded: Why we need a green revolution and how it can renew America.* New York: Picador/FARRAR, Straus, and Giroux.

Gärling, T., Fujii, S., Gärling, A., & Jakobsson, C. (2003). Moderating effects of social value orientation on determinants of proenvironmental behavior intention. *Journal of Environmental Psychology, 23*(1), 1-9.

Geisler, W. S. (2008). Visual perception and the statistical properties of natural scenes. *Annual Review of Psycholog, 59,* 167-192. doi: 10.1146/annurev.psych.58.110405.085632

George, H. A., Getz, C. M., Hardesty, S. D., & Rilla, E. (2011). California agri-tourism operations an dheir economic potential are growing. *California Agriculure, 65*(2), 57-65.

Gerbing, D. W., & Anderson, J. C. (1992). Monte Carlo evaluations of goodness of fit indices for structural equation models. *Sociological Methods & Research, 21*(2), 132-160.

Getz, D., & Carlsen, J. (2000). Characteristics and goals of family and owner-operated businesses in the rural tourism and hospitality sectors. *Tourism Management, 21*(6), 547-560.

Ghai, D., & Vivian, J. M. (2014). *Grassroots environmental action: people's participation in sustainable development*. New York, NY: Routledge.

Gleim, M. R., Smith, J., Andrews, D., & Cronin Jr. J. J. (2013). Against the green: A multi-method examination of the barriers to green consumption. *Journal of Retailing 89*(1), 44–61.

González-Benito, J., & González-Benito, Ó. (2005). Environmental proactivity and business performance: an empirical analysis. *Omega, 33*(1), 1-15.

Goodland, R. (1995). The concept of environmental sustainability. *Annual Review of Ecology and systematics, 26*(1), 1-24.

Gosling, E., & Williams, K. J. (2010). Connectedness to nature, place attachment and conservation behaviour: Testing connectedness theory among farmers. *Journal of Environmental Psychology, 30*(3), 298-304.

Gössling, S., Hall, C. M.,& Weaver, D. B. (2009). *Sustainable Tourism Futures: Perspectives on Systems, Restructuring and Innovations.* New York, NY: Routledge.

Green, S. B., & Yang**,** Y. (2009). Reliability of summed item scores using structural equation modeling: An alternative to coefficient alpha. *Psychometrika, 74*(1), 155-167.

Hair, J. F., Anderson, R. E., Babin, B. J., & Black, W. C. (2010). *Multivariate data analysis: A global perspective* (Vol. 7). In: Upper Saddle River, NJ: Pearson.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). *Multivariate data analysis.* Uppersaddle River. In: NJ: Pearson Prentice Hall.

Han, H. (2015). Travelers' pro-environmental behavior in a green lodging context: Converging value-belief-norm theory and the theory of planned behavior. *Tourism Management, 47,* 164-177. doi: 10.1016/j.tourman.2014.09.014

Han, H., Back, K. J., & Barrett, B. (2009). Influencing factors on restaurant customers' revisit intention: The roles of emotions and switching barriers. *International Journal of Hospitality Management, 28*(4), 563-572.

Han, H., Hwang, J., Kim, J., & Jung, H. (2015). Guests' pro-environmental decision-making process: Broadening the norm activation framework in a lodging context. *International Journal of Hospitality Management, 47,* 96-107. doi: /10.1016/j.ijhm.2015.03.013

Han, H., Kim, W., & Hyun, S. S. (2011). Switching intention model development: Role of service performances, customer satisfaction, and switching barriers in the hotel industry. *International Journal of Hospitality Management, 30*(3), 619-629.

Hardy, A., Beeton, R. J., & Pearson, L. (2002). Sustainable tourism: An overview of the concept and its position in relation to conceptualisations of tourism. *Journal of Sustainable Tourism, 10*(6), 475-496.

Harland, P., Staats, H., & Wilke, H. A. (2007). Situational and personality factors as direct or personal norm mediated predictors of pro-environmental behavior: Questions derived from norm-activation theory. *Basic and Applied Social Psychology, 29*(4), 323-334.

Hausman, A. (2000). A multi-method investigation of consumer motivations in impulse buying behavior. *Journal of Consumer Marketing, 17*(5), 403-426.

Hegarty, C., & Przezbórska, L. (2005). Rural and agri-tourism as a tool for reorganizing rural areas in old and new member states – A comparison study of Ireland and Poland. *International Journal of Tourism Research, 7*(2), 63–77.

Helasoja, V., Prättälä, R., Dregval, L., Pudule, I., & Kasmel, A. (2002). Late response and item nonresponse in the Finbalt Health Monitor Survey. *The European Journal of Public Health, 12*(2), 117-123.

Hepburn, E. (2008). The Rise and Fall of a 'Europe of the Regions'. *Regional & Federal Studies, 18*(5), 537-555.

Hillary, R. (2004). Environmental management systems and the smaller enterprise. *Journal of Cleaner Production, 12*(6), 561-569.

Hunecke, M., Blöbaum, A., Matthies, E., & Höger, R. (2001). Responsibility and environment: Ecological norm orientation and external factors in the domain of travel mode choice behavior. *Environment and Behavior, 33*(6), 830-852.

Hunter, C. (1997). Sustainable tourism as an adaptive paradigm. *Annals of Tourism Research, 24*(4), 850-867.

Imran, S., Alam, K., & Beaumont, N. (2014). Environmental orientations and environmental behaviour: Perceptions of protected area tourism stakeholders. *Tourism Management, 40*, 290-299. doi: 10.1016/j.tourman.2013.07.003

Iorio, M., & Corsale, A. (2010). Rural tourism and livelihood strategies in Romania. *Journal of Rural studies, 26*(2), 152-162.

Jackson, E. H., & Agunwamba, C. C. (1977). Lower bounds for the reliability of the total score on a test composed of nonhomogeneous items: I: Algebraic lower bounds. *Psychometrika, 42*(4), 567-578.

Jensen, K., Lindborg, C., English, B., & Menard, J. (2006). *Visitors to Tennessee agritourism attractions: Demographics, preferences, expenditures, & projected economic impacts*. Report to Tennessee Department of Agriculture, Nashville, TN. Retrived from http://web.utk.edu/~aimag/pubs/research%20report%20visitors%20surveys3.pdf

Johansson, M., Rahm, J., & Gyllin, M. (2013). Landowners' participation in biodiversity conservation examined through the Value-Belief-Norm theory. *Landscape Research, 38*(3), 295-311.

Juana, J. S., Kahaka, Z., & Okurut, F. N. (2013). Farmers' perceptions and adaptations to climate change in sub-Sahara Africa: A synthesis of empirical studies and implications for public policy in African agriculture. *Journal of Agricultural Science, 5*(4), 121-135.

Juvan, E., & Dolnicar, S. (2014). The attitude–behaviour gap in sustainable tourism. *Annals of Tourism Research, 48*, 76-95. doi: 10.1016/j.annals.2014.05.012

Kaiser, F. G., & Schultz, P. W. (2009). The Attitude–Behavior Relationship: A Test of Three Models of the Moderating Role of Behavioral Difficulty. *Journal of Applied Social Psychology, 39*(1), 186-207.

Karassin, O., & Bar-Haim, A. (2016). Multilevel corporate environmental responsibility. *Journal of Environmental Management, 183*, 110-120. doi: 10.1016/j.jenvman.2016.08.051

Kay, T., & Jackson, G. (1991). Leisure despite constraint: The impact of leisure constraints on leisure participation. *Journal of Leisure Research, 23*(4), 301-313.

Komar, S. (2008). New Jersey agritourism survey: highlands region. Retrieved from: http://www.sussex.nj.us/Cit-e-Access/news/?TID=7&NID=10907

Kiatkawsin, K., & Han, H. (2017). Young travelers' intention to behave pro-environmentally: Merging the value-belief-norm theory and the expectancy theory. *Tourism Management, 59*, 76-88. doi: 10.1016/j.tourman.2016.06.018

Klein, A., & Moosbrugger, H. (2000). Maximum Likelihood Estimation of Latent Interaction Effects with the LMS Method. *Psychometrika, 65*(4), 457-474.

Kline, R. B. (2005). Principles and practice of structural equation modeling (2nd ed.). New York, NY: The Guilford Press.

Klöckner, C. A. (2013). A comprehensive model of the psychology of environmental behaviour—A meta-analysis. *Global Environmental Change, 23*(5), 1028-1038.

Klöckner**,** C., & Ohms, S. (2009)**.** The importance of personal norms for purchasing organic milk, *British Food Journal, 111*, 1173-1187. doi: 10.1108/00070700911001013

Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior?. *Environmental Education Research, 8*(3), 239-260.

Kreft, I., & deLeeuw, J. (1998). *Introduction to multilevel modelling*. CA: Sage Publications.

Kuo, N.W., & Chiu, Y. T. (2006). The assessment of agritourism policy based on SEA combination with HIA. *Land Use Policy, 23*(4), 560-570.

Lane, B. (1994). Sustainable rural tourism strategies: A tool for development and conservation. *Journal of Sustainable Tourism, 2*(1-2), 102-111.

LaPan, C., & Barbieri, C. (2014). The role of agritourism in heritage preservation. *Current Issues in Tourism, 17*(8), 666-673.

Lee, H. Y., Bonn, M. A., Reid, E. L., & Kim, W. G. (2017). Differences in tourist ethical judgment and responsible tourism intention: An ethical scenario approach. *Tourism Management, 60*, 298-307. doi: 10.1016/j.tourman.2016.12.003

Lee, K. (2011). The role of media exposure, social exposure and biospheric value orientation in the environmental attitude-intention-behavior model in adolescents. *Journal of Environmental Psychology, 31*(4), 301-308.

Lee, S. J., Busser, J., & Yang, J. (2015). Exploring the dimensional relationships among image formation agents, destination Image, and place attachment from the perspectives of pop star fans. *Journal of Travel & Tourism Marketing, 32*(6), 730-746.

Lee, T. H., Jan, F. H., & Yang, C. C. (2013). Conceptualizing and measuring environmentally responsible behaviors from the perspective of community-based tourists. *Tourism Management, 36*, 454-468. doi: 10.1016/j.tourman.2012.09.012

Lee, W. H., & Moscardo, G. (2005). Understanding the impact of ecotourism resort experiences on tourists' environmental attitudes and behavioural intention. *Journal of sustainable Tourism, 13*(6), 546-565.

Leeds, R., & Barrett, E. (2004). *Agritourism: Cultivating a trend.* Paper presented at the Ohio State University Extension-South Centers & Hocking Hills Tourism Association (Chairs). A conference connecting tourism and agriculture. Symposium conducted at the meeting of advancing community tourism, Logan, OH.

Lin, T. C., & Huang, C. C. (2008). Understanding knowledge management system usage antecedents: An integration of social cognitive theory and task technology fit. *Information & Management, 4*5(6), 410-417.

Lindner, J. R., Murphy, T. H., & Briers, G. E. (2001). Handling nonresponse in social science research. *Journal of Agricultural Education, 42*(4), 43-53.

López-Mosquera, N., & Sánchez, M. (2012). Theory of planned behavior and the value-belief-norm theory explaining willingness to pay for a suburban park. *Journal of Environmental Management, 113*, 251-262.

Lorenzoni, I., Nicholson-Cole, S., & Whitmarsh, L. (2007). Barriers perceived to engaging with climate change among the UK public and their policy implications. *Global Environmental Change, 17*(3-4), 445-459.

Luo, Y., & Deng, J. (2008). The New Environmental Paradigm and nature-based tourism motivation. *Journal of Travel Research, 46*(4), 392-402.

Lynne, G. D., Shonkwiler, J. S. & Rola, L. R. (1988). Attitudes and farmer conservation behavior. *Economic, 70*, 12-19. doi:10.2307/1241971

Maibach**,** E**. (**1993**).** Social marketing for the environment**:** Using information campaigns to promote environmental awareness and behavior change. *Health Promotion International, 8*(3), 209-224.

Manolas, E. (2014). Promoting pro-environmental behavior: Overcoming barrier***s***. *Aegean Journal of Environmental Sciences, 1*, 13–21.

Maslowsky, J., Jager, J., & Hemken, D. (2015). Estimating and interpreting latent variable interactions: A tutorial for applying the latent moderated structural equations method. *International Journal of Behavioral Development, 39*(1), 87–96.

Massoud, M. A., Fayad, R., EI-Fadel, M., & Kamleh, R. (2010). Drivers, barriers and incentives to implementing environmental management systems in the food industry: A case of Lebanon. *Journal of Cleaner Production, 18*(3), 200-209.

Mastronardi, L., Giaccio, V., Giannelli, A., & Scardera, A. (2015). Is agritourism eco-friendly? A comparison between agritourisms and other farms in Italy using farm accountancy data network dataset. *SpringerPlus, 4*(1), 1-12.

Mayer, F. S., & Frantz, C. M. (2004). The connectedness to nature scale: A measure of individuals' feeling in community with nature. *Journal of Environmental Psychology, 24*(4), 503-515.

McGehee, N. G., Kim, K., & Jennings, G. R. (2007). Gender and motivation for agritourism entrepreneurship. *Tourism Management, 28*, 280–289. doi: 10.1016/j.tourman.2005.12.022

McGehee, N. G., & Kim, K. (2004). Motivation for agri-tourism entrepreneurship. *Journal of Travel Research, 43*(2), 161-170.

McGehee, N. G., Kim, K., & Jennings, G. R. (2007). Gender and motivation for agri-tourism entrepreneurship. *Tourism Management, 28*(1), 280-289.

Middleton, V. T., & Hawkins, R. (1998). *Sustainable tourism: A marketing perspective*. New York, NY: Routledge.

Mihalic, T. (2016). Sustainable-responsible tourism discourse: Towards 'responsustable' tourism. *Journal of Cleaner Production, 111*, 461-470. doi: 10.1016/j.jclepro.2014.12.062

Moeller, T., Dolnicar, S., & Leisch, F. (2011). The sustainability–profitability trade-off in tourism: Can it be overcome? *Journal of Sustainable Tourism, 19*(2), 155-169.

Moghimehfar, F., & Halpenny, E. A. (2016). How do people negotiate through their constraints to engage in pro-environmental behavior? A study of front-country campers in Alberta, Canada. *Tourism Management, 57*, 362-372. doi: 10.1016/j.tourman.2016.07.001

Molina-Azorín, J. F., & Font, X. (2016). Mixed methods in sustainable tourism research: an analysis of prevalence, designs and application in JOST (2005-2014). *Journal of Sustaianble Tourism, 24*, 549-573. doi: 10.1080/09669582.2015.1073739

Molnar, J. J., Fazio, R. A., Sydnor, E., & Lowe, M. J. (2009). Barriers to adoption of sustainable agriculture practices: Change agent perspectives. *Renewable Agriculture and Food Systems, 24*(1), 60-71.

Moore, S. A., Smith, A. J., & Newsome, D. N. (2003). Environmental performance reporting for natural area tourism: Contributions by visitor impact management frameworks and their indicators. *Journal of Sustainable Tourism, 11*(4), 348-375.

Moradhaseli, S., Ataei, P., & Norouzi, A. (2017). Analysis of students' environmental behavior in the Agriculture College of Tarbiat Modares University, Iran (application of Planned Behavior Theory). *Journal of Human Behavior in the Social Environment, 27*(7), 733-742.

Moser, C. A., & Kalton, G. (1996). *Survey methods in social investgation.* Londo: Gower.

Murillo-Luna, J. L., Garcés-Ayerbe, C., & Rivera-Torres, P. (2011). Barriers to the adoption of proactive environmental strategies. *Journal of Cleaner Production, 19*(13), 1417-1425.

Muthén, L. K., & Muthén, B. O. (1998-2010). *Mplus user's guide.* Sixth Edition. Los Angeles, CA.

Muthén & Muthén.Mzoughi, N. (2011). Farmers adoption of integrated crop protection and organic farming: Do moral and social concerns matter? *Ecological Economics, 70*(8), 1536-1545.

Neuman, W. L. (2003). *Social research methods-qualitative and quantitative approaches.* Boston: Pearson Education Inc.

Newman, E., & Penrose, R. (1962). An approach to gravitational radiation by a method of spin coefficients. *Journal of Mathematical Physics, 3*(3), 566-578.

Nickerson, N. P., Black, R. J., & McCool, S. F. (2001). Agritourism: Motivations behind farm/ranch business diversification. *Journal of Travel Research, 40*(1), 19-26.

Norby, M. S., & Retallick, M. S. (2012). Iowa consumer motivations and preferences for agritourism activities. *Retrieved from https://joe.org/joe/2012october/a8.php*

Nordlund, A. M., & Garvill, J. (2003). Effects of values, problem awareness, and personal norm on willingness to reduce personal car use. *Journal of Environmental Psychology, 23*(4), 339-347.

Nunnally, J. (1978). *Psychometric methods.* New York: McGraw-Hill.

Onwezen, M. C., Antonides, G., & Bartels, J. (2013). The norm activation model: An exploration of the functions of anticipated pride and guilt in pro-environmental behaviour. *Journal of Economic Psychology, 39,* 141-153. doi: 10.1016/j.joep.2013.07.005

Ou, F., & Shih, A. (2002, March). *A framework for ecotourism and agritourism development*. Paper presented at the IUCN/WCPA-EA-4 Taipei Conference, Taipei, Taiwan.

Pallant, J., (2010). *SPSS survival manual A step by step guide to data analysis using the SPSS program.* McGraw Hill, New York.

Park, D. B., & Yoon, Y. S. (2009). Segmentation by motivation in rural tourism: A Korean case study. *Tourism Management, 30*(1), 99-108.

Park, E., & Lee, S. J. (2018). Developing and measuring agritourism business providers' enviornmentally responsible behaviors. 23rd Annual Graduate Education & Graduate Student Research Conference in Hospitality and Tourism. Fort Worth, TX. January 3-5.

Park, E., Lee, S., Lee, C.K., Kim, J. S., & Kim, N.J. (2018). An integrated model of travelers' pro-environmental decision-making process: The role of the New Environmental Paradigm. *Asia Pacific Journal of Tourism Research, 23*(10), 935-948.

Pegas, F. D., Ollenburg, C., & Tynon, J. F. (2013). Cattle Ranchers and agritourism in Oregon, USA: motivations, challenges and opportunities from the landowner's perspective. *Tourism Recreation Research, 38*(1), 43-54.

Pelletier, L. G., Tuson, K. M., Green-Demers, I., Noels, K., & Beaton, A. M. (1998). Why are you doing things for the environment? The motivation toward the environment scale (mtes) 1. *Journal of Applied Social Psychology, 28*(5), 437-468.

Peterson, R. A., & Kim, Y. (2013). On the relationship between coefficient alpha and composite reliabilit**y**. *Journal of Applied Psychology, 98*(1), 194–198.

Phillip, S., Hunter, C., & Blackstock, K. (2010). A typology for defining agritourism. *Tourism Management, 31*(6), 754-758.

Pilar, L., Pokorná, J., Balcarová, T., & Hron, J. (2012). Factors determining the entry of agricultural farms into agritourism. *AGRIS on-line Papers in Economics and Informatics, 4*(4), 59-66.

Pimentel, D., & Pimentel, M. (2003). Sustainability of meat-based and plant-based diets and the environment. *The American Journal of Clinical Nutrition, 78*(3), 660-663.

Post, J. E., & Altman, B. W. (1992). Models of corporate greening: How corporate s
ocial policy and organizational learning inform leading-edge environmental management. *Research in Corporate Social Performance and Policy, 3*, 3-29.

Preacher, K. J., Zhang**,** Z., Zyphur, M. J. **(**2016**)**. Multilevel structural equation models for assessing moderation within and across levels of analysis. *Psychological methods, 21*(2), 189–205.

Raymond, C. M., Brown, G., & Robinson, G. (2011). The influence of place attachment, and mor al and normative concerns on the conservation of native vegetation: A test of two behavio ural models. *Journal of Environmental Psychology, 31*(4), 323-335.

Raykov, T. (1997). Scale reliability, Cronbach's coefficient alpha, and violations of essential tau-equivalence with fixed congeneric components. *Multivariate Behavioral Research, 32*(4), 329-353.

Raykov, T. (1998). Coefficient alpha and composite reliability with interrelated nonhomogeneous items. *Applied Psychological Measurement, 22*(4), 375-385.

Repetto, R. (1986). Soil loss and population pressure on Java. *Ambio*, 15(1). 14-18.

Revelle, W., & Zinbarg, R. E. (2009). Coefficients alpha, beta, omega and the glb: comments on Sijtsma. *Psychometrika, 74*, 145-154. doi.org/10.1007/s11336-008-9102-z

Rilla, E., Hardesty, S., Getz, C., & George, H. (2011). California agritourism operations and their economic potential are growing. *California Agriculture, 65*(2), 57-65.

Sahin, E. (2013). Predictors of Turkish elementary teacher candidates' energy conservation behaviors: An approach on value-belief-norm theory. *International Journal of Environmental and Science Education, 8*(2), 269-283.

Salkind, N. J. (2010). *Encyclopedia of research design* (Vol. 3). CA: Sage Publications.

Satorra, A., & Bentler, P. M. (2001). A scaled difference chi-square test statistic for moment structure analysis. *Psychometrika, 66*(4), 507-514.

Satorra, A. & Bentler, P.M. (2010). Ensuring positiveness of the scaled difference chi-square test statistic. *Psychometrika 75*, 243-248. doi:10.1007/s11336-009-9135-y

Scanlon, N. L. (2007). An analysis and assessment of environmental operating practices in hotel and resort properties. *International Journal of Hospitality Management*, *26*(3), 711-723.

Schillin, B., Sullivan, K. P., & Komar, S. (2012). Examining the Economic Benefits of Agritourism: The Case of New Jersey. *Sustaiable Livelihoods in Food System, 3*(1), 199-214.

Schwartz, S. H. (1994). Are there universal aspects in the content and structure of values?. *Journal of Social Issues, 50*, 19-45. doi: 10.1111/j.15404560.1994.tb01196.x.

Schwartz, H., & Davis, S. M. (1981). Matching corporate culture and business strategy. *Organizational Dynamics, 10*(1), 30-48.

Schwartz, S. H. (1977). Normative influences on altruism. *Advances in Experimental Social Psychology*, 10, 221-279. doi: 10.1016/S0065-2601(08)60358-5

Schwartz, S. H. (1992). Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries. *Advances in experimental social psychology. 25(1), 1-65.* (Vol. 25, pp. 1-65): Elsevier.

Sharpley, R. & Sharpley, J. (1997). *Rural tourism: An introduction*. International Business Press, London, UK.

Sharpley, R. (2000). Tourism and sustainable development: Exploring the theoretical divide. *Journal of Sustainable Tourism, 8*(1), 1-19.

Sharpley, R. & Vass, A. (2006). Tourism, farming and diversification: An attitudinal study. *Tourism Management, 27*, 1040-1052. doi: 10.1016/j.tourman.2005.10.025

Sheldon, P. J., & Park, S. Y. (2011). An exploratory study of corporate social responsibility in the US travel industry. *Journal of Travel Research, 50*(4), 392-407.

Shen, F., Cottrell, S. P., Hughey, K. F., & Morrison, K. (2009). Agritourism sustainability in rural mountain areas of China: a community perspective. *International Journal of Business and Globalisation, 3*(2), 123-145.

Shi, H., Peng, S. Z., Liu, Y., & Zhong, P. (2008). Barriers to the implementation of cleaner production in Chinese SMEs: Government, industry and expert stakeholders' perspectives. *Journal of Cleaner Production 16*(7), 842-852

Sigala, M. (2008). A supply chain management approach for investigating the role of tour operators on sustainable tourism: the case of TUI. *Journal of Cleaner Production, 16*(15), 1589-1599.

Sijtsma, K. (2008). On the use, the misuse, and the very limited usefulness of Cronbach's alpha. *Psychometrika, 74*(1), 107-120.

Silverman, D. (2006). *Interpreting qualitative data: Methods for analyzing talk, text and interaction*. CA: Sage Publications.

Sivek, D. J., & Hungerford, H. (1990). Predictors of responsible behavior in members of three Wisconsin conservation organizations. *The Journal of Environmental Education, 21*(2), 35-40.

Smith-Sebasto, N. J., & D'Costa, A. (1995). Designing a Likert-type scale to predict environmentally responsible behavior in undergraduate students: A multistep process. *The Journal of Environmental Education, 27*(1), 14-20.

Sonnentag, S., Mojza, E. J., Demerouti, E., & Bakker, A. B. (2012). Reciprocal relations between recovery and work engagement: The moderating role of job stressors. *Journal of Applied Psychology, 97,* 842-853.doi: 10.1037/a0028292

Srikatanyoo, N., & Campiranon, K. (2010). Agritourist needs and motivations: The Chiang Mai case. *Journal of Travel & Tourism Marketing, 27*(2), 166-178.

Statistics Canada (2002). *Statistics Canada's quality 2002 assurance framework.* Catalogue no. 12-586-XIE Minister responsible for Statistics Canada.

Steenkamp, J.-B. E., & Baumgartner, H. (1998). Assessing measurement invariance in cross-national consumer research. *Journal of Consumer Research, 25*(1), 78-90.

Steg, L., De Groot, J. I., Dreijerink, L., Abrahamse, W., & Siero, F. (2011). General antecedents of personal norms, policy acceptability, and intention: the role of values, worldviews, and environmental concern. *Society and Natural Resources, 24*(4), 349-367.

Steg, L., Dreijerink, L., & Abrahamse, W. (2005). Factors influencing the acceptability of energy policies: A test of VBN theory. *Journal of Environmental Psychology, 25*(4), 415-425.

Steg, L., & Vlek, C. (2009). Encouraging pro-environmental behaviour: An integrative review and research agenda. *Journal of Environmental Psychology, 29*(3), 309-317.

Stern, P. C. (2000). New environmental theories: toward a coherent theory of environmentally significant behavior. *Journal of Social Issues, 56*(3), 407-424.

Stern, P. C., Dietz, T., & Guagnano, G. A. (1998). A brief inventory of values. *Educational and Psychological Measurement, 58*(6), 984-1001.

Stern, P. C., Dietz, T., Abel, T., Guagnano, G. A., & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review, 6*(2), 81-97.

Stokowski, P. A. (2002). Languages of place and discourses of power: Constructing new senses of place. Journal of Leisure Research, 34(4), 368-382.

Stewart, K., & Williams, M. (2005). R esearching online populations: the use of online focus groups for social research. *Qualitative Research, 5*(4), 395-416.

Sutton, S. G., & Tobin, R. C. (2011). Constraints on community engagement with Great Barrier Reef climate change reduction and mitigation. *Global Environmental Change, 21*(3), 894-905.

Swanson, J. L., & Woitke, M. B. (1997). Theory into practice in career assessment for women: Assessment and interventions regarding perceived career barriers. *Journal of Career Assessment, 5*(4), 443-462.

Tabachnick, B. G., & Fidell, L. S. (2001). Using multivariate statistics (Vol. 5). *Nedham Heights, MA: Allyn & Bacon*.

Tanaka, J. (1987). How big is enough sample size and goodness-of-fit in structural equation models with latent variables. *Child Development, 58*, 134-146.

Tanner, C. (1999). Constraints on environmental behavior. *Journal of Environmental Psychology, 19*, 145–157. doi: 10.1006/jevp.1999.0121

Tarrant, M. A., & Cordell, H. K. (1997). The effect of respondent characteristics on general environmental attitude-behavior correspondence. *Environment and Behavior, 29*(5), 618-637.

Teo, T., Tsai, L. T., & Yang, C. C. (2013). Applying structural equation modeling (SEM) in educational research: An introduction. In *Application of Structural Equation Modeling in Educational Research and Practice* (pp. 1-21): Brill Sense.

Tew, C., & Barbieri, C. (2012). The perceived benefits of agritourism: The provider's perspective. *Tourism Management, 33*(1), 215-224.

Thøgersen, J., & Ölander, F. (2002). Human values and the emergence of a sustainable consumption pattern: A panel study. *Journal of Economic Psychology, 23*(5), 605-630.

Tschopp, R., Frey, J., Zimmermann, L., & Giacometti, M. (2005). Outbreaks of infectious keratoconjunctivitis in alpine chamois and ibex in Switzerland between 2001 and 2003. *Veterinary Record, 157*(1), 13-18.

United Nations World Tourism Organization (2013). *Sustainable Tourism for Development Guidebook. 2013.* Retrieved fromhttp://cf.cdn.unwto.org/sites/all/files/docpdf/devcoengfinal.pdf

United States Department of Agriculture (2012). 2*012 Census Full Report.* Retrieved from https://www.nass.usda.gov/Publications/AgCensus/2012/

United States Department of Agriculture (2017). *2017 Census Full Report.* Retrieved from https://www.nass.usda.gov/Publications/AgCensus/2017/

University of California Cooperative Extension (2016). *Agritourism.* Retrieved from http://sfp.ucdavis.edu/agritourism/

Valdivia, C., & Barbieri, C. (2014). Agritourism as a sustainable adaptation strategy to climate change in the Andean Altiplano. *Tourism Management Perspectives, 11*, 18-25.

van Hemel, C., & Cramer, J. (2002). Barriers and stimuli for ecodesign in SMEs. *Journal of Cleaner Production, 10*(5), 439-453.

van Riper, C. J., & Kyle, G. T. (2014). Understanding the internal processes of behavioral engagement in a national park: A latent variable path analysis of the value-belief-norm theory. *Journal of Environmental Psychology, 38*, 288-297.

Veeck, G., Che, D., & Veeck, A. (2006). America's changing farmscape: A study of agricultural tourism in Michigan. *The Professional Geographer, 58*(3), 235-248.

Vining, J., & Ebreo, A. (1990). What makes a recycler? A comparison of recyclers and nonrecyclers. *Environment and Behavior, 22*(1), 55-73.

Wang, C., Chen, K., & Chen, S. (2012). Total quality management, market orientation and hotel performance: The moderating effects of external environmental factors. *International Journal of Hospitality Management, 31*(1),119–129,

Weaver, D. B., & Fennell, D. A. (1997). Rural tourism in Canada: The Saskatchewan vacation farm operator as entrepreneur. In S. J. Page, & D. Getz, *The business of rural tourism: International perspectives* (pp. 77-92). London: International Thomson Business Press.

Wensing, J., Carraresi, L., & Bröring, S. (2019). Do pro-environmental values, beliefs and norms drive farmers' interest in novel practices fostering the Bioeconomy?. *Journal of Environmental Management, 232*, 858-867. doi: 10.1016/j.jenvman.2018.11.114.

Wicks, B. E., & Merrett, C. D. (2003). Agritourism: An economic opportunity for Illinois. *Rural Research Report, 14*(9), 1-8.

Williams, P. W.**,** Paridaen, M., Dossa, K., & Dumais, M. **(**2001**).** *Agritourism market and product development status report*. Centre for Tourism Policy and Reseach. Retrieved from http://www.llbc.leg.bc.ca/public/pubdocs/bcdocs/363307/agritourism_market.pdf

Wittmer, J. L .S., Sinclair, R. R., Martin, J. E., Tucker, J. S., Lang, J. (2013). Shared aggression concerns and organizational outcomes: The moderating role of resource constraints. *Journal of Organizational Behavior, 34*(3), 370–388.

World Commission on Environment and Development (1987). *Report of the World Commission on Environment and Development: Our Common Future.* Retrieved from https://sustainabledevelopment.un.org/content/documents/5987our-common-future.pdf

Wynveen, C. J., Wynveen, B. J., & Sutton, S. G. (2015). Applying the value-belief-norm theory to marine contexts: Implications for encouraging pro-environmental behavior. *Coastal Management, 43*(1), 84-103.

Yang, L. (2012). Impacts and challenges in agritourism development in Yunnan, China. *Tourism Planning & Development, 9*(4), 369-381.

Yoon, J. I., Kyle, G. T., van Riper, C. J., & Sutton, S. G. (2013). Testing the effects of constraints on climate change-friendly behavior among groups of Australian residents. *Coastal Management, 41*(6), 457-469.

Yoon, Y., & Uysal, M. (2005). An examination of the effects of motivation and satisfaction on destination loyalty: a structural model. *Tourism Management, 26*(1), 45-56.

Zhang, X., Cai, L., & Harrill, R. (2009). Rural tourism research in China: 1997–2006. *Tourism Analysis, 14*(2), 231-239.

Zhang, Y., Wang, Z., & Zhou, G. (2013). Antecedents of employee electricity saving behavior in organizations: An empirical study based on norm activation model. *Energy Policy, 62*, 1120-1127.

Zhang, Y., Zhang, H. L., Zhang, J., & Cheng, S. (2014). Predicting residents' pro-environmental behaviors at tourist sites: The role of awareness of disaster's consequences, values, and place attachment. *Journal of Environmental Psychology, 40*, 131-146. doi: 10.1016/j.jenvp.2014.06.001

Zhen, L., & Routray, J. K. (2002). Groundwater resource Use Practices and Implications for Sustainable Agricultural Development in the North China Plain: A Case Study in Ningjin County of Shandong Province, PR China. *International Journal of Water Resources Development, 18*, 581-593. doi.org/10.1080/0790062022000017419

Zhu, Q., & Geng, Y. (2010). Drivers and barriers of extended supply chain practices for energy saving and emission reduction among Chinese manufacturer. *Journal of Cleaner Production, 40*, 1-7. doi: 10.1016/j.jclepro.2010.09.017

Zilahy, G. (2004). Organisational factors determining the implementation of cleaner production measures in the corporate sector. *Journal of Cleaner Production, 12*(4), 31 1-319.

APPENDIX A. HUMAN SUBJECT INSTITUTIONAL REVIEW BOARD APPROVAL

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
2420 Lincoln Way, Suite 202
Ames, Iowa 50014
515 294-4566

Date: 11/1/2017

To: Eunkyoung Park
7E Mackay

CC: Dr. So Jung Lee
8A MacKay Hall

From: Office for Responsible Research

Title: Agritourism Providers' Environmentally Responsible Behavior

IRB ID: 17-111

Study Review Date: 11/1/2017

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior where
  - Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
  - Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

The determination of exemption means that:

- **You do not need to submit an application for annual continuing review.**
- **You must carry out the research as described in the IRB application.** Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

  Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

  Detailed information about requirements for submission of modifications can be found on the Exempt Study Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. **Only the IRB or designees may make the determination of exemption**, even if you conduct a study in the future that is exactly like this study.

Please be aware that **approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted.**

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

APPENDIX B. COVER LETTER AND SURVEY QUESTIONNAIRE

Dear Agritourism operators,

This project will investigate how agritourism operators engage in environmentally responsible behavior by seeking to understand your attitudes and barriers. Our findings will discuss issues and challenges when practicing sustainable practices. We hope that our research will be beneficial to agritourism operators by helping them be more engaged in sustainable practices.

If you complete the survey, you will have an opportunity to win a **$10 Amazon gift card** (awarded to 20 participants). Please make sure to leave your email address if you want to participate in the survey and be a winner.

This survey will take about 10-15 minutes to complete. Our study has been approved by the Institutional Review Board (IRB ID: 17-111) at Iowa State University and all information gathered from this survey will be kept completely confidential.

If you have any questions regarding this survey, please contact Eunkyoung Park (primary researcher) at ekpark@iastate.edu or SoJung Lee (major professor) at sjlee@iastate.edu. Your participation is greatly appreciated.

Yours Sincerely,

Eunkyoung Park (PhD Candidate, Iowa State University)

[Agritourism business]

Agritourism is a form of niche tourism that incorporates “a working farm environment and a commercial tourism component” (McGehee, 2007, p. 111).

[Examples of agritourism business]

Do you operate any types of agritourism business?

○ Yes ○ No (The survey will be terminated.)

What activity(ies) does your agritourism business provide? (Please check ALL that apply)

- ☐ Bed and breakfast
- ☐ Camp sites
- ☐ Youth camp
- ☐ Farm stays
- ☐ Rental cabin for day trips/picnics
- ☐ Weddings, receptions, honeymoons
- ☐ Music festivals
- ☐ Holiday celebrations
- ☐ Harvest festivals
- ☐ Haunted house/Haunted hay ride
- ☐ Petting zoo
- ☐ Corn maze
- ☐ U-pick
- ☐ Christmas trees
- ☐ Roadside produce stands
- ☐ Farmers' markets
- ☐ Vendor at state and county fairs
- ☐ Sell herbal/organic products (candles, etc.)
- ☐ Fishing
- ☐ Hunting
- ☐ Skeet shooting
- ☐ Canoe livery
- ☐ Biking
- ☐ Horseback riding
- ☐ Pumpkin patch
- ☐ Bird watching
- ☐ Hiking
- ☐ Hang gliding
- ☐ Hot air balloon rides
- ☐ Rock climbing/rappelling
- ☐ Cross country skiing
- ☐ Wagon/Carriage/Sleigh Rides
- ☐ Hayrides
- ☐ Agricultural education programs
- ☐ Nature education programs (wildlife, trees)
- ☐ Demonstrations
- ☐ Organized tours (school groups, tour groups)
- ☐ Winery and Vineyard Wine Tastings
- ☐ Micro-brewery tours
- ☐ Farm to table dinners
- ☐ Gardens & Nurseries
- ☐ Others: Please specify

[Environmentally responsible behavior]

Environmentally responsible behavior is an action to minimize the environmental problems through individual/group activities.

-**Minimizing air pollution** (e.g., riding a bicycle, walking more in natural areas).

-**Participating in conservation programs** (e.g., recycling events for preserving the environment).

-Cleaning up before leaving the natural areas (e.g., taking all rubbish or picking up litter left by you and others).

[Examples of environmentally responsible behavior]

Have you ever engaged in any type of environmentally responsible behavior(s) in your agritourism business?

○ Yes ○ No

The following is a list of statements regarding your **environmental concern for agritourism industry**. For each statement, please select the response that BEST indicates the extent to which you strongly disagree (1) or strongly agree (5).

	Strongly Disagree 1	**2**	**3**	**4**	**Strongly Agree 5**
1) The agritourism industry can help reduce pollution, climate change, and exhaustion of natural resources.					
2) The agritourism industry can help generate the positive environmental impacts on the neighboring areas and wider environment.					
3) The agritourism industry can help reduce waste from its facilities.					
4) The agritourism industry can help minimize environmental degradation.					

For each choice, please indicate the extent of **your future intention to engage in environmentally responsible behavior** that can be accomplished in the agritourism business**,** using the following scale from (1) strongly disagree to (5) strongly agree**.**

I am willing to _____ in the near future in my agritourism business.

	Strongly Disagree 1	**2**	**3**	**4**	**Strongly Agree 5**
1) Conserve soil and water resources.					
2) Conserve natural habitats and biodiversity.					
3) Convince visitors to behave in a way that will not harm plants and animals.					
4) Post environmental protection information in my business site.					

The following is a list of statements regarding **perceived barriers to engage in environmentally responsible behavior**. For each statement, please select the response that BEST indicates the extent to which you strongly disagree (1) or strongly agree (5).

	Strongly Disagree 1	**2**	**3**	**4**	**Strongly Agree 5**
1) My agritourism business does not have enough management and/or staff time for implementation and maintenance in an environmentally responsible way.					
2) My agritourism business does not have adequate technical knowledge and skills to implement environmentally responsible practices.					
3) My agritourism business does not have enough money to implement environmentally responsible practices.					
4) There is a lack of external assistance (e.g., consulting services) for environmentally responsible practices.					
5) There is a lack of tools for and examples of environmentally responsible practices.					
6) There is a lack of information source on environmental legislation/policies.					

Please indicate if you have any other environmental concerns/issues in operating your agritourism business. Also, please leave your comments on what strategies/policies could help you to further protect the environment if you have suggestions.

The following is a list of statements regarding your **personal values as a guiding principle in your life**. Please rate how important each value is to you, using the following scale from (1) not at all important to (5) extremely important.

	Strongly Disagree 1	**2**	**3**	**4**	**Strongly Agree 5**
1) Social justice: correcting injustice, care for the weak.					
2) Equality: equal opportunity for all					
3) A world at peace: free of war and conflict					
4) Protecting the environment: preserving nature.					
5) Preventing pollution, conserving natural resources.					
6) Respecting the earth: live in harmony with other species.					
7) Influential: having an impact on people and events					
8) Authority: the right to lead or command					
9) Social power: control over others, dominance					

The following is a list of statements regarding your **environmental concern in general**. For each statement, please select the response that BEST indicates the extent to which you strongly disagree (1) or strongly agree (5).

	Strongly Disagree 1	**2**	**3**	**4**	**Strongly Agree 5**
1) If things continue on their present course, we will soon experience a major ecological catastrophe.					
2) Humans are severely abusing the environment.					
3) The earth is like a spaceship with limited room and resources.					

The following is a list of statements regarding your **perceived responsibility**. For each statement, please select the response that BEST indicates the extent to which you strongly disagree (1) or strongly agree (5).

	Strongly Disagree 1	**2**	**3**	**4**	**Strongly Agree 5**
1) I think that every agritourism operator is jointly responsible for environmental issues.					
2) I think that every agritourism operator is partly responsible for global warming.					
3) Every agritourism operator must take responsibility for environmental problems.					

The following is a list of statements regarding your **personal norms**. For each statement, please select the response that BEST indicates the extent to which you strongly disagree (1) or strongly agree (5).

	Strongly Disagree 1	**2**	**3**	**4**	**Strongly Agree 5**
1) I feel that it is important to reduce the harm to the environment on my business site.					
2) I feel a sense of personal obligation to not damage environmental structures on my business site.					
3) I feel morally obliged to minimize human impact on nature-based resources within my business site.					

Please provide any comments concerning the environmental protection in your agritourism operation.

[Agritourism business information]
How many years have you been involved in agriculture?

1. Less than 1 year	11. 10 years	21. 20 years	31. 30 years
2. 1 year	12. 11 years	22. 21 years	32. 31 years
3. 2 years	13. 12 years	23. 22 years	33. 32 years
4. 3 years	14. 13 years	24. 23 years	34. 33 years
5. 4 years	15. 14 years	25. 24 years	35 34 years
6. 5 years	16, 15 years	26. 25 years	36. 35 years
7. 6 years	17. 16 years	27. 26 years	37. 36 years
8. 7 years	18. 17 years	28. 27 years	38. 37 years
9. 8 years	19. 18 years	29. 28 years	39. 38 years
10. 9 years	20. 19 years	30. 29 years	40. 39 years and/or more

How many years have you been operating your agritourism business?

1. Less than 1 year	11. 10 years	21. 20 years	31. 30 years
2. 1 year	12. 11 years	22. 21 years	32. 31 years
3. 2 years	13. 12 years	23. 22 years	33. 32 years
4. 3 years	14. 13 years	24. 23 years	34. 33 years
5. 4 years	15. 14 years	25. 24 years	35 34 years
6. 5 years	16, 15 years	26. 25 years	36. 35 years
7. 6 years	17. 16 years	27. 26 years	37. 36 years
8. 7 years	18. 17 years	28. 27 years	38. 37 years
9. 8 years	19. 18 years	29. 28 years	39. 38 years
10. 9 years	20. 19 years	30. 29 years	40. 39 years and/or more

In which state is your agritourism business located?

1. Alabama	14. Idaho	27. Minnesota	39. North Carolina
2. Arizona	15. Illinois	28. Mississippi	40. North Dakota
3. Arkansas	16. Iowa	29. Missouri	41. Ohio
4. California	17. Kansas	30. Montana	42. Oklahoma
5. Colorado	18. Kentucky	31. Nebraska	43. Oregon
6. Connecticut	19. Louisiana	32. Nevada	44. Pennsylvania
7. Delaware	20. Maine	33. New Hampshire	45. Rhode Island
8. Washing DC	21. Maryland	34. New Jersey	46. South Carolina
9. Florida	22. Massachusetts	35. New Mexico	47. South Dakota
10. Georgia	23. Michigan	36. New York	48. Tennessee
11. Utah	24. Vermont	37. Virginia	49. Texas
12. West Virginia	25. Wisconsin	38. Wyoming	50. Puerto Rico
13. Alaska	26. Hawaii	51. I do not reside in the United States	

What is the total acreage of your farm, including acres that you own or rent? (_____ acre)

How many employees do you have including yourself?

1. 1 person
2. 2 persons
3. 3 persons
4. 4 persons
5. 5 persons
6. 6 persons and/or more

Please choose one that best describes your current agritourism business operation.

1. Full time with all income from agritourism
2. Part time agritourism income primary and others secondary
3. Part time, agritourism income secondary and others primary
4. Part time, agritourism and others equal importance
5. Hobby interest, agritourism income not critical

What the total gross sales was for your agritourism business in 2017?

1. Less than $20,000	10. $180,000~$199,999	19. $360,000~$379,999
2. $20,000~$39,999	11. $200,000~$219,999	20. $380,000~$399,999
3. $40,000~$59,999	12. $220,000~$239,999	21. $400,000~$419,999
4. $60,000~$79,999	13. $240,000~$259,999	22. $420,000~$439,999
5. $80,000~$99,999	14. $260,000~$279,999	23. $440,000~$459,999
6. $100,000~$119,999	15. $280,000~$299,999	24. $460,000~$479,999
7. $120,000~$139,999	16. $300,000~$319,999	25. $480,000~$499,999
8. $140,000~$159,999	17. $320,000~$339,999	26. $500,000 and/or more
9. $160,000~$179,999	18. $340,000~$359,999	

[Demographic information]

What is your gender?

○ Male ○ Female ○ Other

What year were you born?

1. 1930	11. 10 years	21. 20 years	31. 30 years
2. 1931	12. 11 years	22. 21 years	32. 31 years
3. 1932	13. 12 years	23. 22 years	33. 32 years
4. 1933	14. 13 years	24. 23 years	34. 33 years
5. 4 years	15. 14 years	25. 24 years	35 34 years
6. 5 years	16, 15 years	26. 25 years	36. 35 years
7. 6 years	17. 16 years	27. 26 years	37. 36 years
8. 7 years	18. 17 years	28. 27 years	38. 37 years
9. 8 years	19. 18 years	29. 28 years	39. 38 years
10. 9 years	20. 19 years	30. 29 years	40. 39 years and/or more

What is the highest level of education you have completed?

1. Less than high school diploma
2. High school diploma
3. Associate degree
4. Bachelor's degree
5. Graduate degree (Master degree, Ph.D. MD)
6. Other: (Please specify)

What is your annual household income before taxes?

1. Less than $20,000	6. $100,000~$119,999	11. $200,000~$219,999
2. $20,000~$39,999	7. $120,000~$139,999	12. $220,000~$239,999
3. $40,000~$59,999	8. $140,000~$159,999	13. $240,000 and/or more
4. $60,000~$79,999	9. $160,000~$179,999	
5. $80,000~$99,999	10. $180,000~$199,999	