PERCEPTIONS OF VIETNAMESE TOURISM BUSINESSES TOWARD THE ADOPTION OF SUSTAINABLE TOURISM PRACTICES

A Dissertation

Presented in Partial Fulfillment of the Requirements for the

Degree of Doctor of Philosophy

with a

Major in Natural Resources

in the

College of Graduate Studies

University of Idaho

By

Yen Hai Le

May 2005

Major Professor: Steven J. Hollenhorst, PhD.

AUTHORIZATION TO SUBMIT DISSERTATION

This dissertation of Yen Hai Le, submitted for the degree of Doctor of Philosophy with a major in Natural Resources and titled "Perceptions of Vietnamese Tourism Businesses Toward the Adoption of Sustainable Tourism Practices," has been reviewed in final form. Permission, as indicated by the signatures and dates given below, is now granted to submit final copies to the College of Graduate Studies for approval.

Major Professor _____ Date 4/13/05

Dr. Steven J. Hollenhorst

Committee Member _____ Date 4/13/05

Dr. Charles C. Harris

_____ Date 4/13/05

Dr. William J. McLaughlin

_____ Date 4/13/05

Dr. Steven R. Shook

Department Administrator _____ Date 4/13/05

Dr. Steven J. Hollenhorst

Discipline's College Dean _____ Date 4/15/05

Dr. Steven Daley Laursen

Final Approval and Acceptance by the College of Graduate Studies

_____ Date 6/21/05

Dr. Margrit von Braun

ABSTRACT

The richness of natural and cultural resources provides Vietnam potentials for tourism development. Unfortunately, after a long period of war and a "development-at-all-cost" economic policy in the 60's, 70's and 80's, the environment in Vietnam is in an alarming stage of degradation with various problems including soil erosion, water contamination, and an unbalanced biodiversity system. As the economic transformation process started in 1986, often known as *doi moi*, the Vietnamese government has shifted the economy from a strictly state controlled to an open-market policy. Light industries such as textile and tourism are in favor and agriculture remains crucial component of the economy. Protecting the environment and natural resources while achieving economic development is an important focus of *doi moi*. The government plans to achieve *doi moi* by promoting sustainable development with tourism being one of the key economic activities.

Empirical evidence shows that a successful sustainable tourism development (STD) program is often a collaborative effort among local communities, governments, tourists, businesses, and other related actors (Liu, 2003). While the roles of consumer demand, governmental policy, and Non-governmental Organizations in STD have been studied in various research, few studies have approached STD from a business perspective, especially businesses in developing countries like Vietnam. This research aims to narrow this gap in the literature by exploring Vietnamese tourism perspectives toward the adoption of STD practices.

The theory of diffusion of innovations by Rogers (1995) is used as the theoretical framework for this study. Since the first publication in 1962, it has been widely applied across different scientific disciplines and cultural backgrounds and proven its consistency. However, it has never been applied in the Vietnamese context. Furthermore, considering the process of adopting STD practices as a diffusion of innovation process is unique to this study. To this extent, this study

contributes to diffusion of innovation literature by extending the theory to a new cultural context and a new field of study.

The results of the survey among 149 tour companies and 497 hotels, of which 40% responded, show that the complexity of innovations and the benefits they may bring to the companies, especially marketing image, are the most important motivations to adopt STD practices. While the number of innovations being adopted by tourism companies is not correlated with the companies' sizes, the type of innovations being adopted is different between small and large companies. Because STD is at an early stage in Vietnam, tourism companies also demonstrate a skeptical attitude. They consider adopting STD practices as a risk-taking action which is illustrated by a strong correlation between risk-taking attitude measurement and the intention to adopt.

Based on these findings, some recommendations to Vietnam National Administration of Tourism (VNAT) were also made in order to help plan a successful STD program. VNAT should follow a step-by-step course of action which may start from generating a list of standardized code of conduct or criteria for sustainable tourism practices. This list will help tourism companies to obtain a better estimate of innovation complexity as well as its benefits. VNAT also should encourage and sponsor several companies to be pioneers in STD and use them as examples for others to observe. Once a successful example is presented, skepticism toward STD will diminish and opportunities for STD in Vietnam will increase.

ACKNOWLEDGEMENTS

In this research effort, I received encouragement, inspiration, and support from numerous individuals and institutions. To all that were involved, I am deeply grateful. I would especially like to thank my advisor Steve Hollenhorst for his guidance, dedication, and perseverance to seeing this project though. My committee member, Charles Harris, William McLaughlin, and Steve Shook have been fully supportive and have pushed hard to ensure a quality product – their critiques were always constructive and professional.

The Department of Tourism and Hospitality, at National Economics University, Hanoi, Vietnam was an invaluable resource in this research. Not only did they contribute to the criteria selection stage of the research but they also helped provide information for the sampling plan and pilot tests of the instrument. Special thanks to Dr. Nguyen Van Dinh, Dr. Nguyen Van Manh, Dr. Tran Hau Thu, Dr. Tran thi Minh Hoa, Vuong Quynh Thoa, and Tran Thi Hanh. And of course, many thanks to all faculty and staff of the department who spent considerable time and effort to help me collect the data.

On a personal level, I am indebted to my parents for their love and encouragement. In addition to their love for my country, Vietnam, their hard-working attitude their supports throughout the years were crucial to my pursuit of an academic career. I would like to thank Jay for his support, his commitment, his love and wisdom in helping me finish this project.

Also, I would like to thank my "gang," my fellow graduate students and close friends who stood by me at difficult times and gave me support in finishing this project. Without their creative ideas, this dissertation would not have achieved the quality desired.

Lastly, special thank to Department of Conservation Social Science and Graduate Student Association at the University of Idaho for partially funded my project.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1: Introduction

1. Defining the Problem

The environment in Vietnam has been seriously damaged by a long period of war, followed by a Soviet style development-at-all-cost economic policy that focused on heavy industry, (D. O'Rourke, 1995). Opportunity for environmental improvement began in 1986, when the National Communist Party Assembly decided to shift toward a market-oriented economic policy while maintaining the communist party influence. A primary component of the new policy involved a shift toward light industry and exports. However, population pressure and lack of advanced technology has severely limited implementation of the policy. As a consequence, Vietnam continues to suffer various environmental problems. Deforestation, soil erosion, contaminated water sources, and reduced wildlife habitat are some of the most highly visible examples (Dinh, 2003; Nguyen, 2000).

Recognizing the problem, the Vietnamese government has been continuously increasing effort to protect the environment and reduce pollution levels. The Law on Environmental Protection (LEP) promulgated in December 1993 is the umbrella environmental law for Vietnam. O'Rourke (2001a) stated that "since the passage of the LEP, the government has issued a wide range of decrees, directives, and circulars that flesh out the law, and create implementation instruments to realize the goals of environmental regulation and enforcement." The government also encourages the development of environmentally friendly industries, such as tourism, as economic substitutions for natural resource exploitation. Tourism, in particular, is expected to play a leading role in achieving the balance between economic development and environmental protection (Do, 1996).

From 1986 when the market-oriented economic policy was adopted to 1995, tourism was the one of the fastest growth industries in Vietnam. By 1995, tourism was generating USD 780

million in annual revenue and creating more than 15,000 jobs (Hoang, 1998). Given this economic impact, along with its relatively low environmental impact, the tourism industry seemed a promising economic alternative. However, some negative problems associated with tourism soon began to show. In addition to leakage of hard currency to foreign investors, the growth rate in the industry has been slowing down significantly since 1995. Nationwide hotel occupancy rates declined from 84.5% in 1993 to 50% in 2000. The number of foreign investment projects in tourism declined from 60 projects in 1996 to 2 projects in 2000 (*Tourism Statistics*, November 2002). Furthermore, negative impact on the natural and cultural environment from tourism activities began to show. In particularly, development of large scale resorts is blamed for reducing the are of forest coverage and run-off chemical residuals from resort landscaping has contaminated local water resources (Haley & Haley, 1997; Nguyen, 2000; Pham, 1997). In addition, tourism development is also associated with increasing social problems such as prostitution, abuse of women and child labor, and a widening income gap between foreign and domestic employees who hold the same position (Mbaiwa, 2003; Vu, 2004).

In order to construct a successful tourism development strategy, it is necessary to understand both the supply and demand sides of the industry. It requires the voluntary commitment of tourism companies to apply environmentally sustainable management practices as well as demand for these practices from consumers (Dewhurst & Thomas, 2003; Liu, 2003; Rivera, 2004). Research confirms a trend toward consumer preference for environmentally friendly products, such as ecotourism and sustainable tourism practices (Luzaz & Cosse, 1998b). However, there is limited research from the business point of view, particularly with respect to tourism businesses in developing countries like Vietnam (Liu, 2003; Rivera, 2004). Therefore, the purpose of this study is to examine factors that influence tourism businesses' intention to adopt sustainable tourism practices.

2. Overview of the Vietnamese Tourism Industry

The tourism industry is a complex system comprised of many different inter- and intra-relationships and connections with other sectors of the economy. In this study, the Vietnamese tourism industry was examined in two aspects, type of business and type of ownership. The most common classification of type of business in tourism industry, according to Gee et al. (1989) and McIntosh and Goeldner (1990), are:

(1) Accommodations, including motels, hotels, B&B, guesthouses, inns, campgrounds, resorts, cruises;

(2) Tour operators and travel agencies;

(3) Tourist attractions, including both natural and historical/cultural attractions, and;

(4) Transportation, including airlines, cruise lines and on-ground transportation.

Tourist attractions in Vietnam include natural and cultural/ historical attractions. The policies and regulations are relatively independent with regard to tourism management practice. Natural attractions such as national parks are managed by the Ministry of Forestry. Cultural attractions are managed by the Ministry of Culture, Youth and Sports. Fees collected from tourists are distributed according to those administrative bodies. The revenues generated from donations and entrance fees are generally not used to invest in tourism

While tourist attractions and transportation are integral elements of the tourism industry, because of their relative independent position from the tourism industry, neither will be included in this study. The Vietnamese tourism industry is unique with respect to its transportation system. There are only two domestic airlines. One is state owned and the other is "equitized." Train and bus systems are mostly state owned. Tour operators and travel agencies often do not own vehicles themselves, but instead outsource to transportation firms on a case-by-case contract basis. Providing transportation for tourism is only one of the many services that those companies offer. Therefore, transportation is related but relatively independent of the regulations of the

tourism industry. Given this context, this research will focus on accommodations (which are referred to as hotels) and tour companies.

With regards to type of ownership, the Vietnamese tourism industry consists of four main types of ownership. They are:

(1) Joint Venture Companies (JVCs): JVCs are characterized by shared ownership between a domestic tourism company and a large international corporation. Under the closed-market economic policy of the Soviet era, international investors outside the soviet countries were not allowed. JVCs refer specifically to those new international ventures that emerged after the economic reform of the early 90s. Despite their late entrance into the tourism market, JVCs have the largest financial resources given their connection to international partners. In addition, management boards of JVCs, comprised of a combination of both domestic and international personnel, often contain managers who hold degrees from universities around the world and have years of experience in the international tourism industry before taking their position in Vietnam. The target markets of JVCs are middle-class and high-income tourists, businesspeople, and diplomatic delegations. JVCs are often large in size with a wide variety of services and luxury facilities.

(2) State-owned Enterprises (SOEs): Traditional SOEs were government owned and operated businesses whose main purpose was to provide social benefits to workers and services to governmental delegations. With the shift to a market economy, government is gradually withdrawing funding for these enterprises, forcing them to function as independent economic identities. However, these companies enjoy certain advantages over other enterprises because of their access to a stable source of clients through the government network. SOEs are often large to medium in size. According to Hoang (1998), "state-owned companies remain the strongest rivals in the tourist and travel services market because of the restrictive licensing and funding allocated by the state budget." In addition, state-owned companies have the most experience in the market

because they were the only type of business in the market before privately owned and joint ventures were legally recognized.

(3) Equitized Companies (ECs): 'Equitized' is a special term used by the Vietnamese government to describe companies that were originally state owned companies but were facing bankruptcy. In order to increase funding to save the company but also to maintain state control, the government allows these companies to sell up to 49% of their shares. Technically, the first stock market was open in Hanoi in the early 1990s. However, it has not yet fully functioned due to various legal issues. Therefore, shares of equitized companies are often held by certain investors and do not circulate in the stock market. Prioritized share holders are current employees who are encouraged to purchase the company's shares as a means to secure their jobs. The rest of the shares are held by other private investors. Equitized companies are often large to medium in size. Equitized companies enjoy the advantages of being both in the government network and the flexibility of privately-owned management.

(4) Privately Owned Companies (POCs): POCs are mostly small, family-run businesses. Most of these firms were established in the early 1990s in response to the burgeoning interest of international tourists in Vietnam. Managers typically do not have much knowledge or experience in tourism management compared to their JVC and SOE counterparts, and tend to have minimal knowledge about environmental management practices. The POCs also have limited financial resources in comparison to JVCs and SOEs. However, private-owned companies "with more intimate local knowledge of the country are better able to develop a foothold in their own niche market" (Hoang, 1998). In addition, POCs are often small in size and are operated by their owner-managers. These characteristics allow them to be more flexible in adopting new management practices.

3. Research Objectives

To encourage businesses to adopt environmentally sustainable management practices (ESMPs also referred to interchangeably in this dissertation as "environment innovations") it is important to understand their motivations as well as the difficulties they face. However, differences in business size, ownership, and resources often lead to different management styles. These differences may result in very different perceived incentives and barriers toward adopting ESMPs. In addition, the characteristics of these practices may be perceived differently by different businesses. The differences in the perceived characteristics of the ESMPs may result in different reactions from businesses. Therefore, each business would have a unique set of motivations and difficulties associated to their decision to adopt certain ESMPs. Thus, the research objectives of this study were:

- Examining the potential motivations and difficulties associated with adopting or rejecting ESMPs among the Vietnamese tourism businesses.
- Examining the correlation between motivations and difficulties to the likelihood of adopting ESMPs among accommodation businesses in Vietnam
- Examining the correlation between motivations and difficulties to the likelihood of adopting ESMPs among tour businesses in Vietnam.

Based on the findings of this research, the overall goal is to make recommendations to VNAT that will lead to a sustainable tourism development policies and programs.

4. Review of Literature in Sustainable Tourism Development

4.1. Sustainable Development

Van den Bergh and van der Straaten (1994) defined sustainability as "the ability to be continued indefinitely in time." Although it had been previously mentioned in the literature, sustainability in relation with impact of humans on the natural environment has especially attracted the attention of researchers during the past two decades. The reason for lack of interest on this topic in the past is a point of controversy. One argument is that, until recently, the impact of human activities was not significant enough to make sustainability an issue. Another perspective is that the sustainability issue was largely ignored while attention focused on short-term economic development (Victor, 1980). However, it is commonly agreed that the continuation of human life and the quality of life depends on resource use and development. Also, "most people now admit that many human activities are currently reducing the long-term ability of the natural environment to provide goods and services, as well as adversely affecting current human health and well- being" (Sharachchandra M Lele, 1991). The term sustainability, therefore, is generally used to indicate the sustainable utilization of natural resources; or to a larger extent the balance of the ecosystem on which human life depends (van den Bergh & van der Straaten, 1994).

Sustainability also concerns economic development. In developing countries, environmental problems seem to result from overpopulation and poverty. Under the burden of increasing population, most developing countries have no choice but to overexploit natural resources for food and energy (Parikh & Parikh, 1998). Environmental protection seems to be sacrificed in developing countries to resolve the pressure of a "combination of survival needs due to population pressures, shortages of foreign exchange, and potential political revolution" (Farber, 1991). Therefore, it can be argued that sustainability is directly related to economic development. Lele (1991) stated that "removal of poverty (i.e. development) is necessary for environmental

sustainability. This, it is argued, implies that economic growth is absolutely necessary for sustainable development."

Therefore, sustainability of the ecosystem and economic growth seem to be two facets of the same problem. Sustainability would not be an issue if humans could give up the goal of economic growth. However, economic growth requires the sustainability of natural resources because it cannot continue when natural resources are depleted. Moreover, in the case of developing countries, economic development seems to be the only solution to achieving sustainability of the environment. From this understanding, sustainability, perhaps, should be better addressed as "sustainable development".

I found the most appropriate definition of the term sustainability was provided by Lele (1991) who viewed it as "(a) 'sustainability' being understood as "ecological sustainability"; and (b) a conceptualization of sustainable development as a process of change that has (ecological) sustainability added to its list of objectives."

Since sustainable development attracts a great deal of attention from theorists and researchers from different perspectives and fields of study, many different definitions have been constructed. These definitions were reviewed and critiqued by Lele (1991). Some researchers use the phrase "sustainable development" interchangeably with "ecologically sustainable or environmentally sound development" (Sharachchandra M Lele, 1991). For others, "sustainable development would simply mean "development that can be continued- either indefinitely or for the implicit time period of concern" (Lele, 1991). This has led to sustainable development "frequently being interpreted as simply a process of change that can be continued forever" (Sharachchandra M Lele, 1991). Sustainable development is also understood as "a form of societal change that, in addition to traditional development objectives, has the objective or constraint of ecological sustainability" (Sharachchandra M Lele, 1991).

Perhaps the most commonly accepted definition of sustainable development is the one that was provided at the World Summit of Sustainable Development, that states, "sustainable

development is development that meets the needs of the present without compromising the ability of future generation to meet their own needs" (WCED, 1987). Regardless of the differences in definitions, the most important aspect of the sustainable development concept is that at least in theory it shows a hope for an alternative form of economic development in which "the natural environment can be protected, the economy developed, and equity achieved all at the same time and that the extent to which we are successful in this simultaneous achievement is the extent to which we will achieve sustainability" (Jepson Jr., 2001).

4.2. Sustainable Tourism Development

"Sustainable tourism" is an industry-specific topic of sustainable development. From this perspective, tourism contains elements of both economic growth and the desire to sustain the resources upon which this growth depends for a long period of time. However, some researchers have argued that the impacts of tourism on the natural environment are insignificant compared to the impacts from other industries (Gee et al., 1989). For this reason, (M. Honey, 1999) suggests that sustainable tourism development should focus more on sustaining the social and cultural structure rather than on the ecological dimension of sustainability. However, another point of view in the tourism literature argues that ecological dimensions are as important as social and economic aspects of sustainable tourism because tourism itself has been repeatedly shown to impose significant impacts on the natural environment (Ancher, 1973; Andereck, 1993; Boo, 1990; Farrell, 1977; Gun, 1988; Mowforth & Munt, 1998; Nelson et al., 1999; Peters, 1969; Rangel, 2000; Wall, 1997).

Tourism, by its nature, requires constant interaction between the outsiders (tourists) and host communities. As a result, cultural and social disruption is a serious issue (V. L. Smith, 1977). In addition to economic measurements such as income and economic growth, a free of crime, politically stable and maintaining moral values living environment is more desirable than a society that is unstable, unsafe and morally corrupt (Butler, 1974). In the development process

"societies and their environments change, technologies and cultures change, knowledge changes, values and aspirations change, and a sustainable society in particular must allow and sustain such change, i.e. it must allow continuous and viable adaptations, which is what we mean by sustainable development" (Bossel, 2000). In tourism, socially sustainable development means that local communities retain their cultural identities and values while adapting to the changes brought in by visitors. To that extent, socially sustainable development does not mean unchanging but rather having adaptive processes that manage and selectively adopt changes. The concept of sustainable tourism, therefore, has to be examined from three perspectives: economic development, social sustainability, and ecological sustainability.

Therefore, sustainable tourism can be defined as continued economic growth without compromising the goal of sustaining the environment as well as social systems and cultural identity. Mowforth and Munt (1998) identified and summarized 29 alternative terms which have been used as synonyms for sustainable tourism. They vary from a common term like ecotourism to more obscure terms such as scientific tourism, soft tourism, green tourism and appropriate tourism. Sustainable tourism is also defined as a 'new' tourism that implies 'no-impact', 'responsible', 'green' and 'environmental friendly' practices (Mowforth & Munt, 1998).

Even though it is important to understand the concept of sustainable tourism from the social, cultural and ecological aspect, I decided to study the concept of sustainable tourism from an economic standpoint with a focus on environmental protection. Limiting sustainable tourism to certain types of tourism, like ecotourism or green tourism, seems inappropriate in that it discourages other tourism business companies from working toward sustainable development goals. Social sustainability, while also important, will not be the focus of this research because it is difficult to represent within a micro-economic context. Sustainable tourism practices, therefore, are the business and management practices that help to reduce the impacts of tourism on the environment. Examples of sustainable tourism practices include applying available technologies to energy efficiency and limiting use of a harmful chemical product, having

appropriate infrastructural design that harmonizes with nature, developing a conservation attitude among employees and visitors through education programs and publications.

For the purpose of this study, a sustainable tourism company was not limited to ecotourism and green tourism businesses but includes all types of tourism enterprises that apply sustainable tourism or environmental friendly practices. To be specific, a sustainable tourism firm could be an accommodation provider, a travel agency, a tour operator, a transportation company or a service provider at attractions that is applying environmental management practices in conducting business regardless of the size of the company, the type of service provided or the target market. Environmental friendly technology, knowledge of sustainable management as well as sources of investment are all very limited in Vietnam. Therefore, I adopted a practical rather than ideal model of a sustainable tourism firm. Sustainable tourism companies were designed with a consideration to the surrounding natural and cultural environment; uses the maximum amount of available local products; applies available environmental friendly technology wherever possible (such as energy and water efficiency facilities); applies environmentally safe water and garbage disposal; uses renewable resource of energy and supply; minimizes the use of chemical products for landscaping; uses recycled, recyclable and or reusable products; has a recycling program; respects carrying capacity limits of the area such as limits on number of visitors at a time; provides environmental education programs to employees; and distributes environmental education materials to visitors.

4.3. Environmentally Sustainable Management Practices (ESMPs)

It is a common practice to measure the environmental sustainability level of a production by its outputs. For example the Green Seal programs for forest products, chemical products and other manufacturing products all focus on the output of a production process. The output of tourism is the experience that the tourist gains from the trip (V. L. Smith, 1977). It is very difficult to measure the sustainability level of a tourism company by measuring the output

because tourist experiences are intangible. In addition, tourists' experiences are formed by many other factors beyond the environmental practices of a tourism provider. Some of these factors affect tourists before their trip, including education and publications. Other factors are created from the interaction between tourism and different aspect of the society such as other economic activities, interaction between tourists and the host community. Therefore, it is impossible to study the influence of the tourism business on tourists' experience in isolation from other socio-psychological factors.

However, a tourism company has to use both tangible and intangible inputs to produce this intangible output. The tangible inputs can be as varied as the materials used to build a hotel, foods used to prepare a visitors' meal, and interpretive materials distributed. Intangible inputs may include employees' experience, training, and demeanor. Therefore, while it is difficult to measure whether a tourism firm produces an environmental friendly output, it is possible to measure the environmental impact of both the inputs and the production process.

The decision to use one input versus another may affect the firm in different ways. The firm may gain benefits or have difficulties applying certain environmentally friendly practices to an input. Therefore, tourism businesses may perceive different incentives (associated with potential benefits), and barriers (associated with potential difficulties) in regards to adopting environmentally sustainable tourism practices. From an economic standpoint, benefits and disadvantages are often expressed in terms of financial cost/benefit and competitive positioning.

There is no common agreement in the extant literature about a set of specific ESMPs applying for tourism businesses. However, many programs in different countries around the world were developed for ecotourism, green tourism, and sustainable tourism development. Agenda 21-Green Globe, Green Seal (International), Nature and Ecotourism Accreditation Program (NEAP-Australia), Green Hotel (Hyatt Corporations), Certification for Sustainable Tourism (CST-Costa Rica), and the Saskatchewan Ecotourism Accreditation System (Canada) are some examples. These programs have a common feature: they all require the voluntary

participation and commitment of tourism business to control their inputs and production procedures.

A simple search on the Internet for "sustainable tourism programs" resulted in a truncate result with thousands of websites. However, more than half of these websites were in other languages rather than English or Vietnamese. Due to the language barrier, I was not able to review the ESMPs suggested by these programs. Many websites do not contain any information about ESMPs; rather they were advertisements for consulting companies. Other programs such as the Ecotourism Program from Ecotourism Society did not provide specific ESMPs but presented code of conduct for tourism businesses. Among those, NEAP and CST were reviewed as the best sustainable programs in the current literature. CST, for example, was rated as "one of the most widely respected sustainable certification programs" (*Protecting Paradise: Certification Programs for Sustainable Tourism and Ecotourism*, June 2002). NEAP was also highly evaluated with a report concluding, "NEAP has laid the groundwork for the Australian tourism industry as a whole to be able to credibly and honestly promote Australia as a country that is actively working towards delivery of sustainable tourism programs" (*Protecting Paradise: Certification Programs for Sustainable Tourism and Ecotourism*, June 2002).

Because a sustainable tourism development program in Vietnam has not yet developed, I adopted the criteria suggested by current programs, especially NEAP and CST as ESMPs for this research. However, as the research was conducted in a limited timeframe and budget, as well as the country-specific issue, I did not use all ESMPs from these programs but rather applied a set of selected ESMPs. The selection procedure is presented in the methodology section.

5. Diffusions of Innovations as Theoretical Model

5.1. Simple Cost/Benefit Analysis Model

Classical economic theory derived by Adam Smith (in "*Self interest and the Invisible hand*") and Karl Marx (in "*Des Kapital*") holds that business is strictly profit driven. Adam Smith stated that humans are driven by self-interest. An individual only acts to satisfy selfish interest. While theorists continue to debate the motives underlying human nature, most agree that profit is the most important concern of business firms. Even an altruistic businessperson needs to generate profit for the firm to survive in the business environment. According to classical economic theory, the more profit a management practice generates, the more likely it will be adopted.

In tourism, it is assumed that companies are more likely to adopt a management practice if it brings benefits to the firm; that is, if the expected benefits outweigh the investment cost. In contrast, management practices that do not produce a benefit are not likely to be adopted. Figure 1.1 demonstrates the rationale of simple cost/benefit analysis.

According to this framework ESMPs which are perceived as high in costs and low in benefits will have a low likelihood of being adopted. In contrast, ESMPs which are perceived as high in benefits and low in costs will have a high likelihood of being adopted. This model is simple and easy to use. However, it is inefficient to study the adoption of management practices in sustainable tourism. There are two main reasons that lead to the inefficiency of this model. First of all, two quadrants in the simple cost/benefit analysis model which the adoption likelihood of ESMPs is indeterminate. These include the quadrants where both cost and benefit are perceived as high or both are low. In both cases, additional factors rather than a simple net benefit push the company decision towards either direction of adoption or non-adoption. Current economic theory, with special application in marketing research, suggests a solution to overcome this model limitation. Financial costs and benefits, which are very important indicators of the

firm performance, are not the only indicators. In addition, because they are often addressed in the short-term they do not represent the firm's performance in its business cycle. Researchers such as Porter (1985) and Kotler (2003) introduced the concept of competitive advantage which is "at the heart of a firm's performance in competitive markets" (Porter, 1985). In addition to financial cost/benefit, competitive advantage captures the firm's competitive position in the market (e.g. market share), and marketing image (e.g. brand name, reputation) (Kotler et al., 2003; von Krogh & Roos, 1995). While financial cost/benefit measures the firm's performance in the short-term, competitive positioning and marketing image represent the long-term dimension. Based on these criteria, the firm's behavior toward adoption of a new management practice is beyond the scope of a simple cost/benefit analysis model. From the competitive advantage viewpoint, the firm has to consider more complicated trade-offs than just short term cost increases.

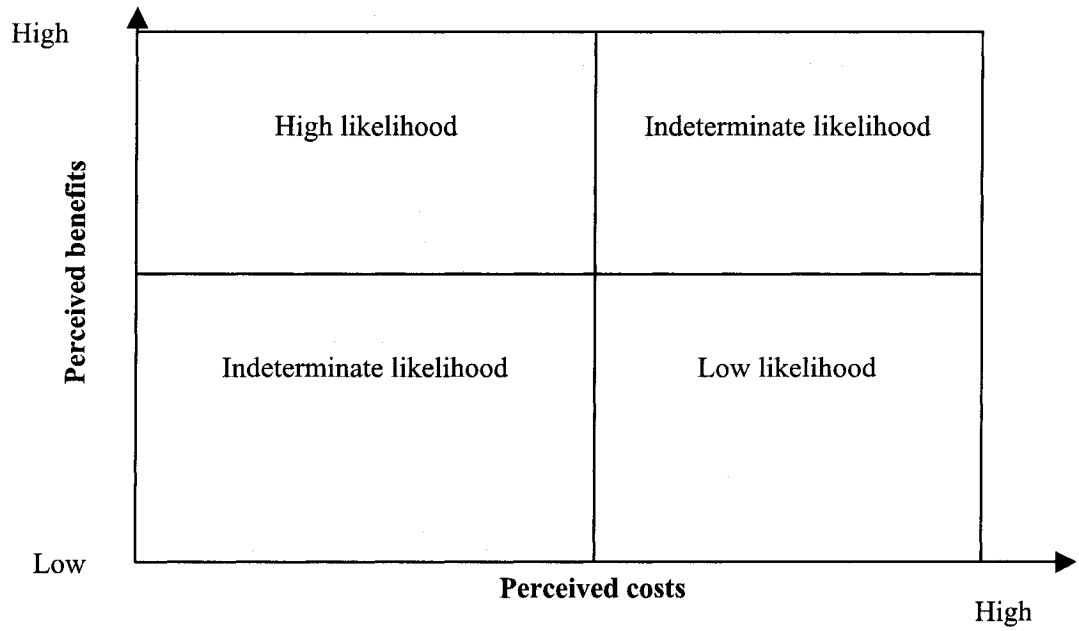

Figure 1.1: Simple cost/benefit model of the relationship between cost/benefit with likelihood of adopting ESMPs (composite).

Another problem with the simple cost/benefit analysis is that the notion of sustainable tourism development cannot be fully understood from economic analysis alone. Sustainable development has been understood as "a form of societal change that, in addition to traditional development objectives (i.e. economic growth), has the objective or constraint of ecological sustainability" (Sharachchandra M Lele, 1991). In addition, some researchers such as Gato and Leo (2000) claim that environmental problems, at least within the context of developing countries, are caused by over-consumption. Therefore, sustainable development is not only an economic choice but also is a social and ethical choice (Gatto & Leo, 2000). Therefore, measuring in the economic dimension alone would not be sufficient to address the choice of a company to adopt ESMP. In order to understand the firm's decision of adoption, both economical and social dimensions need to be measured. This viewpoint is commonly addressed in literature as *ability and willingness* of the firm to adopt ESMPs (Bansal, 2002; Briassoulis, 2001; Dasgupta et al., 2000; Esty & Porter, 1998; Gil et al., 2001; Hackett, 1998; Hoffman, 2000b; Kinsley, 1995; Sharachchandra M Lele, 1991; Metzger & McEwen, 1999; O'Hara, 1995; Rangel, 2000; Wall, 1997). As Horobin and Long (1996) concluded "the development of sustainable tourism remains dependent on the *willingness and ability* of individuals in the tourism industry to act on such guidelines." The ability to adopt ESMPs is widely measured by economic and technological indicators while the willingness to adopt tends to be the results of a psychological and/or sociological rationalization process.

The inefficiency of the simple cost/benefit model required a better model to predict the likelihood of ESMP's adoption. The new model needed to be able to capture the wider range of cost/benefit and the sociological/psychological dimensions of a business firm's decision to adopt/reject ESMPs.

5.2. Rogers' Diffusion of Innovations Theoretical Model

In the search for an appropriate model to study the likelihood of adoption of ESMPs, the diffusion of innovations is the best fit given the context of this study. As Rogers (1995) defined innovation as "an idea, practice, or object that is perceived as new to individual or other unit of adoption," ESMP can be considered as a type of innovation. Generally, sustainable tourism is relatively new idea in Vietnam. Therefore, the study of adoption of ESMPs is equivalent with the study of adoption of innovation, in which innovations are particular ESMPs.

In addition, diffusion of innovations theory overcomes the problem of the simple economic model which assumes financial cost/benefit analysis is the major rationale for an organization's decision of adopting ESMPs. The diffusion of innovation model can be conceptualized to contain a wider range of economic indicators and a set of variables which measure the psychological/sociological process of adoption.

Moreover, diffusion of innovation is a well developed theory. The model has been used since its introduction in 1962 and continuously refined by Rogers and his assistants by empirical research. As summarized by Rogers (2003), the diffusion of innovation model has been applied in more than 5,000 studies across different principles including economics and marketing. Another significant reason why theory of diffusion innovation is suitable to my study is that the model has been cross-culturally tested and showed its consistency (Everett M Rogers, 1995).

The theory of diffusion of innovations has also been applied to various research concerning recreation and tourism studies (Kocis, 1986). Recently, researchers have explored the adoption of environmental innovation using the framework of diffusion of innovation theory (Bansal, 2002; Gil et al., 2001; Horobin & Long, 1996; Ramus, 2001; Reinhardt, 2000). They concluded that "the same factors that encourage innovation in general would most probably encourage environmental innovation" (Ramus, 2001).

Figure 1.2 shows the basic Rogers' model in which a decision making unit passes from first knowledge of an innovation to forming an attitude toward the innovation. The five main steps are:

1. *Knowledge* occurs when a decision making unit is exposed to an innovation's existence and gains some understanding of how it functions.
2. *Persuasion* occurs when a decision making unit forms a favorable or unfavorable attitude toward the innovation.
3. *Decision* occurs when a decision making unit engages in activities that lead to a choice of adopt or reject the innovation.
4. *Implementation* occurs when a decision making unit puts an innovation into use.
5. *Confirmation* occurs when a decision making unit seeks reinforcement of an innovation-decision already made, or reverse a previous decision to adopt or to reject the innovation. It might happen after exposure to conflicting messages about the innovation.

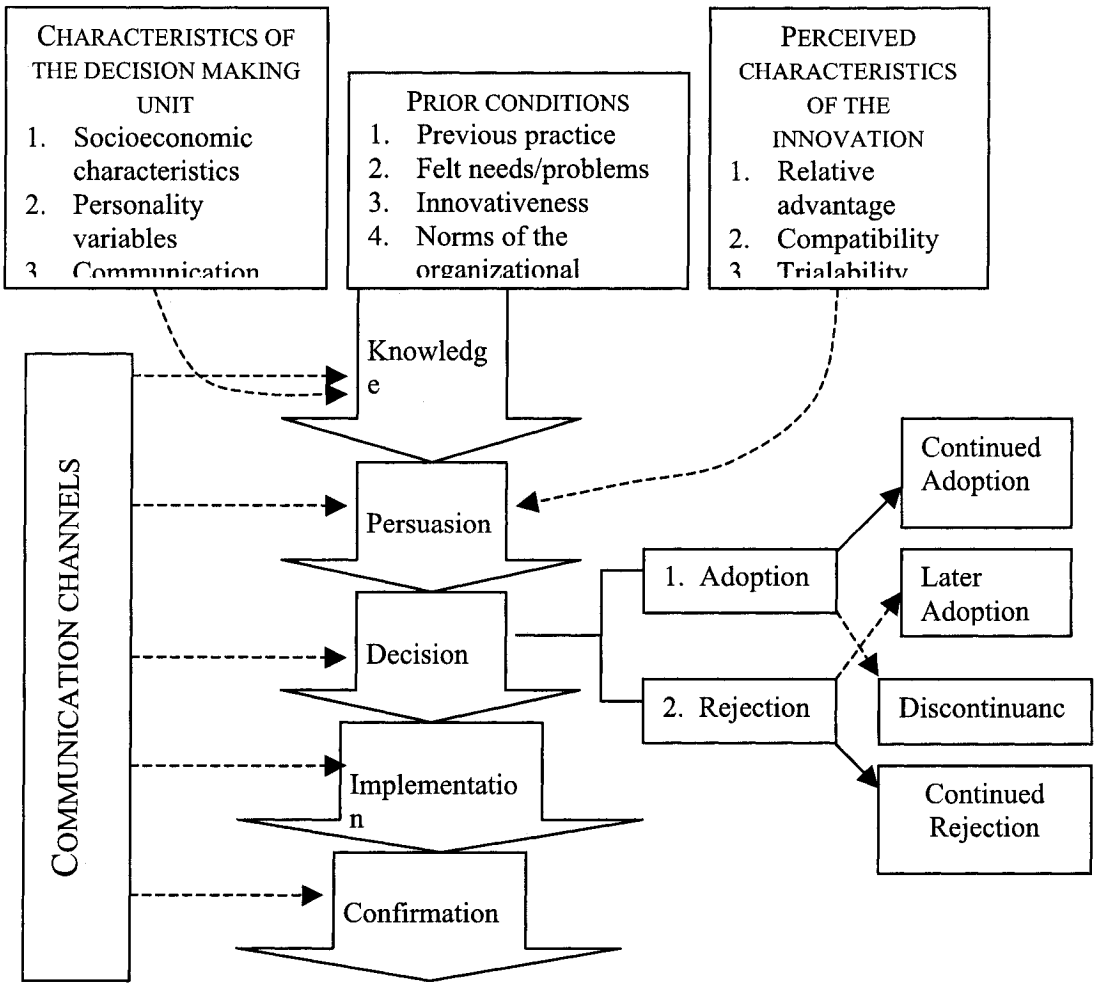

Figure 1.2: Elements of Rogers' initial model of innovation diffusion process (Everett M Rogers, 1995)

The characteristics of innovations in this model are defined as follows:

Relative advantage: The degree to which an innovation is perceived as better than the idea it supersedes. The degree of relative advantage may be measured in economic terms, but social prestige, convenience, and satisfaction are also important factors. It does not matter so much if an innovation has a great deal of objective advantage. What does matter is whether an individual perceives the innovation as advantageous. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be.

Compatibility: The degree to which an innovation is perceived as being consistent with existing values, past experience, and needs of potential adopters

Complexity: The degree to which an innovation is perceived as difficult to understand and use. Some innovations are readily understood by most members of a social system; others are more complicated and will be adopted slowly.

Trialability: The degree to which an innovation may be experimented with on a limited basis. New ideas that can be tried on the installment plan will generally be adopted more quickly than innovations that are not divisible.

Observability: The degree to which the results of an innovation are visible to others. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it.

Rogers developed this initial model to illustrate the *individual* innovation diffusion process. In the earlier research using the model (1970s and prior) scholars simply transferred this model to the study of organizations, often without carefully thinking through the ways in which the two levels of systems were alike or differed (Everett M Rogers, 1995). This approach is problematic because many organizational characteristics are equivalent to the characteristics of innovative individuals (such as organizational size and individual wealth and education), but certain organizational characteristics do not have an individual counterpart (Everett M Rogers, 1995). Because of this problem, the initial diffusion innovation model cannot be directly applied to the study of organizations but requires certain modifications. Figure 1.3 is the model that

Rogers developed to study diffusion of innovations in the context of organizations, which he called *organizational innovativeness.*

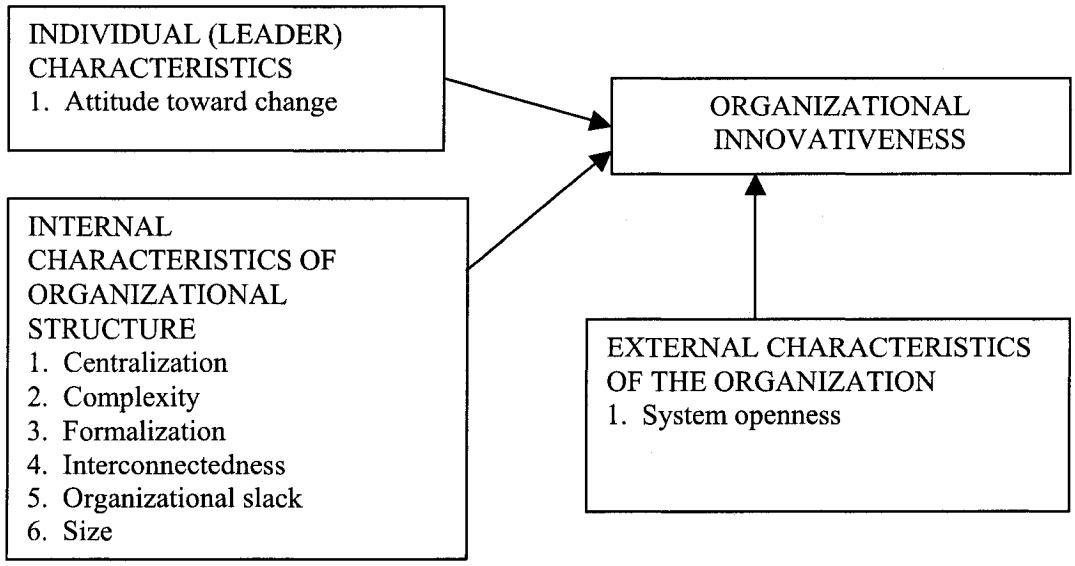

Figure 1.3: Rogers' initial organizational innovativeness model (Rogers, 1995)

Figure 1.4 is another model developed by Rogers (1995) which depicts the relationship between influential factors and the rate of adoption for a certain innovation. The difference between the organizational innovativeness model and the rate of adoption model is the unit of analysis. The innovativeness model focuses on the characteristics of organization that affect the decision to adopt an innovation. The rate of adoption model focuses on perceived attributes of innovation itself as a major influence on the ability of being adopted.

The earlier reviews of research applying the diffusion of innovations theoretical framework by Downs and Mohr (1976), Bigoness and Perreault, Jr (1981), and the later critiques by Damanpour (1991),Wolf (1994) and Rogers (1995) found that there is a wide range in the results of research. They found that the study of innovative behavior in organizations remains relatively undeveloped as the results of organizational innovation research have been

inconclusive, inconsistent and characterized by a low level of explanation (Bigoness & Perreault Jr., 1981; Damanpour, 1991; Everett M Rogers, 1995; Wolfe, 1994). For example, if one factor is found to be highly important to the organizational innovativeness in one study, it is then found to be less important, not important at all, or even has an inverse effect in other research (Downs & Mohr, 1976).

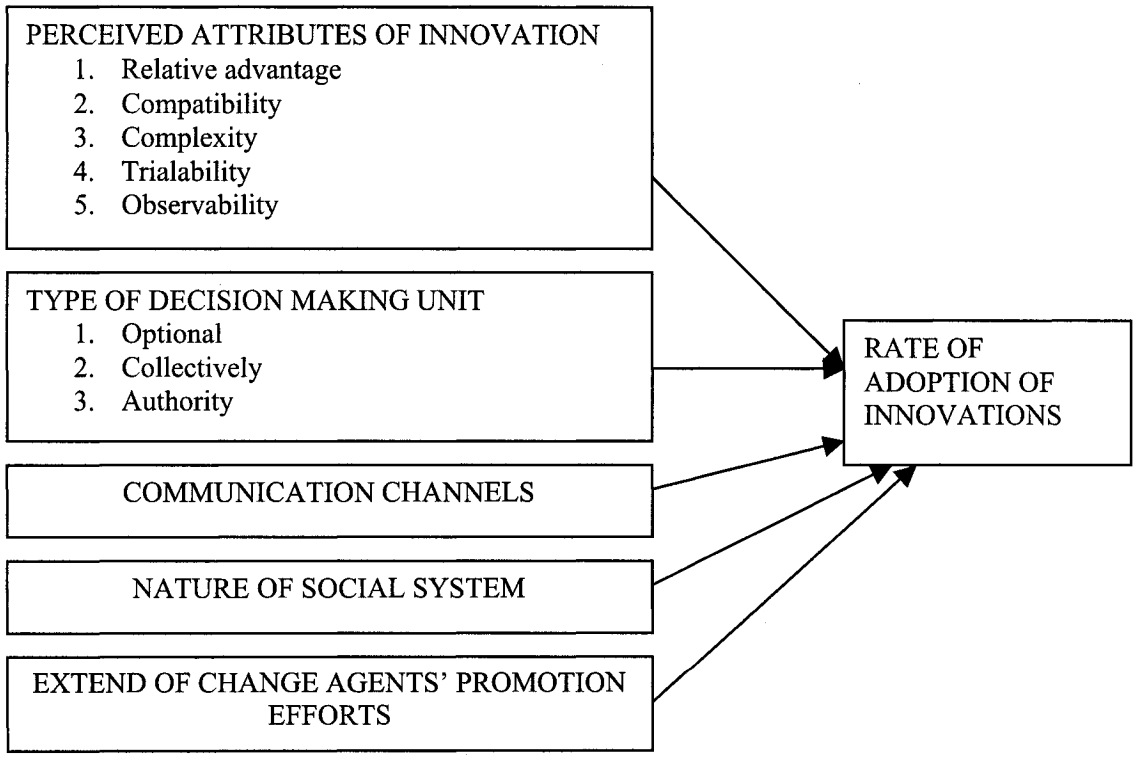

Figure 1.4: Rogers' initial adoption rate of innovations model

The cause of this inconsistency, as defined by Downs and Mohr (1976) and Bigoness and Perreault, Jr (1981), is the difference in the attributes of innovation. For example, Downs and Mohr (1976) suggested that innovations should be first classified with a primary attribute such as cost or level of technical difficulty. The comparison is then based on the secondary attributions of innovation. Damanpour (1991) also explored further into the differences of innovation

attributes. He suggested categorizing the innovations in different types based on their nature such as technological versus administrative innovations. Thus the comparison of the innovativeness associated with certain types of innovation may be more consistent.

Another cause of variety according to Rogers (1995) and Ravichandra (1999) is that researchers often look at organizations as "organic" and "static" when in reality they operate in dynamic, complex environments. This leads to the consequence that researchers overlook the impact of the external environment on organizational innovativeness. The external environment is different from industry to industry and over time, leading to inconsistency study findings. Rogers (1995) suggested examining the external environment which is measured by the system openness as shown in Figure 1.3.

Wolfe (1994) concluded that there is inconsistency in the results of the diffusion of innovations study because although researchers have adopted the same theoretical framework, they are using different research designs. Table 1.1 shows the summarization of research classifications developed by Wolfe (1994).

Table 1.1: Type of research within diffusion of innovations theoretical framework (Wolfe, 1994)

Research question	Research approach	Research focus
1. What is the pattern of diffusion of an innovation through a population of potential adopter organizations?	Diffusion of innovation (DI) research	Address the diffusion of an innovation over time and/or space
2. What determines organizational innovativeness?	Organizational innovativeness (OI) research	Address the determinants of the innovativeness of organization
3. What are the processes organizations go through in implementing innovation?	Process theory (PT) research	Address the process of innovation within organization

Different research approaches suggested by Wolfe (1994) are:

- DI: examines at a population of potential adopters. The unit of analysis is therefore the innovation. The objective of DI research is to explain or predict rates and patterns of innovation over time and/or space.
- OI: examines the determinants of an organization's propensity to innovate. The unit of analysis is thus the organization. OI research adopts a variance research model, the common sort of hypothesis or model such as regression model.
- PT: examines the nature of the innovation process; how and why innovations emerge, develop, grow, and (perhaps) terminate, are examined. The unit of analysis of PT research is the innovation process itself.

This classification, according to Downs and Mohr (1976), falls into the single-innovation or single-organization research category. Downs and Mohr (1976) suggested another research design which they called multi-innovation or innovation-decision design. This design is a combination of DI and OI research.

> *"The symmetry and close relation among the theories of innovation and adoptability are best demonstrated by considering the innovation-decision design, the design in which the sample size is equal to the number of innovations times the number of organization. Assume that we wish to study both innovations and adoptability. Because the measured secondary attributes of the innovations are identical to those of the organizations, these need be measured only once. Given a single data set based on the innovation-decision design, we can study adoptability simply by eliminating the primary attributes of organizations; reinserting those primary attributes, we can study innovation by eliminating the primary attributes of innovation" (Downs & Mohr, 1976).*

Rogers' diffusion of innovation model was adopted as most relevant framework to study the likelihood of adoption of ESMPs. In addition, the model has been widely applied, tested and

has proven the scientific significance. However, based on critiques of the model, some adjustments to the initial model of individual innovation and the initial model of organizational innovativeness were made to overcome limitations addressed above. As the research interest was both the tourism firm's innovativeness related to ESMPs and the determinants that affect the likelihood of ESMPs being adopted, the innovation-decision design suggested by Downs and Mohr (1976) with the unit of analysis being *the organization in relation to innovation* was adopted. Thus, the conceptual model for this research is the combination of innovativeness and rate of adoption models as presented in Figures 1.3 and 1.4. The variables were modified to suit the current condition of tourism industry in Vietnam. In addition, as the external environment of a tourism firm is an important factor, variables depicting effects of external environmental effect were also included.

Figure 1.5 shows the conceptual framework for this research. It contains the variables that were hypothesized to influence the firm's likelihood of adoption of selected ESMPs. The model incorporates some factors corresponding to Rogers' initial model and other factors from the specific perspective of tourism industry.

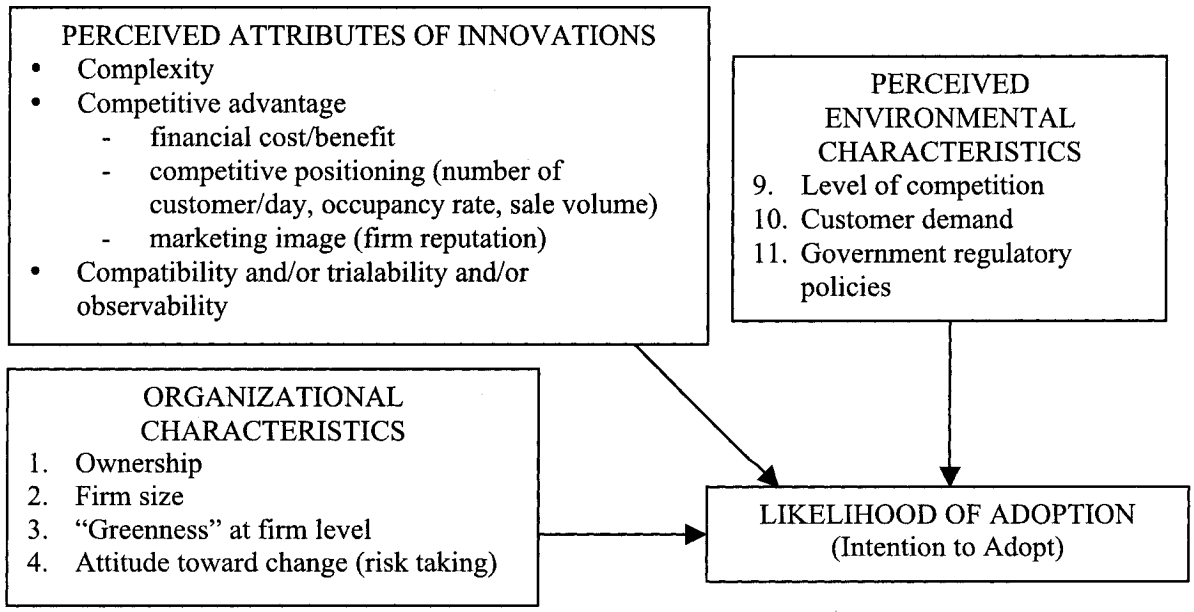

Figure 1.5: Likelihood of adoption model for Vietnamese tourism firm based on Rogers' diffusion of innovations theory.

6. Research Questions and Hypotheses

6.1. Research Questions

The research questions were

1. What are the innovation characteristics correlated with the likelihood of adopting ESMPs among Vietnamese tourism firms?
2. What are the organizational characteristics correlated with the likelihood of adopting ESMPs among Vietnamese tourism firms?
3. What are the external environment characteristics correlated with the likelihood of adopting ESMPs among Vietnamese tourism firms?
4. If any of the above correlations were found, which characteristics are most associated with likelihood of adoption?
5. Do different type of tourism companies (JVCs, SOEs, PVCs, and ECs) perceived innovation, organizational, and external environment characteristics differently from each other? If yes, what are the differences?

6.2. Hypotheses Development

6.2.1. Hypothetical Relationship between Perceived Characteristics of Innovations and the Likelihood of Being Adopted

As defined by Rogers (1995), an innovation itself does not have neither positive nor negative attributes, but rather depends on how the firm them. For example, one firm may perceive an innovation as having positive attributes while another firm may perceive the same innovation as negative. To that extent, the attributes of an innovation that the firm perceives will effect the decision of adopting or rejecting a specific innovation. Rogers suggests five main perceived attributes of innovations as presented earlier in this paper. However, he also suggested that modifications should be made according to industry, time and location specifics. This

suggestion was developed based on a study by Kearns (1992) which resulted in 25 different attributes of 8 different innovations. In addition, Rogers (1995) reviewed diffusion of innovation literature and concluded that relative advantage, compatibility and complexity had a significant impact on the rate of adoption, while trialability and observability seem to have a lesser effect. Also, trialability and observability can be studied embedded in technological and organizational aspects of the innovation attributes.

Therefore, three perceived attributes of innovation were focused in this study:

(1) Relative advantage, which is represented in terms of perceived competitive advantage that tourism firms may gain with regard to ESMPs.

(2) Compatibility, as Rogers (1995) defined, is the level by which ESMPs fit into current organizational structure, culture, and procedure.

(3) Complexity, and to a certain extent contains trialability and observability, is viewed as technical attributes of ESMPs.

Competitive Advantage

In the modern economic environment, competitive advantage is the essential measurement of firm performance (Porter, 1985). The firm constructs its competitive advantage by "the unique bundle of resources that it possesses and deploys" (Mahoney, 2001). In order to maintain and grow, the firm must sustain its competitive advantage. This goal can be achieved by properly using the set of competencies which "include the particular set of skills and resources a firm possess as well as the way those resources are used to produce outcome" (Fiol, 2001). Resources that the firm uses in competition can be tangible assets, such as physical capital or brand names, to less-tangible assets such as organizational routines and capabilities. Different firms have different strategies for sustaining their competitive advantage. However, Porter (1995) and Kotler et al (2003) summarized two main types of strategy namely cost leadership and differentiation. Cost leadership strategy focuses on reducing production costs and thus the firm would be able to provide service/product with the lowest price in the market. Differentiation

strategy involves product and market differentiation (Kotler et al., 2003). The two main goals of differentiate strategy are to increase the market share and to strengthen company marketing image.

Cost saving: In short-term, net benefits that a firm gains from using natural resources are actually social costs because "organizational goals are tied to economic performance, not environmental performance or social equity" (Bansal, 2002). The social costs are not easy to recognize because they are diverged to general public while the benefits of an individual firms presented by financial figures are visible. However, as environmental problems occur more often and with a larger scale, the social costs became more obvious. In addition, there are also increasing number of scientific evidences of the relationship between business and environmental degradation. Thus, many economists such as Costanza & Wainger (1991) and Daly & Ehrlich (1996) believe that in a near future businesses will not be able to enjoy their "free ride" of exploiting the natural resources but will be forced to share the social costs. As the government policy towards protecting the environment is being tightened, the firm will face increasing cost if it retains an end-of-pipe attitude (Reinhardt, 2000). Proactive firms, by voluntarily adopting ESMPs, will have the advantage of an early adopter and maintain its costs level compared to competitors when business environments change (Ramus, 2001). Following this alternative view, "these two types of cost (production cost versus social cost) must converge over the long term and that strategies that anticipate this convergence will, if they are timed properly, yield a competitive advantage" (Reinhardt, 2000). Several current research support this viewpoint showing certain business practices that firms can voluntarily implement to reduce environmental burden while reducing production costs and creating economic value (Clelland et al., 2000).

Hypothesis 1a: Perceived cost savings is positively correlated with the likelihood of ESMP adoption.

Overall financial performance: However, adopting ESMPs results in investment costs. The financial costs may come from the need for R&D, implementation costs or investment in facilities, equipment, and other organizational changes. By adopting ESMPs the firm accepts some social opportunity costs, namely the costs of using the environment, which were earlier distributed to the society (Reinhardt, 2000). Being a sustainable tourism company, the firm has to bear both social and private costs which affect overall financial performance. The concern of sustainable development in this case is not the willingness to pay but the ability to pay. In market economic condition, firms are focused on shareholder value which often comes before environmental value. "This orientation is understandable given that a firm's time horizon is considerably shorter than society's. If a firm does not survive the next organizational challenge, the question of societal sustainable development is moot" (Bansal, 2002). In some cases, although benefit of innovation is perceived to outweigh the costs in long-term, the firm is still reluctant to adopt ESMPs if the adoption negatively affect the overall short-term financial performance (Clelland et al., 2000).

Hypothesis 1b: Perceived overall financial benefit is positively correlation with the likelihood of ESMP adoption.

Market share: Market share is another important indicator of competitive advantage. Firms can increase their market share either by increasing the number of customers in the current market segment or by penetrating a new segment (Kotler et al., 2003). According to Mowforth and Munt (1998), there is an emergence of a "new tourist class" and "these social classes are not only important consumers of Third World holidays but also key groups in promoting and implementing notions of sustainability." This new class of tourists, often characterized as the middle class in developed countries who have moderately high incomes, are mostly young to middle age well educated people holding professional jobs. However, other researchers argue that it is inappropriate to characterize this new class of tourists by social class and income.

Bourdieu (1995) introduced the term 'habitus' as a more appropriate term to classify this new group of tourists. The new 'habitus' do not differentiate themselves from other 'habitus' by income, living standard and social interest but more likely on the "lifestyle" that they choose to live (Bourdieu, 1995).These new 'habitus' show a high level of concern for the sustainability of the environment and environmental protection activities in general. Moreover, they are willing to pay higher prices for environmentally friendly products (Luzaz & Cosse, 1998b). Research has shown that the number of tourists in this 'habitus' market segment going to Third World tourism destinations is continuously increasing (Mowforth & Munt, 1998). If the tourism firm already targets this class of tourists, adopting ESMPs is the obvious solution to sustain customer loyalty. If the firm has a desire to penetrate this market segment, adopting ESMPs may become a requirement. However, tourism firms may target other market segments, adopting ESMPs may not be necessary for the current market segment. It may even conflict with values imposed by the current customers. Adopting ESMPs may cause a threat of reducing market share and therefore will not be accepted.

Hypothesis 2: Perceived increasing market share is positively correlated with the likelihood of ESMP adoption.

Marketing image/reputation: The marketing image of a company is created by the brand name and the reputation of a company in the market (Kotler et al., 2003). Marketing image is especially important in the tourism industry because tourism products are mostly intangible, inseparable, variable and perishable (Kotler et al., 2003). That means the product cannot be stored, or tested in advance by the five basic senses. Rather, customer experience is a part of the product and they can only evaluate the product quality as they consume it. Customers base purchasing decisions mostly on the uniqueness of the product and the reputation of the company. As Kotler et al (2003) observed, many tourism firms have used "being green" as part of their marketing image. This image is not only aimed at customers but also at government and the

general public. However, adopting ESMPs may conflict with the current company marketing image. As firms target different marketing segments, one possible image that the tourism firm may want to convey is a luxury level of service and product. These customers may not have any concern for the environment or are not willing to change their perception of a "luxury" product. In this case, adopting ESMPs may be a threat to a well-established marketing image, and are therefore less likely adopted.

Hypothesis 3: Perceived benefit from a "green" marketing image is positively correlated with the likelihood of ESMP adoption.

Complexity: Complexity is the "degree to which innovation is perceived as relative difficult to understand and use"(Everett M Rogers, 1995). Technical complexity does not seem to be a major concern in sustainable tourism development literature with little attention having given to understanding the complexity of ESMPs (Horobin & Long, 1996). One possible explanation is that tourism is a service oriented industry which does not require complicated technology. Therefore, sustainable tourism development will not require the firm to apply technology that is too complex to understand or to use. However, given the situation in Vietnam where the tourism industry is relatively new, the firm's management may not have much experience or may not have any experience at all with ESMPs. The empirical research under the innovation-decision conceptual framework confirms that the more complexity of an innovation the less likely it will be adopted (Everett M Rogers, 1995; Shook, 1997).

Hypothesis 4: Perceived complexity is negatively correlated with the likelihood of ESMP adoption.

Compatibility: Compatibility is the level to which innovation is perceived as consistent with existing value, past experience, and needs of potential adopters (Everett M Rogers, 1995). Compatibility of innovation is related to the perceived success of implementing an innovation

(Hurley & Hult, 1998). An innovation that is incompatible with cultural values/beliefs will likely be rejected (Everett M Rogers, 1995). In addition, the adoption of innovation may also depend on the organizational learning experience. Hurley and Hult (1998) found that organizations which had successfully implemented certain innovations in the past would be more likely to adopt a similar one in the future. Highly compatible innovation would attract employee attention and commitment to the adoption of innovation (Hurley & Hult, 1998). There are several ways to address the compatibility of innovation to the current organizational condition. However, the bottom line of compatibility is to the level of interest that employees show to the innovation (Hurley & Hult, 1998). It is because, according to Okumus & Hemmington (1998), the resistance from employees is always strongest at the early stage of adoption. The innovation that gains employee interest from the beginning tends to be adopted faster (Okumus & Hemmington, 1998). The relationship between level of compatibility and the likelihood of being adopted is hypothesized to be positive.

Hypothesis 5: Level of increasing employee interest in ESMPs is positively associated with the likelihood of ESMPs being adopted

6.6.2. Hypothetical Relationships between Organizational Characteristics and Likelihood of Adoption

Size

Firm size is perhaps the most controversial factor influencing the adoption of an innovation. Shook (1997) conducted an extensive literature review on the body of looking at the relationship between firm size and likelihood of adoption. He observed that there is no common agreement to which direction firm size affects innovativeness. Some research suggests that larger firms are more likely to adopt innovations compared to small firms because larger firms have more slack resource, both financial and human resources, necessary to make the change possible (Bansal, 2002). In addition, larger firms tend to be leaders in the industry and in that position

they tend to be more proactive or aggressive. That means they are more interested in innovations and actively seek changes to maintain their competitive advantage (Bansal, 2002).

The counter argument is that small firms are more innovative. The reasoning for this is that small firms have a more flexible structure that allow them to be more adaptive to change (Mody & Wheeler, 1987). Shook (1997) also found some studies that indicate no relationship between innovativeness and firm size. A study by Ozsomer et al (1997) also had the same result. The authors suggested that quantitative study (amount of practices being adopted) may not be the best differentiation between large and small firms but a qualitative study (type of practice being adopted) is perhaps a better approach.

Hypothesis 6: Firm size is correlated with likelihood of ESMP adoption

Note that the direction of the correlation (positive or negative) between firm size and likelihood of adoption was not hypothesized because of the complexity of the relationship.

Ownership

Relationship between ownership of Vietnamese tourism firm, namely joint-venture, state-owned, equitized and privately-owned, is a specific interest in this study. Type of ownership was neither suggested by Rogers nor explored by other researchers. This is a unique situation in Vietnam where the ownership type of the firm is also relatively associated with firm size, firm resources and type of management. Type of ownership may not be necessary to include in the overall model as an independent variable. A correlational analysis between firm size and firm ownership was conducted, if a sufficient correlation was found, firm ownership would be omitted. If the correlation was insignificant or weak, ownership would be another independent variable the overall model. Therefore, hypothesis for the relationship between type of ownership and likelihood of adoption was not specified. In addition, how difference each type of company (as in ownership) perceives innovation, organization, and external environment characteristics is

another research interest. No hypothesis was made addressing these relationships but a separate analysis would be conducted.

Attitude toward sustainable development

For the purpose of this study, attitude toward sustainable development is labeled as the "greenness" of tourism firms. This is a special organizational characteristic not originally constructed by Rogers. However, corporate responsibilities in general and environmental responsibility in particular are important aspects of sustainable development research. This attitude is considered one type of organizational norm. There has been very limited attention paid to the relationship between corporate greenness and adoption of sustainable development innovations (Horobin & Long, 1996). However, there are various studies examining the relationship between consumers' attitude toward the environment and environment protection and the adoption of ecologically produced products. Schwepker and Cornwell (1991) reviewed 17 studies from 1972 to 1991 concerning the relationship between consumer attitude towards environment and their intention to purchase environmentally sound products. Most of the research found a positive relationship. However, the correlation appears to be weak and the relationship occurred under other constraints such as income and level of education. Currently, there is no sustainable tourism literature using the diffusion of innovations framework. However, a research was done by Horobin and Long (1996) in which they develop the greenness scale of tourism organization. Even though the relationship was found to be positive, they suggested further research needs to be done.

Hypothesis 8: Firm greenness is positively correlated with likelihood of ESMP adoption.

Attitude toward change

Attitude toward change is referred to risk-taking behavior (Avlonitis et al., 1994). Firms that have an 'innovativeness culture' or show willingness towards new idea development/technological change are the ones that most likely to adopt the innovation (Vazques

et al., 2001). Furthermore, new ideas, products or management practice are adopted faster in organizations that are already in the innovativeness leadership position in the industry (von Krogh & Roos, 1995). Rogers' (1995) summarization of the literature on organizational innovativeness also shows that an organization with an open system (open to new ideas) is more innovative than an organization which is reluctant to take risk.

Hypothesis 7: Risk-taking is positively correlated with the likelihood of ESMP adoption.

6.2.3. Hypothetical Relationships between Perceived External Environment Characteristics and the Likelihood of Adoption

Perceived characteristics of the external environment have a great effect on the innovativeness of an organization (Everett M Rogers, 1995). Like attributes of an innovation, external environment characteristics themselves are neither favorable nor unfavorable to a firm. The characteristics of the external environment are perceptions that the firm creates from its sources of information (Miles & Snow, 1978). Classical economic theory made a simple assumption that sources of information about the external environment are completely mobile and divisible. Thus, freely flows between companies. This assumption has been critiqued as naïve and under-represents the power of information in a competitive environment (von Krogh & Roos, 1995). In a competitive environment the firm is not the sole player but also depends upon others such as competitors, customers, government and the general public. Among those, competitors, customers and government are the main forces that most influence the firm's management decisions (Kotler et al., 2003). Therefore, there three forces are the focus of this study.

Level of competition

Researchers tend to agree that companies that operate in a high competitive environment tend to be more innovative (Veliyath & Fitzerald, 2000). The relationship between level of

competition and level of innovativeness also has been studied in environmental management. Competition has been found to be one of the most important factors to a firm's decision to "go green" (Appiah-Adu & Singh, 1998; Clelland et al., 2000; Hurley & Hult, 1998; Karagozoglu & Lindell, 2000; Kassinis, 2001; Okumus & Hemmington, 1998; Rangel, 2000; Veliyath & Fitzerald, 2000). According to Veliyath and Fitzerald (2000), in a highly competitive environment the firm has no choice but to be proactive. Going green is one of the possible ways that a firm can differentiate itself from other competitors (Kotler et al., 2003). While some studies have found a positive relationship between level of competition and level of innovativeness, Appiah-Adu & Singh (1998) found the relationship was not significant. Their explanation is that their survey was conducted among small and medium businesses who may not have sufficient information about competitors. The small and medium tourism businesses in Vietnam are expected to be the larger proportion of the population. Thus, similar results may be found. However, as tourism is a very dynamic industry, the hypothesized relationship is expected to be positive.

Hypothesis 8: Perceived competition is positively correlated with likelihood of ESMP adoption.

Customer demand

Ultimately, the goal of innovation in business is to attract more customers or to increase loyalty from current customers. In a market-oriented firm the customer is the cause and the target of innovation (Kotler et al., 2003). Firms would be more likely to invest in new product/technology or improve their current product if there is a certain demand from customers (Miles & Snow, 1978). In other words, companies who understand their customers well and are confident in predicting demand will be more likely to adopt innovation. In contrast, companies who do not have a good profile of their customers will be resistant to change due to the risk of losing current customers (Okumus & Hemmington, 1998; Rangel, 2000). Certainty about customer demand is therefore tends to be positively associated with adoption of innovations.

Hypothesis 9: Certainty about customer demand is positively correlated with likelihood of ESMP adoption.

Government/Regulation

Government regulation has a great effect on the firm's management, especially the regulation regarding environmental management. Rangel (2000) found hotels that have more certainty about the changes in environmental regulation will be more likely to voluntarily participate in ecotourism projects. In general, other government regulations also affect the firm's strategic management. A stable, supportive environment is always preferable to an unstable one (Kotler et al., 2003). Firms are not likely to invest in new technologies, and products, especially environmentally sound products, if they do not sense a positive attitude from the government (Ozsomer et al., 1997). The empirical research results suggest that firms perceive uncertainty of government policy as a risk or threat and thus are not likely to make new investments (Kotler et al., 2003; Ozsomer et al., 1997; Soderbaum, 2000; von Krogh & Roos, 1995).

Hypothesis 10: Certainty regarding government regulation is positively correlated with likelihood of ESMP adoption.

7. Methodology

7.1. Research Design

Correlational research design as defined by Graziano and Raulin (2000) is a study that "always measures at least two variables, and plans for measuring variables that formalized prior to any actual measurement." That means in correlational research design at least two variables are measured and there is an indication of relationship among variables. The correlational design is different from experimental design in regards to the level of control. There is no control over the variables in correlational design when the maximum control is required in experimental design. Therefore, although the relationships among variables in correlational design are

indicated and examined, causality cannot be concluded, because in addition to variables being studied, there could be other confounding variables. Therefore, correlational design cannot be used to test a theory but simply negate it.

In this research, the studied groups (tourism businesses) as well as variables measuring the perceived barriers and incentives to adopting ESMPs are neither controlled nor manipulated. Since they already exist, the researcher only observes and records the data based on a research instrument. The aim of this study is to apply the framework of diffusion of innovations theory to examine the hypothetical relationships among variables, but not to test the theory. Therefore, correlational design would be the best classification of this research.

7.2. Variables and Operationalization of Constructs

The unit of analysis is the organization in relation to a particular innovation (O by I) as suggested by Downs and Mohr (1976). Thus this study has two dimensions (1) the innovation itself and (2) the intention of a tourism firm to adopt that particular innovation.

Analysis of result will be in three main sections

(1) The relationship between the likelihood of ESMP adoption and innovation characteristics.

(2) The relationship between organizational characteristics and the firm's intention to adopt.

(3) The relationship between external environment characteristics with the likelihood of adoption.

Because the unit of analysis is the organization in relation to the innovation and hotels have a different set of ESMPs than those of tour companies, two separated analyses were conducted to each type of tourism businesses. Statistical procedure was logistic discrimination analysis to discriminate O by I into two populations of rejection and adoption. Also, a comparison of perceived characteristics among different type of ownership was made.

7.3. Dependent Variable

The likelihood of adoption or intention to adopt is the dependent variable. There has been much discussion in the literature of how to measure this variable. Some researchers, such as Tabak and Barr (1998) used a ratio scale; the question was "If the decision were totally up to you, what is the probability that you would adopt the innovation in your organization?". Respondents were asked to answer on the scale from 0 to 100%. The other measurement is a dichotomous scale with 0 being coded as nonadopted and 1 being coded as adopted. The dichotomous scale is widely used in diffusion-innovation research (Rogers, 1995). It appears in two common formats. One format is the direct Yes/No question as kind if the innovation will be adopted. Another format, as used by Avlonitis et al (1994) and Shook 1997, appears in a form of a multiple-choice question. These answer choices are then combined and recoded into a binary scale which 0 representing nonadoption and 1 representing adoption.

Both measurement methods (ratio and dichotomous scale) appeared to be reliable and valid. However, some researchers such as Downs and Mohr (1976) and later on Wolfe (1994) were favored of a dichotomous scale due to several advantages. One advantage is the convenience of interpreting the results. For example, saying that an organization can be 10% sure that they will adopt a certain innovation, as in the case of using a ratio scale, would be more difficult to understand. Another advantage of a dichotomous scale is that it would be easier for the target audiences to select an answer choice rather than determining the percentage of their adoption. In addition, a dichotomous scale would ensure a more appropriate statistical procedure in term of correlation/regression analysis. Using a ratio scale for the response value, the regression analysis requires all independent variables to be continuous which may not be possible in some cases such as type of ownership.

Therefore, a dichotomous scale with multiple items was adopted to reduce the risk of respondents giving "neutral" answers. This scale was developed by Avlonitis et al (1994). In the

original research the authors studied the intention to adopt of brand new product that had not been introduced to the market. The first item was added because the practice may have been already adopted by the firm at the time of survey. Likelihood of adoption presented to target respondents is in the form of the following question with four answer choices:

Have you adopted this practice?

1. Yes we already adopted it
2. No but we seriously consider adopting it within the next 5 years
3. No, we will just wait and see
4. No and we will not consider adopting it.

These four responses were combined into a binary response with a conservative approach. It was assumed that since being environmentally responsible is a positive social norm, respondents would avoid answering a definite 'No'. In addition, it is also a cultural issue that Vietnamese respondents are not likely to give a definite answer of 'No' to a direct question (Ellis, 1995). Therefore, the only answer choice number one was defined as 'Yes' and all other three answer choices were grouped as 'No'.

7.4. Independent Variables

The construct measured was the perceptions of tourism companies (accommodation or tour) in Vietnam towards the adoption of various environmental management practices. These perceptions are represented by different independent variables. Several types of measurement scaling techniques have been developed in social science, including Thurstone scales, Guttman scales, and Likert scales. However, Likert scaling is the most common technique used to measure opinions, beliefs, and attitudes (DeVellis, 1991). Under the Likert scaling technique, "the item is presented as a declarative sentence, followed by response options that indicate varying degrees of agreement with or endorsement of the statement" (DeVellis, 1991). The Likert scale is

commonly used in research under the framework of diffusion of innovations theory, as it is shown in a vast number of studies.

All scales used in this research to measure the independent variables were used and tested in previous researches with high validity. However, while a 5-point scale is the most common Likert scale format and allows less complicated statistical tests, it would not be a good choice in the Vietnamese context. As in many Asian countries, an absolute "NO" or absolute "YES" is not likely to be given as an answer to a direct question (Ellis, 1995). Therefore, if the original scales were not already in 7-point interval format were adjusted. Example of a questionnaire is included in the appendix.

Table 1.2: Adopted measurement scales and their origin.
All measurements are in 7-point equal interval scale except for firm size and ownership

Variable	Origin	Number of item	Cronbach's alpha
Competitive advantage	Karagozoglu & Lindell, (2000)	4	0.86
Complexity	McCabe (1987)	4	0.8
Compatibility	Kocis (1986)	1	n/a
Firm size (this is not a Likert scale)	Rangel (2000)	• 4 items for hotels • 3 items for tour companies	n/a
Ownership	Vietnam specific	3 categories	n/a
"Greenness"	Horobin and Long (1996)	5	n/a
Attitude toward change/risk-taking	A development from Miles and Snow's perceived uncertainty scale (1978) by Hurley & Hult (1998), later applied by Vazques et al (2001)	4	0.869
Perceived competition	earlier developed by Jaworski and Kohli (1993) has been tested and used by Appiah-Adu & Singh (1998)	3	0.71
Perceived certainty about customers' demands	Miles and Snow (1978)	2	n/a
Perceived certainty about government policies	Miles and Snow (1978)	5	n/a

7.5. Research Instrument: Questionnaire

Even though environmental management practice is a broadly used term in the international tourism market, it is virtually unknown within the Vietnam tourism industry. In a general sense, environmentally sustainable management practice indicates the integration of environmental responsibility into the company's management practice (Hoffman, 2000b). It is also argued that environmental management should not be understood as managing the environment but managing for the environment (Hackett, 1998). In this study, environmental management practices were those aimed at reducing or minimizing the impact of business activities on the natural environment. These management practices cover every aspect of the company's activities including product design, waste management, and environmental education programs for employees and customers. In tourism, the term is used interchangeably with sustainable, ecotourism or green management practices. For example, environmental management practices in the case of Hyatt Hotel worldwide management strategy also indicate criteria for "green hotel" practice.

The research instrument was developed through a two-stage process. At stage one, all available literature was reviewed and synthesized to produce two lists of ESMPs, one for hotels and another for tour companies. The core of the research instrument is the list of applicable environmental management practices for accommodations and travel businesses in Vietnam. Because of the differences between the accommodation and travel sectors, two separated lists were developed. Such codified lists of environmental management practices have not been developed for the Vietnam situation. However, there are several well-developed programs around the world such as Nature and Ecotourism Accreditation Program (NEAP, 2003) from Australia, the Ecotourism program from Costa Rica (CST, 2003) and some other countries. These programs include both accommodation and travel business sections. There are also

numerous "green hotel" criteria from other organizations such as Hyatt Corporations (Enz & Siguaw, 1999). These practices were chosen by their importance and applicability for hotels and tour companies in Vietnam. Obvious irrelevant practices such as managing private land were omitted because Vietnam does not have a private land ownership system. At the end of this stage one list of 82 ESMPs and another list of 73 ESMPs for hotels and tour companies were generated.

A semi-Delphi procedure was utilized at stage two using two expert panels. This technique was suggested by Delbecq et al. (1975) as an effective method to evaluate alternative plans and reach a decision given time and budget constraints. The first review process occurred over six weeks using emails. The first expert panel included international experts who have experience in research and/or practicing sustainable tourism management practices. The experts were asked to refine the list and make sure that no important items were left out. The review criteria were the importance and appropriateness of each ESMP to sustainable tourism development program in Vietnam. The expert panel included

1. Dr. Dara O'Rourke from UC Berkerly. Dr. Dara O'Rourke is an expert in environmental policy and has specialized in environmental policy analysis in Vietnam. He had worked in various industrialized zones in Vietnam as an important advocate for environmental quality. I acknowledge Dr. O'Rourke's valuable comments at the beginning stage of composing the list. However, he was not available to review the final list due to his other personal commitment as he was in the process of moving from MIT to UC Berkerly.
2. Dr. Sam Ham from University of Idaho. Dr. Sam Ham has tremendous experience in research as well as in practice with regard to sustainable tourism development program, especially interpretation project in developing country.
3. Dr. Rosemary Black from Monash University (Austrialia). Dr. Black is one of the members of Nature and Ecotourism Accreditation Program in Australia.
4. Jean-Pierre Issave, a PhD from Monash University. Mr. Issave is also executive manager of Wine Food Tourism Strategies Pty.Ltd. He has been involved in designing NEAP in

Australia and also has experience with sustainable tourism development program as tourism business management.

5. Dr. Vikneswaran Nair, Head of Information and Communication Technology/Research and Development, Taylor's College, School of Hospitality and Tourism, Malaysia. Dr. Nair recently conducted a study on sustainable tourism development in Malaysia and was involved in designing the Purple Orchids, a program for sustainable hotels in Malaysia.

After six weeks and with three email rounds a consensus was reached among the experts. The refined list of ESMPs contained 62 items for tourism companies and 57 items for accommodation providers. For practical reasons, i.e. questionnaire length, the time and budget limits, it was impossible to conduct the survey on all the ESMPs. Therefore, a second selection of innovations was made to reduce the size of questionnaire. The above lists were then translated into Vietnamese and given to the second expert panel who are researchers, business managers, and tourism administrators in Vietnam. As the lists of ESMPs were categorized according to the area of environmental management, such as air quality, water management, and other management practices, items were selected as representative of each area. The panel of experts was asked to independently select one list of ESMPs most important to environmental sustainability and one list of ESMPs most applicable to the condition of Vietnam. The selected ESMPs were the ones which would be appeared in both lists. The second expert panel included:

3. Dr. Nguyen Van Dinh, Vice President, Professor of College of Tourism and Hospitality Services, Hanoi, Vietnam.
4. Dr. Tran Thi Minh Hoa, Professor of Tourism and Hospitality Department, National Economics University.
5. Dr. Nguyen Van Luu, Vietnam National Administration of Tourism.
6. Dr. Tran Hau Thu. Emeritus Professor, founder of Tourism and Hospitality Department, National Economics University.

7. M.B.A Hoang Lan Huong, Vice Chairwoman, Department of Tourism and Hospitality, National Economics University.
8. M.Sc. Nguyen Thi Hoa, senior staff, the Institute of Tourism Research.
9. Dr. Pham Hong Chuong, Executive Manager of Marketing, Huong Giang Tourist Company, Vice Director of Research Center, National Economics University.
10. Ms. Nguyen Thi Chien, Executive Manager of Finance, Exotissmo Vietnam.

The review process was conducted by both email and face-to-face correspondence. After eight weeks, consensus was reached, resulting in a list of 15 practices for hotels and another list of 13 practices for tour companies.

The lists of ESMPs were then combined with scale measurements to formulate questionnaires. They were translated into Vietnamese and retranslated into English to access the accuracy. Two groups of hotel and tour company managers with a total of 50 respondents were selected in a pilot survey. No special difficulty in answering the questionnaire was detected. However, respondents made some valuable comments about formatting and arranging the questionnaire which was then adjusted. An example of questionnaire is demonstrated in appendix. However, the order of ESMPs appearing in questionnaire was shuffled and rearranged four times resulting in four different formats of questionnaire to prevent carry-over effect.

8. Organization of the Dissertation

In addition to the introduction chapter, this dissertation is comprised of four manuscripts which were submitted to different journals in the field of tourism and environmental management. Thus, the document differs from a traditional dissertation in that it does not contain separated chapters for the literature review, methodology, results, and conclusions. The introduction chapter includes detailed information for each of these sections.

The first of four papers is presented in Chapter 2 and is titled "Perceptions of Vietnamese hotels regarding direct contributions to local communities – a study of environmental

innovations." In addition to sustaining natural resources and the environment, the most important contribution of sustainable tourism is improvement of living standard and to preserve the cultural identity of the local community. While most hotel environmental innovations are technical innovations involving conservation of energy, water, using alternatives to chemical pesticides, and construction of hotel buildings, only 4 of 15 practices selected by the experts address hotel financial and cultural contributions to local community. As classified by Damanpour (1991), ESMPs are comprised of two main types, administrative and technical innovations. These four practices are administrative innovations. Furthermore, applying Ravichandran's (1999) classification, these four practices are also high cost innovations since they require hotels to make donations and provide free printed materials without any reimbursement. For these reasons, four administrative innovations were separately analyzed as a special subset of the whole database with the objective being to describe the hotels' behavior towards high cost innovations. The paper suggests that innovation complexity is strongly correlated with hotels' intention to adopt ESMPs. In addition, a firm's risk-taking level is another important factor that is positively correlated with likelihood of adoption. Other factors were not statistically significantly correlated with likelihood of adoption.

The second paper which is presented in Chapter 3 and is titled: "Perceptions of hotel businesses in Vietnam toward the adoption of environmentally friendly practices". The paper examines incentives and barriers to adopting ESMPs by hotels. This paper includes results from the whole dataset, which contains responses from 190 hotels, out of 498 selected at random with respect to their intention to adopt 15 ESMPs. Generally, the paper suggests that hotel behaviors are not much different from the findings presented Chapter 2 with complexity and risk-taking being the strongest correlated factors. However, the results also include some other important relationships such as the correlations between observability, certainty about customer demand, hotel location (natural resource versus non-natural resource area), and likelihood of adoption. Most of the correlations between dependent and independent variables confirm the study

hypotheses. For example, complexity, relative advantages, risk-taking, and certainty about customer demand were positively correlated with likelihood of adoption. However, the paper also suggests more complicated relationships such as nonmonotonic relationships between firm size, perceived competitive levels and likelihood of adoption. The results indicate that large and small hotels are not different in terms of adoption rate but they were different in terms of the types of innovations they would adopt. Similarly, competition level was not always positively correlated with likelihood of adoption as was hypothesized. Rather, the correlation of this factor with a firm's intention to adopt was varied. Some innovations were likely to be adopted in a low competitive environment while others were favored in a highly competitive environment.

The third paper (Chapter 4), "Intention to adopt sustainable tourism practices: An exploratory study of the incentives and barriers among tour companies in Vietnam" examines the responses of tour companies. As the first two papers focus on the hotel sector of Vietnamese tourism industry, this paper explores factors correlated with tour companies' intentions to adopt ESMPs. Similar statistical procedures with logistic regression were conducted using the dataset obtained from 60 respondents out of 149 randomly sampled tour companies regarding their perceptions of 13 ESMPs. The results suggest that while complexity had a strong correlation with likelihood of adoption, risk-taking emerged as the strongest correlated factor that stimulating tour companies to adopt ESMPs. In addition, other relative advantages such as strengthening the company's marketing image were also strongly associated with firms' intention to adopt an environmental innovation. Other factors, especially external environment characteristics were not significantly correlated with likelihood of adoption.

The dissertation is concluded in Chapter 5 with the fourth paper titled "Business perspectives of sustainable development: A study of tourism companies in Vietnam." As previous papers separately analyzed hotel and tour company motivations and barriers towards adoption of ESMPs, this paper summarizes and compares the results. Conclusions about the similarities and differences in terms of perceived incentives and barriers between these two

sectors of the Vietnamese tourism industry are drawn. Comparisons among different types of ownership were also conducted regarding their adoption rates and perceived motivations. Complexity, all other benefits which entail strengthening firm image, and risk-taking were the strongest correlated factors with both hotel and tour company intention to adopt ESMPs. Other factors had more complicated relationships, with likelihood of adoption and the coefficient correlations varying according to different circumstances. While most factors were not significantly different, perceived certainty about government regulatory policies, perceived financial benefits, and other relative advantages were varied across types of ownership.

9. Recommendations

9.1. Recommendations for VNAT

The best strategy for VNAT to promote a successful voluntary sustainable tourism program for tourism companies involves an incremental approach which includes the following five steps.

1. Generate draft lists of codified standards for sustainable tourism practices. Since various sustainable tourism programs are available worldwide, VNAT could modify these standards to suit the particular conditions of the Vietnamese tourism industry. The standards developed through the modified Delphi technique used in this study provide a good starting point. Additional input could be gained from surveys of local tourism companies. Environmental experts should also again be consulted to confirm the finding herein. Separate standards for tour companies and hotels are necessary due to the different nature of their businesses.

Because complexity is the most significant influence on a firm's intention to adopt a sustainable tourism practice, codified standards can serve two important purposes. First, codified standards can reduce the perceived complexity of a sustainable tourism practice. Since sustainable tourism standards have not yet been developed in Vietnam, businesses are often

unsure of what activities can be classified as sustainable. In addition, because sustainable tourism is a relatively new concept in Vietnam, sets of codified standards introduce the idea to businesses. The standards should be written in such a way as to demonstrate that sustainable practices are not contrary to normal business conduct. Secondly, standards serve as a guideline for a sustainable tourism program. Once a draft set of sustainable tourism practices has been introduced to businesses, VNAT should monitor the effect and make changes accordingly. Modifications may involve adding or removing practices, adjusting the environmental standard of each practice, or other adjustments that consider the local condition of each business.

2. *Implement and promote certification programs*: Once final sets of codified standards have been developed, VNAT should implement and promote a certification program. The program would certify tourism companies that comply with the standards as sustainable businesses. Strengthening a firm's reputation using a green image is an important motivation for tourism firms to adopt environmental innovations, as was found in this study. Certification would provide a firm with a positive image, and thus a competitive advantage over its competitor.

A sustainable tourism certification program might be similar to the star-rating classification used in the hotel industry. Hotels with a high star rating often advertise this rating as a means of projecting a quality image to customers. Similarly, a certified tourism company could use this standard to market itself as a green and environmentally responsible business, thereby gaining competitive advantage over competitors. As part of the certification process, VNAT could create awards for "best practices" in certain categories and for companies with overall high levels of achievement across categories. These awards could become a key element of a company's positive marketing image and reputation, and provide significant motivation to participate in the program. Similar effects have been found in the case of hotels in Costa Rica (Rivera, 2004).

3. *Assistance from the state*. VNAT should consider providing various forms of assistance to firms interested in adopting sustainable practices. As previously mentioned,

motivations for adoption may vary according to ownership type, suggesting that VNAT assistance should take various forms. One type of assistance could be provision of information, particularly information about predicted demand from adopting sustainable practices. A key finding of this study is that tourism companies, especially hotels, are reluctant to adopt sustainable tourism practices without certainty the practice will positively associate with customer demand. Surveys of customer demand, particularly potential demand at the macro level, are often too complicated and costly to be conducted by a single firm, especially small and medium size enterprises. Providing information about demand will help companies to see the economic potential of sustainable tourism. Information from the supply side is also an important way to influence a company's intention to adopt sustainable tourism practices. As Liu (2003) observed, providing examples of successful businesses that adopted sustainable tourism practices is an effective way to promote the adoption of environmental innovations. Since sustainable tourism is a relatively new idea in Vietnam, tourism companies do not have ready access to information on such successes. VNAT can assist tourism businesses by providing such information, particularly international examples of model sustainable tourism businesses.

Financial assistance from VNAT is also important in several respects. For example, adopting certain environmental innovations may require a large financial investment. A loan or tax credit program may help encourage firms to make such an investment. While the results of this study suggest that direct financial benefit is not a significant factor overall in a firm's intention to adopt sustainable practices, the adoption of some practices may be sensitive to financial status. For example, the practice of "making financial donations for rehabilitation of tourist attractions" which does not provide any direct financial advantage to a firm, received a particularly low adoption rate, with only 28% of hotels and 22% of tour companies in the study are likely to adopt this practice. Therefore, for these particular circumstances, financial incentives from the state such as tax breaks may provide a better motivation for a company to adopt non-financial benefit practices.

VNAT should also provide technical support to tourism companies, both in the areas of technology and administrative practice. As Rogers (1995) observed, during the early stage of adoption process, companies often perceive innovations as complex because of unfamiliarity with the innovation. As a relatively new concept, Vietnamese tourism firms may perceive associated innovations as highly complicated. Communication and guidance from VNAT is important so that questions can be answered. In some instances, technical support from environmental science experts may be necessary if the technology is too advanced for the local market. Examples include non-residual pesticides, energy saving lighting system, etc. However, most technical support provided by VNAT would be in the form of administrative and organizational support. Such support might include providing environmental, low impact tourism training courses for interpreters and other staff in tourism companies, organizing large scale environmental innovations such as restoration of tourist attractions, and acting as the lead organization that collects donations for environmental protection activities. These activities require a reliable organization to coordinate tourism companies' activities which VNAT is in the best position to provide.

4. Public environmental education and marketing. Tourism companies play a critical role in a successful sustainable tourism program. However, such a program also requires the support of local communities and the government (Fennel, 2002; M. S. Honey, 1999; Liu, 2003; Mowforth & Munt, 1998). While VNAT's efforts provide the government support, the public also needs to be informed about companies' environmental activities. In addition, as of 2002, Vietnam received about two million international tourists and approximately ten million domestic travelers (*Tourism Statistics*, November 2002). This data shows that domestic demand is a very important part of the tourism market. By providing environmental education for the public, VNAT could help create demand for green destinations and green services. Increased demand would put direct pressure on tourism companies to move towards environmentally responsible business practice. This difficult task requires substantial effort at the macro level. As such it is

best for VNAT to partner with education institutions, international NGOs (non-governmental organizations), and other environmental organizations.

5. Seek international support. Lastly, VNAT should take advantage of international interest in sustainable development. Many environmental improvements around the world are the result of pressure and action of international organizations, such as the World Wildlife Fund, Green Peace, the Nature Conservancy, Ecotourism Society, etc. Domestically, the Halong Bay area in Vietnam was designated as a tourism area as a result of international pressures from UNESCO and other international environmental organizations. The designation ended all large scale coal mining activities which had been polluted Halong Bay. International organizations can help to promote sustainable tourism program in Vietnam in various ways, including lobbying the government, providing environmental education programs, generating technical and financial support, and detailing information about sustainable tourism programs worldwide.

9.2. Recommendations for Further Research

The factors correlated with Vietnamese tourism companies' intention to adopt ESMPs appear to be generalizable to the Vietnamese tourism industry. However, some of the factors were not fully explored due to certain limitations of the study. Given that the study was the first attempt to understand business perspective of sustainable tourism development in Vietnam some of the limitations were unavoidable. However, this study set a ground work for further research of sustainable tourism in Vietnam, followings are suggestions to improve and/or extent the results of this study

Follow-up study. Most previous studies have assumed that tourism companies' intention to adopt sustainable tourism practices is static. Ravichandra (1999) criticized diffusion of innovation studies for this assumption, arguing that a company's decision may change over time. Early adopters of an innovation can reject it later if they face too many difficulties. Early non-

adopters can change their decision later and adopt the innovation as its benefits become evident. Since codified standards for sustainable tourism practices were not available at the time of the study, we were only able to examine the static status of adoption intentions. However, because the goal of a sustainable tourism program would be to encourage voluntary participation from business, it is also important to examine factors that may influence a firm to change its decisions over time. Therefore, we suggest a follow-up survey of the same sample aimed at better understanding the factors influencing likelihood of adoption combined with factors leading to decision changes over time. This understanding is key to designing a successful sustainable tourism program.

Improved survey instrument. This study was the first to examine business perspectives related to sustainable tourism in Vietnam. As such, several weaknesses occurred. One key weakness was the measurement scales employed. All measurements were adopted from scales developed for other studies originally in English, which we then translated into Vietnamese. Since participants in this study were culturally different from those in the original studies they may have interpreted the scales in slightly different ways. This was particularly a problem with negatively worded scale items, with some internally inconsistent results. In addition, due to the limited length of the questionnaire, open-ended questions were not included which prevented us from exploring more deeply the relationships between the influencing factors and likelihood of adoption.

Future survey instruments should therefore take into account the cultural and social constraints of respondents and include open-ended information. Future researchers should perhaps consider using focus group of local businesses to help develop future questionnaires. Additional analysis of open-ended information could help explain some of the unexpected results of the present research.

Better population estimation and incentives for participations. During the survey period, several incidents occurred that dramatically changed the estimated population. The first incident

was the SARS outbreak in Asia. The second incident was the outbreak of Avian flu, or "bird flu," in Southeast Asian countries. Both incidents occurred within six months of each other proceeding and during the study period. These events dramatically reduced the study populations of tourism business. However, these changes were not spontaneously recorded by VNAT, nor was information available through other official sources. Thus, there may be some discrepancies between estimated and true populations. In addition, no incentives, financial or otherwise, were provided for participants. This situation may have contributed to the relatively low response rate of 40 percent. Even though nonresponse bias was not detected in most cases, higher response rates are always desirable. To obtain better information in future research, we recommend using multiple sources of information to estimate the population, in addition to providing participants with incentive to increase the response rate.

Chapter 2: Perceptions of Vietnamese Hotels Regarding Direct Contributions to Local Communities – a Study of Environmental Innovations

Abstract[1]

The main purpose of this study was to examine factors influencing the likelihood that tourist accommodation businesses in Vietnam will adopt sustainable innovations that directly benefit local communities. This study approach is based on Rogers' (1995) model of diffusion of innovations with the innovations of interest being sustainable tourism contributions to the local community. Fifteen innovations related to sustainability were selected using semi-Delphi selection with two expert panels. However, this study focuses only on the four administrative innovations which directly contribute to the local communities in terms of ecological sustainability (direct contribution to maintain resources) as well as cultural and social equity (employing locals with fair wages and facilitating cultural understanding). Potential factors that might influence adoption of these innovations were first identified from the diffusion and adoption of innovation literature. The influence of these factors was then tested via a survey of tourism accommodation businesses in Vietnam. Results indicate that the technical complexity factor had a significant negative affect on the adoption of all four innovations. The financial benefit and attitude toward change factors positively influenced the likelihood of adoption, while a quadratic relationship described the relationship between the certainty about customer demand and the likelihood of adoption.

Key word: accommodation business, adoption and diffusion of innovations, sustainable tourism practices, Vietnam.

[1] Paper submitted to Journal of Sustainable Tourism

1. Introduction

Since the late 1980s, environmental sustainability has attracted the attention of researchers of various disciplines (Liu, 2003). Van den Bergh and van der Straaten (1994) defined sustainability as "the ability to be continued indefinitely in time." The concept of sustainable development, while still hotly debated, is generally understood as development that sustains both the ecological system and economic growth. Other researchers (Bossel, 2000; Jepson Jr., 2001; Sharachchandra M Lele, 1991) have argued that sustainable development should also include a third dimension related to the sustainability of cultural and social identities. Despite these differences, the common message that the concept of sustainable development conveys is the hope for continuously economic development without destroying the natural or cultural environment.

One economic activity generally viewed as compatible with sustainable development is tourism (Gee et al., 1989). While compared to other industries the ecological impacts of tourism may seem slight, however, tourism has been repeatedly shown to impose impacts on the natural environment (Ancher, 1973; Andereck, 1993; Farrell, 1977; Gun, 1988; Mowforth & Munt, 1998; Peters, 1969; Rangel, 2000). In fact, tourism, mass tourism to be specific, was identified as one of the causes of the imbalanced biodiversity in some areas of Vietnam (Dinh, 2003). In addition, other critics have raised concerns regarding the impact of tourism on local culture, suggesting that sustainable tourism development should focus more on sustaining the social and cultural structure of the communities upon which it depends (Boo, 1990; Butler, 1974, 1999; M. Honey, 1999).

From this perspective, sustainable tourism is understood as an activity that can be sustained economically, ecologically, and culturally. Among them, one of the most important aspects is the contributions of tourism businesses to the local community. Contribution to the local community has, in fact, been identified as one of the key elements differentiating 'true' sustainable tourism businesses from those that use the term as a marketing gimmick (Boo, 1990; Fennel, 2002; Liu, 2003). These contributions include economic benefits such as increasing local

income, creating jobs for local people; ecological benefits such as direct donations to preservation, supporting local research; and social benefits such as facilitating cultural understanding between tourists and the host community (Murphy, 1985).

As Mowforth and Munt (1998) summarized, various terms have been used as synonyms to sustainable tourism including ecotourism, green tourism to more obscure terms such as scientific tourism, soft tourism, and appropriate tourism. Sustainable tourism is also defined as a 'new' tourism that implies, 'responsible,' 'green,' 'environmentally friendly,' and 'no-impact' practices (Mowforth & Munt, 1998). While the development of these forms of tourism is undoubtedly important, attention should also be given to the sustainability of traditional or mass tourism activity. Indeed, there appears to be a trend in the sustainable tourism literature encouraging more sustainable mass tourism practices through various measures (e.g., reduced electricity consumption, rotating laundry schedule, waste reduction), and thus should also be considered part of the movement toward sustainable development (Fennel, 2002; Neto, 2003). Therefore, this study adopted the definition of sustainable tourism developed by Liu (2003: 461) which includes "all types of tourism (conventional or alternative forms) that are compatible with or contribute to sustainable development."

2. The Vietnamese Tourism Industry

After a long period of war, followed by a Soviet-style development-at-all-costs economic policy that focused on heavy industry, the environment in Vietnam has been seriously damaged (Dara O'Rourke, 1995). Recognizing the problem, the Vietnamese government has increased its effort to protect the environment and reduce pollution levels. The Law on Environmental Protection (LEP) promulgated in December 1993 is the umbrella environmental law for Vietnam. O'Rourke (2001b: 5) observed that "since the passage of the LEP, the government has issued a wide range of decrees, directives, and circulars that flesh out the law, and create implementation

instruments to realize the goals of environmental regulation and enforcement." The government also encourages the development of environmentally friendly industries as economic substitutions for natural resource exploitive industries. Tourism, in particular, is expected to play a leading role in achieving the balance between economic development and environmental protection (Do, 1996; Vu, 2004).

In order to insure that Vietnam's tourism development is sustainable, it is necessary to understand both supply and demand sides of the industry. On the demand side, research found that customers became more environmentally conscious and more critical in choosing their suppliers (Liu, 2003; Luzaz & Cosse, 1998b; Miller, 2003). Specifically, a recent study done by Lindsey and Holmes (2002) in Nha Trang, Vietnam showed a high willingness from both international and domestic tourists to pay for marine protection in the area. On the supply side, sustainable tourism development also requires the voluntary commitment of tourism companies to apply environmentally sustainable management practices. However, there are a limited number of studies examining tourism businesses' perspectives, especially tourism business in Vietnam, in regards to adopting sustainable tourism practices.

The tourism industry is made up of several components: travel companies, tour operations, travel agencies; accommodation providers; transportations providers; tourist attractions; and supporting services and facilities (Gee et al., 1989). However, accommodations comprise the fastest growing component of the tourism industry in Vietnam since the economic renovation in early 1990s (Hoang, 1998). The majority (72%) of foreign direct investment in the tourism industry is for the construction of new hotels (Haley & Haley, 1997). Besides their contributions to the local economy, hotels also created some negative impacts on the environment. As observed by local authorities, the construction of hotels in Vietnam has contributed significantly to reductions of the country's forested areas (Pham, 1997). The attendant proliferation of waste water and chemical residuals from large-scale resorts' landscaping has also been a great concern of the local environmentalists (Haley & Haley, 1997).

From a social perspective, hotels also have significant impacts on the local economy, social equity, and culture. As commonly found in developing countries, while hotels create the largest source of employment for local residents, they also have the largest disparity in incomes between local staff and expatriate staff who have the same position (Mbaiwa, 2003). Tourism is expected to "help boost cultural exchange activities, strengthen friendship, co-operation and promote mutual understanding between nations" (Vu, 2004). However, tourism may equally increase misunderstanding, stereotyping, xenophobia and other social problems. Host communities, to a certain extent, may exhibit resentment towards luxury resorts and hotels as rising property values that force them into a lower living standard (Hall & Jenkins, 1995). In addition, the hotel business is also blamed for social problems such as prostitution and abusing child labor (Haley & Haley, 1997). For these significant impacts, although other components of the tourism industry are also important, accommodations are the special focus of this study.

3. Factors Influencing the Likelihood of Adoption

The theory of adoption and diffusion of innovation, developed by Everett Rogers, served as the theoretical framework for this study. First advanced in 1971 and refined in 1983 and 1995, Rogers (1995) defined innovation as an idea, practice, or object that is perceived as new by an individual or another unit of adoption. Before the economic renovation in 1986, tourism was more like a social benefit program in which state-owned company government employees were rewarded with free vacations. Thus, tourism has just become a market and profit-oriented industry since the early 1990s (Hoang, 1998). The notion of sustainable tourism, while not a new concept in the international tourism market, is a new practice for the Vietnamese tourism industry. Therefore, sustainable tourism practices fit in Rogers' classification of environmental innovations.

Another reason that makes Rogers' model of diffusion of innovation the most suitable framework for this study is its wide acceptance and proven applicability across different scientific fields. As summarized by Rogers (2003), the diffusion of innovation model has been applied in more than 5,000 studies across different principles including technology, health care, agriculture, marketing, economics and other social studies. It is also significant to note that this model has been well developed and cross-culturally tested with respect to its consistency across cultural settings (Roger, 1995). Recently, Padel (2001) observed that while the theory of diffusion of innovation has not been widely applied in sustainable development studies, an increasing number of studies have explored the adoption of 'green technology,' 'organic products,' and other environmental innovations. Research has shown that that the same factors that encourage innovation in general would also most probably encourage environmental innovations (Ramus, 2001).

Wejnert (2002) categorized the factors that influence likelihood of adopting innovations into three main areas: (1) characteristics of innovation; (2) characteristics of the organization; (3) and characteristics of the environment in which the organization operates. Figure 2.1 depicts the potential relationship between these factors and the likelihood of Vietnamese tourism accommodation providers adopting contributions to the local community as environmental innovations. This section presents the hypothesized relationships between these factors and the likelihood of adoption of contributions to the local community based upon empirical evidence from literature.

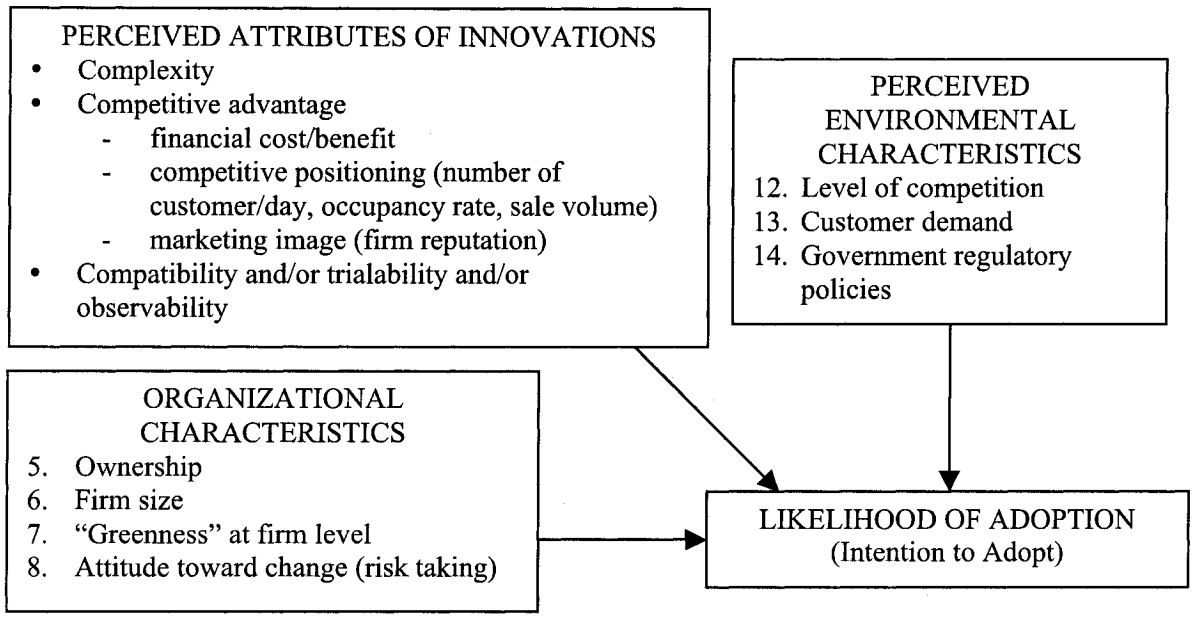

Figure 2.1: Likelihood of adoption model for Vietnamese tourism firm based on Rogers' (1995) diffusion of innovations theory.

There is a high consensus in empirical research (Everett M Rogers, 1995) that suggests the direction to which innovation characteristics influence the likelihood of innovation adoption. Some researchers observed that the characteristics of innovations are the most important factors that influence the likelihood of adoption (Al-Gahtani, 2003; Wejnert, 2002). Among innovation characteristics, the *relative advantage* is the degree to which an innovation is perceived as better than the idea it supersedes or substitutes (Everett M Rogers, 1995). Relative advantage can be either financial or non-financial. The higher the organizations perceive relative advantage of an innovation, the more it is desired (Gopalakrishnan et al., 2003).

Compatibility is the degree to which an innovation is perceived as being consistent with existing values, past experience, and needs of potential adopters. The innovation which is perceived as not compatible with the current organizational setting is more likely to be rejected (Kocis, 1986; Ramus, 2001). Among various measurements of compatibility, the employees' acceptance is one of the strongest indicators (Okumus & Hemmington, 1998; Ramus, 2001).

Especially in Asian countries, employees' support plays an even more important role in the company's intention to adopt environmentally friendly practices because of the collective culture (Chudnovsky & Lopez, 2003).

Complexity is the degree to which an innovation is perceived as difficult to understand and use (Everett M Rogers, 1995). The more complex an innovation, the less likely it will be adopted. Complexity is considered factor that most influences the intention to adopt environmental innovations in both administrative and technical aspects (Yudelson, 2004). *Observability* is the degree to which the results of an innovation are visible to others. The easier it is for individuals or organizations to see the results of an innovation, the more likely they are to adopt it. Liu (2003) concluded that observability plays the most critical role in promoting sustainable tourism practices because tourism firms would most likely to adopt environmental innovations if they are shown examples of success.

In this study, organizational characteristics include firm size, firm location, greenness level, and risk-taking level. Rogers (1995) found that it is more difficult to predict the relationships between organizational characteristics and the likelihood of adoption. Some researchers argue that small and medium enterprises (SMEs) would be more likely to adopt innovations because they are more flexible and have a closer relationship with customers (Dewhurst & Thomas, 2003). Large firms, in contrast, are argued to be more innovative because they have more resources (Shook, 1997). A study by Hansen et al. (2002) shows that a linear trend is not sufficient to explain the relationship between the likelihood of adopting environmental innovations and firm size. Therefore, the relationship between firm size and the adoption of contribution to local community as an environmental innovation is expected to be quadratic in this study.

Firm location is also another factor that was mentioned in diffusion of innovation literature (Everett M Rogers, 1995). Various categories of firm location types have been examined according to the type of innovation being studied. For example, in marketing studies,

location is often classified as rural, urban, suburban, metropolitan, small metropolitan, or large metropolitan (Shook, 1997). In this research, because the main focus is sustainable tourism innovation, the firm location to be investigated depends on whether the hotel is located at an area associated with natural resource attractions or non-natural resource attractions.

While not originally constructed by Rogers, greenness levels or attitudes and beliefs about protecting the environment and corporate responsibility are important factors in sustainable development research (Soderbaum, 2000). This attitude is considered as an organizational norm. Little attention has been paid to the relationship between corporation greenness and adoption of sustainable development innovation (Horobin & Long, 1996). However, various studies have examined the relationship between consumers' attitude toward environment protections and the adoption of ecologically produced products. Seventeen of those studies from 1972 to 1991, reviewed by Schwepker and Cornwell (1991), confirmed a positive relationship. However, the correlation between the greenness level and the adoption of ecologically produced products appears to be weak and moderated by other constraints.

Another organizational characteristic being investigated in this study is the attitude toward change which is considered an indication of risk taking (Avlonitis et al., 1994). Firms that have an 'innovativeness culture' or show willingness to open to new ideas, products, or changes are also the ones that most likely adopt the innovation (Vazques et al., 2001). Inversely, new ideas, products or management practices are adopted faster in organizations that are already in the innovativeness leadership position in the industry (von Krogh & Roos, 1995). In addition, an organization with an open system (open to new ideas) often has more innovativeness than an organization with a closed system (Everett M Rogers, 1995).

Perceived characteristics of the external environment have a great effect on the innovativeness of an organization (Everett M Rogers, 1995). External environment characteristics like attributes of innovation, are in themselves neither certain or uncertain. Rather, perceptions about the external environment depend on available sources of information that the

firms may have, which give them different levels of certainty about each of the external environment characteristics (Miles & Snow, 1978). Generally, external environment characteristics are measured with three aspects (1) perceived level of industrial competitions; (2) perceived level of certainty about customers' demands; (3) and perceived level of certainty about changes in government's policies.

Research has shown that companies that operate in a highly competitive environment tend to be more innovative (Veliyath & Fitzerald, 2000). Level of competition has been found to be one of the most important factors that make business firms adopt green practices (Appiah-Adu & Singh, 1998; Clelland et al., 2000; Hurley & Hult, 1998; Karagozoglu & Lindell, 2000; Kassinis, 2001; Okumus & Hemmington, 1998; Rangel, 2000; Veliyath & Fitzerald, 2000). According to Veliyath and Fitzerald (2000), in a highly competitive environment the firm has no choice but to be proactive. Going green is one of the possible ways that a firm can differentiate itself from other competitors (Kotler et al., 2003). While some research found a positive relationship between level of competition and level of innovativeness, Appiah-Adu & Singh (1998) found the relationship was not significant. Their explanation was that their survey was conducted among small and medium businesses that may not have sufficient information about competitors. The small and medium tourism businesses in Vietnam are expected to be the larger proportion of the population. Thus, similar results may be found. However, as tourism is a very dynamic industry, the hypothesized relationship between perceived level of competition and the likelihood of adoption is expected to be positive.

Generally, the goal of innovation in business is to attract more customers or to increase loyalty from current customers so as to retain them. In a market-oriented firm, the customer is the cause and the target of innovation (Kotler et al., 2003). Firms would be more likely to invest in a new product/technology or improve their current product if there is a certain demand from customers (Miles & Snow, 1978). In contrast, companies who do not have a good profile of their customers will be resistant to change due to the risk of losing their current customers (Okumus &

Hemmington, 1998; Rangel, 2000). The relationship between certainty about customer demand and innovativeness is hypothesized to be positive.

Government policies and regulations have a great effect on the firm's management, especially environmental regulations (Miles & Snow, 1978). A stable, supportive government is always preferable to an unstable one (Kotler et al., 2003). Rangel (2000) found that hotels that have more certainty about changes in environmental regulations will be more likely to voluntarily participate in ecotourism projects. Firms are not likely to invest in new technologies, and products, especially environmentally sound products, if they do not sense a positive attitude from the government (Ozsomer et al., 1997). The empirical research results suggest that if firms perceive uncertainty of government policy as a risk or threat, they are not likely to make new investments (Kotler et al., 2003; Ozsomer et al., 1997; Soderbaum, 2000; von Krogh & Roos, 1995).

4. Methodology

4.1. Development of Survey Instrument

Since examining factors that affect the likelihood of adoption is the objective of this study, we first developed a list of environmental innovations for hotels in Vietnam. Because Vietnam has not yet codified standard industry practices for sustainable tourism development, we referred to several existing sets of practices, including the Australian NEAP (*Nature and Ecotourism Accreditation Program*, 2003), Green Hotel Criteria of Hyatt Corporations (Enz & Siguaw, 1999), and Costa Rican CST (2003). However, because these codified standards contain hundreds of practices, the application of any original sets is not feasible within our limited time frame. In addition, these standards are country-specific which may not be applicable for

Vietnam. Therefore, a selection of researchable-size number of practices that are more suitable to Vietnam needed to be made.

The selection procedure involved a semi-Delphi process using two expert panels. As suggested by Delbecq et al. (1975), this is the most effective method for generating criteria for planning and management given the time and budget constraints. The first panel included English-speaking experts in the field of ecotourism and sustainable tourism. Two experts were from Australia who contributed to the construction of NEAP. Two other experts with extensive experience of working in environmental protection policies in developing countries including Vietnam were from the U.S. One expert was from Malaysia who was also involved in the procedure of generating criteria for sustainable hotels in Malaysia. From the three sets of codified standards mentioned above, the experts were asked to select practices that are most important to environmental management and most applicable to a developing country like Vietnam. After reaching a consensus point, the result contains 36 practices that were then translated into Vietnamese by two independent translators and retranslated into English to verify consistency.

The Vietnamese translation of the practices was given to the second expert panel of tourism experts in Vietnam including tourism researchers, government officers from Vietnam National Administration of Tourism (VNAT), and tourism businesspersons. The experts were asked to further reduce the list to a more researchable size. The selection criteria were most important for environment protection and most applicable for tourism accommodations. From this process, fifteen practices were selected with a consensus of two expert panels as being important to sustainable tourism as well as feasible in Vietnam. These practices concern various hotel activities including controlled use of water and energy, sustainable building design and landscaping, minimizing air and noise pollution, waste control and recycling, and direct contribution to the local environment, economy and social equity. Among those, this paper focuses on the four following practices:

1. The company actively provides financial or in-kind assistance to support management of tourist attractions including sending hotel staff to clean out visitors' litter or rubbish at tourist attractions.
2. The company actively provides physical, financial or in-kind assistance for the rehabilitation of areas subjective to negative visitors' impacts.
3. Local residents are employed in some aspect of the operation and paid a fair wage.
4. Some forms of information or education are delivered to customers to minimize negative impacts on the local community and its lifestyle (e.g., attire, subjects discussed or language, items that should not be touched, areas that should not be entered, places, items, or people that should not be photographed in some or all situations, performance of some behaviors)

This paper focuses on these four practices because they contain some different features compared to other practices in the expert selected list. According to Damanpour (1991), there are several ways to classify an innovation, one of which is to classify the innovation as technical or administrative. While factors influencing the likelihood of adoption of these types of innovations are similar, the interpretation of these factors is not the same. Technical complexity, for example, can be understood as engineering and mechanical issues in the case of technical innovations. However, it would be understood as managerial and administrative difficulties with administrative innovations. The four practices mentioned above are different from the rest in the sense that they are administrative innovations (Damanpour, 1991; Damanpour & Evan, 1984). In addition, these practices concern direct contributions to the local area where the firms are located both in terms of ecological sustainability (practice 1 and 2), and social and cultural integrity (practice 3, 4). Other practices, such as controlled use of water, although have significant contribution in protecting the local resources, are somewhat more remote and have a larger extent of influence beyond the boundary of the areas.

A survey questionnaire was then developed that included measures of these four practices. The independent variable measures were adopted from various studies (Table 2.1). Innovation characteristics were measured with a semantic differential scale from 1 to 7, with 1 being "extreme disadvantageous" and 7 being "extreme advantageous." The wording of each item varied according to the innovation characteristic. For example, the scale for technical complexity ranged from 1 to 7 with 1 being "extremely complicated" and 7 being "extremely simple." Firm size was measured using several proxies including hotel's star standard, total assets, number of rooms and number of employees. Other organizational characteristics were measured using the 7-point Likert-type scale, with 1 being "strongly disagree" and 7 being "strongly agree." External uncertainty characteristics were measured using a 7-point Likert-type scale with 1 being "highly unpredictable" and 7 being "highly predictable."

Table 2.1: Measurement scales of variables used in model of this study and their origins

Variable	Origin	Number of item	Cronbach's alpha from original studies
	Innovation characteristics		
Competitive advantage	Karagozoglu & Lindell, (2000)	4	0.86
Complexity and observability	McCabe (1987)	4	0.8
Compatibility	Kocis (1986)	1	n/a
	Organizational characteristics		
Firm size	Rangel (2000)	4 proxies	Not a Likert-type scale
"Greenness" level	Horobin and Long (1996)	5	n/a
Attitude toward change	A development from Miles and Snow's perceived uncertainty scale (1978) by Hurley & Hult (1998), later applied by Vazques et al. (2001)	4	0.869
	External environment characteristics		
Competition	earlier developed by Jaworski and Kohli (1993) has been tested and used by Appiah-Adu & Singh (1998)	3	0.71
Customers	Miles and Snow (1978)	2	n/a
Government		5	n/a

The questionnaire was then translated into Vietnamese and retranslated into English to ensure the accuracy. Two pilot surveys were conducted among 50 accommodation businesses owners in Vietnam. Several minor adjustments in the layout as well as the language of the questionnaire were made based on the result of pilot studies.

4.2. Survey Procedure

Vincent and Santos (1996) found that response rates for tourism survey studies in developing countries are generally low. They also suggested that the most promising data collection technique is to personally deliver and retrieve the questionnaire later. There is no current study about Vietnamese behavior towards survey research. However, there are a number of studies among Vietnamese communities in the U.S. Sasao (1994) and Milburn et al. (1991) encountered low response rates, which they attributed to unfamiliarity with 'scientific method', and concern with self-disclosure to 'strangers' (Milburn et al, 1991). In addition, the Vietnamese community exhibited the highest refusal rate relative to other Asian communities such as Chinese, Korean, Thai or Philippines. According to Sasao (1994), the Vietnamese community in the U.S. has retained the strongest original cultural identity because of their new immigration status. Therefore, we expected to encounter similar challenges when conducting our survey in Vietnam.

Hotels were randomly selected from the lists provided by regional VNAT offices (whenever available). Then, the participants in this survey were approached. They are 497 managers, owners or decision makers of tourism accommodation businesses throughout Vietnam. The survey period was from August to December 2003. The surveyors first scheduled brief face-to-face meetings with participants. At the meeting, participants received the questionnaire with pre-paid postage. The surveyors explained the purpose of the study, gave instruction of how to complete and return the questionnaire, and answered clarification questions. Surveyors then

came back to retrieve the questionnaire several days later according arrangements made with the participants. This method was suggested by Vincent and Santos (1996) to improve the response rate. If the questionnaires were not completed, than participants were asked to return them by mail. If the questionnaire was still not returned, reminder telephone calls were made and letters sent, one and two weeks after the second meeting, respectively.

5. Results

5.1. Response Rate

During this data collection effort, we unexpectedly found that many hotels had recently merged, with 33 participants managing more than one hotel on the sample list. In addition, 27 participants were unreachable during the survey period because the hotels were closed for reconstruction and/or renovation. Together this reduced the sample size to 437. We obtained a total of 193 returned questionnaires. Three participants sent back a blank questionnaire, reducing usable responses to 190, or 43.5%.

Among the responding organizations, 12.0% of the hotels were rated 1-star, 32.2% were 2-star, 17.0% were 3-star, 9.0% were 4 or 5-star; and 15.0% were non-classified according to VNAT list. Generally, the non-classified hotels include both new or unrated hotels that have not yet finished their applications for classification and hotels that do not meet the requirements of any star. The star ratings are relatively correlated to the size of the hotel. However, due to the large number of not-yet-classified hotels, the star classification was not included as one of the proxies for measuring firm size.

Nonresponse bias is perhaps the most serious problem that affects the quality of survey research, affecting both accuracy and representativeness of the results (Salant & Dillman, 1994; Sheaffer et al., 1996). The higher response rate would help to reduce coverage error. However, a lower response rate does not necessary produce an unrepresentative sample if the nonresponse

bias is at an insignificant level (Sheaffer et al., 1996). There are various ways to check the nonresponse bias in the literature such as comparing the average age and gender or other socio-economic characteristics of the respondents versus that of nonrespondents, or comparing the result between earlier and later responses (Dey, 1997; Stoop, 2004).

In this survey, because the unit of analysis is the individual tourism firm, it is more appropriate to check the nonresponse bias based on the characteristics of the organizations. Therefore, the number of rating stars (from 0, i.e. non-classified hotel to 5-star hotel) and types of ownership (state owned, privately owned and joint-venture between a domestic and a foreign partner) were used to check the nonresponse bias. With χ^2 equals 8.41 (p-value > 0.1), it is concluded that the proportion of stars among nonrespondents is not different than that of respondents. The Chi-square test of the proportion of ownership types between respondents and nonrespondents also results in a χ^2 of 4.09 and p-value greater than 0.1. This result also indicates the indifferences between respondents and nonrespondents in term of the ownership of the hotels that they manage. Because differences between respondents and nonrespondents were not found on both of the two checking variables, the nonresponse bias was judged to be insignificant.

5.2. Internal Consistency

Recall Figure 2.1 and Table 2.1 which show that there are three main constructs in this study among which the innovational characteristics were measured with 9 items; and external environment characteristics were measured with 10 items. Organizational characteristics include greenness level, risk taking level being measured by equal interval scale, firm size and firm location which were measured by proxy variables. Cronbach's coefficient alpha was used to determine the internal consistency of the measurement scale items that were used to operationalize these constructs.

Table 2.2: Cronbach's coefficient alpha for internal consistency checking of scale items

Variable/Scale item		Mean	SD	Correlation with total	Alpha if item is deleted
Innovation characteristic. Cronbach's coefficient alpha = 0.895					
Tech1	Decrease in technical complexity	2.63*	1.84	0.686	0.882
Tech2	Decrease in application complexity	2.80*	1.96	0.712	0.879
Obser1	Decrease in consequential complexity	2.69*	1.79	0.778	0.874
Obser2	Decrease in difficulty to forecast the overall effect	2.39*	1.60	0.729	0.878
Cost	Decrease in flexible cost	3.51*	1.80	0.582	0.890
Finance	Increase in financial performance	3.12*	1.60	0.661	0.884
Sale	Increase in sale volume	2.92*	1.50	0.589	0.889
Image	Increase in company's reputation	2.01*	1.35	0.508	0.894
Compa	Compatibility with current organization's practice	2.24*	1.58	0.679	0.883
Greenness level. Cronbach's coefficient alpha = 0.796					
Green1	Responsibility toward future generation	6.42*	1.26	0.701	0.720
Green2	The fortunes of tourism and the environment are closely link	6.36*	1.21	0.655	0.736
Green3	The greater the attraction of a beautiful place the greater the danger caused by large number of tourists	4.98*	1.67	0.377	0.839
Green4	It is responsibility of tourism businesses at all sizes to encourage preservation	5.97*	1.35	0.696	0.718
Green5	We can all respond to the need to protect environment by altering some of our everyday business activities	5.71*	1.25	0.543	0.768
Attitude towards change. Cronbach's coefficient alpha = 0.527					
Inno1	Innovations based on research result is readily accepted in our organization	5.33*	1.15	0.292	0.476
Inno2	Management is actively seeking for innovative ideas	5.87*	1.24	0.465	0.322
Inno3	Employees are penalized for new ideas that do not work	4.74*	1.48	0.264	0.514
Inno4	Innovation in our company is perceived as too risky and is resisted	4.99*	1.23	0.265	0.497
Perceived external environment characteristic. Cronbach's coefficient alpha = 0.743					
Comp1	The industry competition is cut throat	6.13*	1.21	0.184	0.748
Comp2	Anything that one competitor can offer other can match	5.28*	1.36	0.197	
Comp3	Our competitors are relatively weak	4.74*	1.52	-0.171	0.794
Cust1	Customer demand for existing product is highly predictable	4.67	1.58	0.299	0.738
Cust2	Customer demand for new product is highly predictable	4.04	1.91	0.437	0.718
Gov1	Government's changes in pricing policy are highly predictable	3.84**	1.82	0.567	0.696
Gov2	Government's changes in product standard or quality is highly predictable	4.27*	1.80	0.616	0.688
Gov3	Government's changes in environmental standard is highly predictable	5.04*	1.79	0.666	0.679
Gov4	Government's changes in marketing and distribution methods are highly predictable	4.90*	1.71	0.596	0.693
Gov5	Government's changes in acceptable accounting procedure are highly predictable	4.07	1.81	0.606	0.689

* significantly different than the 'neutral value' of 4 at p-value <0.01

** significantly different than the 'neutral value' of 4 at p-value <0.05

The bound that researchers put on the acceptable level of coefficient alpha is somewhat subjective across literature. According to DeVellis (1991), Cronbach's coefficient alpha below 0.60 is unacceptable and indicates a problem with internal consistency of the questionnaire items. The alpha score between 0.60 and 0.65 is undesirable; between 0.65 and 0.70 minimally acceptable; between 0.70 and 0.80 respectable; between 0.80 and 0.90, very good. If the coefficient alpha goes above 0.90, reduction of items in the scale should be considered. According to DeVellis' classification, all scales in this study are at a respectable or very good level except for the latent variable of attitude toward change. However, Nunnally (1978) argued that in the exploratory stages of research, reliabilities of 0.50 to 0.60 would suffice. Given the condition that this study is at the early stage of sustainable tourism development research in Vietnam, the coefficient alpha of 0.527 for attitude toward change scale might be acceptable.

However, it is noted that item Inno3, Inno4, and Comp3 are stated in a negative context relative to other items in the same scale. The coefficient alphas were calculated based on the reverse score of these items. These items all have low correlations with their totals (less than 0.3) and Comp3 even had a negative correlation with the total. Examining these partial correlation scores, Inno3, Inno4, (p-value ranged from 0.47 to 0.78 for both items), and Comp3 (p-value ranged from 0.118 to 0.664) have very low correlations with other scale items. It is suspected that there may be a cultural/linguistic issue of answering negatively worded questions. Therefore, even though the Cronbach's alpha for the external environment scale was at an acceptable level, we decided to take out Inno3, Inno4 and Comp3. This improved the Cronbach's alpha to 0.722 for the attitude toward change scale and 0.793 for the external environment characteristics scale.

5.3. Factor Analyses to Identify Variables Related to Proposed Model

Two factor analysis procedures were conducted to serve two purposes. The first purpose was to check the consistency between the theoretical and respondents' constructs of variables of interest. The second purpose was to create statistically independent variables from respondents' constructs

to be used later on for regression analysis. Factor analysis was not required to examine the construct of organizational characteristics because they were measured by different scales and proxies.

The first factor analysis was done on nine measurement items associated with the construct of innovation characteristics. Six new variables were created from six factors after a varimax rotation. These factors account for 87% of the total variance. The loaded variables in each factor corresponded very closely to the theoretical construct. Factor 1 indicates complexity; factor 2 indicates monetary benefit; factor 3 indicates level of observability; factor 4 indicates level of increase in market share; factor 5 indicates image or reputation; and factor 6 indicates level of compatibility.

Three factors were found in a second factor analysis which examined the construct of external environment characteristics. Varimax rotation revealed 3 factors which account for 75% of the total variance from nine original measurement items. The loaded variables in each factor also corresponded very closely to theoretical construct. Three new variables were created to measure three characteristics of external environment. Factor 1 indicates the level of perceived certainty about government; factor 2 indicates the level of perceived certainty about customer demand; and factor 3 indicates the level of perceived competition in the industry.

5.4. Logistic Regression Examining the Factors Correlated to Likelihood of Adoption

Recall that there are four sustainability innovations being studied in this survey, with participants providing a binary response as to whether they would or would not adopt each innovation. The innovations included hotels' financial or in-kind assistance to help cleaning out tourists' rubbish, rehabilitating areas subjected to negative tourists' impacts, employing local residents with fair wages, and facilitating cultural understanding between tourists and local communities.

Table 2.3: Constructed variables used in the study model by factor components

Factor Analysis 1: Innovation Characteristics						
Variable	Complexity	Monetary benefit	Observability	Market share	Firm image	Compatibility
TECH1	**0.88832**	0.11970	0.17690	0.22126	0.12294	0.11442
TECH2	**0.82647**	0.24395	0.31587	0.03145	0.11392	0.14229
COST	0.19486	**0.91280**	0.21474	0.05030	0.04910	0.09634
FINANCE	0.19380	**0.69407**	0.11366	0.43421	0.08045	0.33010
OBSER1	0.32287	0.19590	**0.81322**	0.22039	0.20350	0.15324
OBSER2	0.47943	0.29822	**0.61533**	0.09882	0.11172	0.31482
SALE	0.16786	0.17587	0.18564	**0.87872**	0.24253	0.16400
IMAGE	0.16160	0.06589	0.17394	0.22200	**0.92334**	0.18621
COMPA	0.20729	0.24674	0.24143	0.20699	0.23464	**0.84713**

Factor Analysis 2: External Environment Characteristics			
Variable	Government certainty	Customer certainty	Perceived level of competition
GOV3	**0.81017**	0.20638	0.03276
GOV4	**0.80468**	0.04279	0.09674
GOV1	**0.77227**	0.11584	0.02012
GOV5	**0.75038**	0.18508	0.07059
GOV2	**0.63533**	0.36137	0.08127
CUST1	0.15258	**0.82176**	-0.16027
CUST2	0.28149	**0.74402**	0.08237
COMP1	-0.02148	0.14373	**0.89090**
COMP2	0.19712	-0.25016	**0.77643**

An overall multivariate probability plot that represents the relationship between all factors (as shown in Figure 2.1) in the model and the likelihood of adoption were produced. This plot has a curvilinear form which indicates a quadratic relationship between the response variable and the factors. Individual scatter plots were created to examine the variables that cause the quadratic trend. Among those, firm size, perceived competitive level, and perceived customer demand are the variables that exhibit the most quadratic relationship with likelihood of adoption. The logistic regression model used to examine the potential influence factors, thus, contained the quadratic terms of those variables.

Adoption likelihood = Intercept + β_1*(perceived complexity) + β_2*(perceived financial benefit) + β_3*(perceived reputation) + β_4* (perceived increase in sale) + β_5*(perceived compatibility) + β_6*(perceived observability) + β_7*(firm location) + β_8*(firm size) + β_9*(firm size)^2 + β_{10}*(greenness level)+ β_{11}*(risk taking level) + β_{12}*(perceived competition) + β_{13}*(perceived competition)^2 + β_{14}*(perceived customer certainty) + β_{15}*(perceives customer certainty)^2 + β_{16}*(perceived government certainty)

Using the Wald backward elimination technique, the above model was used to analyze the data. Table 2.4 shows the results of logistic regression procedures of the overall model and individual practices. All models are significant at the 0.05 level and the least correct classification proportion was 71.2%. This result indicates a strong overall model fit. Note that the technical complexity is measured with a decreasing level. Therefore, the increase of complexity has a negative relationship with likelihood of adoption.

Table 2.4: Results of logistic regression analysis presenting the correlation between factors used in the model and the likelihood of adoption

Result 1: Overall model fit

Practice	Overall model fit		Pseudo R-square		Percentage of correct classification		
	-2L	p- value	Cox and Snell	Nagelkerke	Adopt	Reject	Overall
Overall	422.516	<0.0001	.268	.358	72.9	75.3	74.2
Help to clean tourists' litter/rubbish	102.914	<0.0001	.293	.394	64.3	84.0	76.5
Contribute to rehabilitation of tourist attractions	71.923	<0.0001	.282	.430	50.0	94.7	84.7
Employ locals with fair wages	84.505	<0.0001	.224	.335	97.3	37.5	82.8
Facilitate cultural understanding	115.712	0.0016	.161	.216	63.0	77.6	71.2

Result 2: Correlations between factors and the likelihood of adoption and levels of significance

Variable	Overall model	Help to clean tourists' litter	Contribute to rehabilitation of tourist attractions	Employ locals with fair wages	Facilitate cultural understanding
Decreasing level of complexity	0.841*	1.171*	0.599*	0.897*	0.508*
Financial benefit	0.711*	1.113*	Ns	0.707**	Ns
Reputation	Ns	Ns	Ns	Ns	Ns
Sale volume	Ns	Ns	0.858*	Ns	Ns
Observability	0.321*	Ns	Ns	Ns	Ns
Compatibility	0.626*	0.828*	0.589**	Ns	Ns
Location	-0.428**	Ns	Ns	-1.697*	-0.905**
Firm size	Ns	Ns	Ns	-0.809**	Ns
$(\text{Firm size})^2$	Ns	Ns	Ns	Ns	Ns
Greenness level	Ns	Ns	Ns	Ns	Ns
Risk taking level	0.472*	Ns	1.025*	0.787*	0.492*
Perceived competitive level	Ns	Ns	-0.876*	Ns	Ns
$(\text{Perceived competitive level})^2$	0.097**	Ns	Ns	Ns	Ns
Perceived customer certainty	Ns	Ns	Ns	Ns	Ns
$(\text{Perceived customer certainty})^2$	Ns	Ns	Ns	Ns	Ns
Perceived government certainty	Ns	Ns	Ns	Ns	0.424**

Ns: not significant with p-value > 0.1
* significant with p-value ≤ 0.05
** significant with p-value ≤ 0.1

Only technical complexity was found to be consistently significant across all sustainability innovations. Perceived observability, although it was found significant in the overall model, was not found significant in any of the individual practice models. Perceived increase in firm reputation, greenness level, and quadratic term of firm size were found consistently insignificant across all models.

The results also suggest that the perceived competitive level is the only variable that possibly has a quadratic relationship with the likelihood of adoption. However, this relationship is really weak because it is only significant at a 0.1 confidence level in the overall model and was not found significant in any of the individual practice models. The positive quadratic relationship means that firms that perceive high or low level of competition would be more likely to adopt the innovation than the firms who perceive medium level of competition. Overall, innovation

characteristics appear to be the most influential factors while external environment characteristics play a minimum role in affecting the likelihood of adoption.

6. Discussion and Conclusion

The main purpose of this exploratory study was to detect factors that affect the adopting intention of sustainable practices among tourism accommodation providers in Vietnam. Specifically, direct contributions to local communities were the innovations being investigated. According to Rogers (1995), later verified by various research such as Tabak and Barr (1998), Al-Gahtani (2003), and Martins et al. (2004), innovation characteristics are the most influential factors to the likelihood of adoption. The results of this survey confirm this conclusion with the significant result of technical complexity's effect on the likelihood of adoption across all four innovations. Perceived financial benefits were found significant in the overall model, in the firms' contribution to clean up tourist attractions and employ local residents. Perceived compatibility was also found significant in the overall model and in two of four practices (financial and in-kind assistance to clean out tourists' litter and to rehabilitate tourist attractions). Perceived increase in sales volume and perceived observability were the two factors that were found to have a lesser effect on the likelihood of adoption as they were found significant in only one of the models. The only innovation characteristic that was not found to significantly affect the likelihood of adoption was the perceived increase in firm's reputation.

As Damanpour (1991) defined, these four innovations are administrative innovations. Therefore, technical complexity did not mean mechanical or engineering issues, but more likely concerned management and administrative tactics. From informal conversations during the survey period, some participants expressed that the reason they did not financially or physically contribute to conservation in the area was "purely technical." They were unclear about which organizations can collect donations, how to make a donation, as well as who and how to organize

a clean up at tourist attractions. Also, they were unclear about the kind of publications and materials that would be considered 'appropriate' to facilitate cultural understanding between local communities and tourists. Open-ended questions were not included in this survey due to the limited length of the questionnaire. Therefore, we were unable to provide deeper insight into the relationship between hotels' technical complexity and the likelihood of adoption of innovations. A further study using a qualitative approach might be worthwhile to explain this relationship. Intervention by environmental non-governmental organizations (NGOs) as well as governmental organizations might be effective means for increasing the contributions from tourism accommodation providers in Vietnam toward the sustainability of local areas.

In the modern economic environment, competitive advantage is the essential measurement of a firm's performance (Porter, 1985). A firm constructs its competitive advantage by "the unique bundle of resources that it possesses and deploys" (Mahoney, 2001). In order to maintain and grow, a firm must sustain its competitive advantage. Different firms have different strategies for sustaining their competitive advantage. However, Porter (1995) and Kotler et al. (2003) summarized two main strategies, namely cost leadership and differentiation. Cost leadership strategy focuses on reducing production costs and thus a firm would be able to provide a service/product with the lowest price in the market. Differentiation strategy targets increasing a firm's market share and strengthening its marketing image (Kotler et al., 2003). The competitive advantage in this study, to a certain extent, was mirrored in the relative advantage which hotels perceived from each innovation.

Relative advantage was measured from several aspects which include perceived financial benefits, perceived increase in a hotel's reputation/image, and perceived potential increase in sale volume (i.e. capturing a larger market share). Among those, only financial benefits were found significantly affect the likelihood of adoption of two innovations. Perceived increase in sales volume was found to be significant in one innovation and perceived increase hotel's reputation was not found significant in any case. There was not sufficient information to comment about

this behavior in regard to hotels' strategy of sustaining their competitive advantage. However, it is important to note that small and medium hotels account for a larger proportion of the tourism accommodation providers in Vietnam. Small hotels may focus more on short term goals such as financial benefits rather than longer visions of increasing market share or their reputation (Hansen et al., 2002). As a result, perceived increase in sales volume and increase in market share may affect the likelihood of adoption to a lesser extent compared to financial benefits. Thus, financial incentives policy such as a tax deduction for donations seems to be an effective encouragement to promote the adoption of environmentally friendly practices.

Regarding organizational characteristics, the risk-taking level or organizational openness toward change was found to be significant across three innovations. Given that sustainable tourism development is a relatively new concept in Vietnam, it confirms the hypothesis that the firms more open to new ideas were more likely to adopt sustainable practices. Firm size, expected to have a quadratic relationship, was negatively correlated with employing local people to work in the hotel. Firm location was also found to have significant impact on employing local workers and facilitating cultural understanding. Hotels which were located in natural resource areas seemed to be less likely to adopt these two innovations. This finding seems to be contradict the result of the study by Dewhurst and Thomas (2003) that the firms located in natural resource areas may be more likely to adopt environmental innovation because they have a stronger attachment to the environment. However, it is worthwhile to note that the natural resource areas in Vietnam are also the rural areas in many cases. Those areas are less populated and it is more difficult for the firms to hire trained workers. Also, firms often have more difficulty in obtaining resources (financial and non-financial) in rural areas to invest in new innovation.

Greenness level, however, was not significantly correlated with the likelihood of adoption of any innovations. This result was similar to the finding by Horobin and Long (1996) that there was not a significant correlation between the greenness level and the number of environmentally sustainable actions that tourism firms may conduct. In addition, in this study the

greenness level has a mean of 5.89, standard deviation 1 and median 6, indicating that the hotel managers generally agree on the importance of protecting the environment and acknowledge their role in the overall sustainable development effort. However, the relationship between attitude towards sustainable development and the actual action that an individual or an organization may take is always complicated and difficult to interpret (Miller, 2003).

External environment characteristics are the least influential factors. Perceived competitive level was found to be negatively correlated with the adoption of only one innovation (firms' contribution to rehabilitate tourist attractions). This result indicates that the increasing level of competition will increase firms' hesitation to adopt environmental innovations. A competitive environment is not perceived as a positive encouragement for adopting environmental practices among hotels in Vietnam. Perceived government certainty, generally, was not found to significantly affect the likelihood of adoption, except for hotels' action in facilitating cultural understanding. The positive correlation indicates that hotels are expecting more transparent policies from the government before adopting this practice. A possible explanation for this behavior is Vietnam's legacy of strict press control, especially in documents delivered to international visitors (Venard, 1996). This may cause a hesitation among tourism businesses to produce culturally sensitive materials without an absolute certainty of government support.

This study was subject to certain strengths and limitations that deserve some attention. First, we provided no incentive for respondents to participate. Even though the response rate is at an acceptable level, an incentive might have further improved response rates. Another limitation was that open-ended questions were not included in the questionnaire due to the constraints on the length of the instrument. Open-ended comments may have provided a further explanation of the correlation between the likelihood of adoption and certain independent variables.

Despite these limitations, this study represents one of the first efforts to provide relevant insights into the barriers and advantages of adopting sustainable tourism practices in Vietnam.

As innovation characteristics were found to be the most influential factors and greenness level was found insignificant, the likelihood of adoption of sustainable tourism practices among Vietnamese hotels is more likely to be affected by their ability-to-pay rather than willingness-to-pay. Intervention from NGOs and the government seems to be another important factor to promote environmental innovations, especially interventions in term of financial and technical supports. Some of the supports may include tax incentives; award for 'best practice' business, and organized clean-up, donation events. Further research using qualitative approaches would further contribute to understanding of how to promote the adoption of sustainable tourism practices among tourism businesses in Vietnam.

Chapter 3: Perceptions of hotel businesses in Vietnam toward the adoptions of environmentally friendly practices

Abstract and keyword [2]

The objective of this study was to identify factors that influence the intentions of Vietnamese hotel business to adopt sustainable tourism development practices. The study is approached from the perspective of hotel managers within the framework of the diffusion of innovations theory. Participants (497 hotel managers) were asked to evaluate the potential advantages and barriers to the adoption of 15 selected sustainable tourism practices and to make an adoption/rejection decision based on their judgment. Innovation characteristics were the most influential factors, being highly correlated with the likelihood of adoption. External environment characteristics were also highly correlated with intention to adopt sustainable tourism practices. Organizational characteristics had a weaker relationship with the likelihood of adoption except for the attitude toward change/level of risk-taking.

Key words: environmental innovations, Vietnam

Résumé et le mot-clés.

L'objectif de cette étude etait d'identifier les facteurs qui influencent les intentions prises par l'Hôtellerie Vietnamienne en vue adopter des pratiques de développement tourisque durables. L'étude s'etait basée de la perspective de directeurs d'hôtel à partir d'un cadre de diffusion de théorie d'innovations. Les participants (497 directeurs d'hôtel) sont amener à évaluer les potentiels avantages et les barrières à l'adoption de 15 pratiques tourisques durables et prendre une décision d'adoption/rejet basée sur leur jugement. Les caractéristiques d'innovation étaient les facteurs les plus influents, cela du fait qu'ils sont fortement liés à la probabilité d'adoption. Les caractéristiques environnementales externes étaient aussi fortement liées aux intentions d'adopter des pratiques tourisques durables. Les caractéristiques organisationnelles, par contre,

[2] Paper submitted to Annals of Tourism Research

presentaient une faible liaison avec la probabilité d'adoption, exception faite pour l'attitude envers le changement/niveau de prise de risques.

Mot- clés: Innovations environnementales, Vietnam.

1. Introduction

Before 1986, Vietnam followed a Soviet-style of economic development which included a 'development-at-all-cost' economic policy favoring heavy industry and commerce closed to non-Soviet bloc and/or communist countries. This policy created serious, highly visible environmental consequences for the country including deforestation, soil erosion, contaminated water sources, and reduced wildlife habitat (D. O'Rourke, 1995). Since 1986, Vietnam's economic structure has been transformed into a market-oriented economy. This transformation is often known as economic renovation or *doi moi*. In addition to a major shift that steer the economy toward a higher proportion of light industry and joining the international market, sustaining natural resources is a focus of doi moi. In 1993, the government promulgated The Law on Environmental Protection (LEP), an umbrella environmental law. O'Rourke (2001b:5) observed that "since the passage of the LEP, the government has issued a wide range of decrees, directives, and circulars that flesh out the law, and create implementation instruments to realize the goals of environmental regulation and enforcement." As part of this movement, the government encouraged the development of environmentally friendly industries as economic substitutes for natural resource exploitation. Tourism, in particular, is expected to play a leading role in achieving the balance between economic development and environmental protection (Do, 1996; Vu, 2004).

During the early stages of tourism development, the industry made several significant contributions to the Vietnamese economy. By 1995, tourism was generating USD 780 million in annual revenue and had created more than 15,000 jobs (Hoang, 1998). Because of its

contribution to the nation's GDP, as well as its relatively low impact on the environment, tourism seemed to be a promising economic alternative to heavy industry and resource extraction. However, several negative problems associated with tourism development soon arose. For example, McDonnald (2000) found that there were growing numbers of wildlife restaurants right outside of national parks. These restaurants served wild game including rare or endangered species, which sometimes were illegally poached. A reason given for doing this was the demand from a particular tourist market segment. Furthermore, tourism, mass tourism to be specific, is blamed as an economic activity that has seriously compromised the balance of biodiversity in Vietnam (Dinh, 2003).

Explanations for the negative environmental impacts of Vietnam's tourism industry are many and varied. As a newly emerging industry, the tourism sector has suffered from a lack of oversight and funding from the state. Established in 1960, the Vietnam National Administration of Tourism (VNAT) has been ineffective in the strategic planning and management of the industry (Hoang, 1998). Before 1986, the tourism industry in Vietnam did not really exist as a profit-oriented economic activity, but rather was viewed as a social welfare program which was fully subsidized by the government (Marris et al., 2003). All resorts and hotels in the country were government properties. These facilities housed state-owned company and government employees who were rewarded with vacations as a bonus for meritorious performance. Privately owned tourism businesses were not legally recognized by the law until 1986. With the 1986 economic restructuring, tourism was forced like other industries to become a profit-oriented economic activity. With little or no experience in managing tourism as a market-oriented industry with multiple types of business ownerships, VNAT promoted growth but without any strategic management planning (Haley & Haley, 1997). As a consequence, growth in the tourism sector was accompanied by unforeseen environmental and cultural impacts.

In order to promote a more environmentally friendly approach to tourism development, it is essential to understand the perceptions from both demand and supply sides of the tourism

market as tourism development is both "supply-led and demand-driven" (Liu, 2003:463). The literature on tourism development shows that from the demand side, tourists have become more critical and more conscious about the environmental quality of their destination as well as about the commitment from the providers that they purchases tourism products (Dewhurst & Thomas, 2003; Luzaz & Cosse, 1998a; Middleton & Hawkins, 1998; Miller, 2003). However, little research has explored adopting environmentally friendly practices (EFPs) from the supply side, with the exception of recent studies by Horobin and Long (1996), Rangel (2000), Dewhurst and Thomas (2003), Miller (2003), Rivera (2004). These studies only begin to explore the barriers and advantages of adopting EFPs. Both Dewhurst and Thomas (2003) and Liu (2003) conclude that it is important to understand the business perspective of adopting EFPs to successfully promote a more environmentally friendly and sustainable approach to tourism development. They showed that the most successful cases always start from the micro, or firm level although sustainable tourism development requires the contribution of various actors such as governments, businesses, host communities and other stakeholders.

Specifically, as the Vietnamese government continuously shows its interest in promoting a more environmentally friendly approach to tourism development (Haley & Haley, 1997; Pham, 1997), some recent studies such as Lindsey and Holmes (2002) also provided empirical evidence of consumers awareness and willingness to pay to protect the environment in Vietnam. However, the challenge lies in getting tourism businesses to adopt EFPs. This requires understanding of the difficulties as well as the motivations and incentives for participation in sustainable tourism practices. Nevertheless, no study on tourism development in Vietnam has addressed this issue. Therefore, this study aims to bridge that gap by examining the factors that influence the perceptions Vietnam's tourism businesses concerning *likelihood of adoption* (LOA or intention to adopt) of EFPs.

As classified by McIntosh and Goeldner (1990), the tourism industry contains four main components: (1) accommodation and hospitality services; (2) travel agencies and tour companies;

(3) tourist attractions including natural, cultural, and historical resources; and (4) transportation services. Accommodation and hospitality services including hotels, resorts, campgrounds, bed and breakfasts, etc., continue to be the most critiqued tourism component because of the potential negative impacts it can have on the environment, in this study, this component is referred to as hotels for short. For example, local environmentalists have raised concerns about the impacts of run-off residual chemicals and waste water from large hotel and golf course landscaping on the surrounding environment (Haley & Haley, 1997). Also, the construction of large scale resorts throughout the country have contributed to deforestation (Pham, 1997).

In addition to biophysical impacts, tourism can result in social and cultural impacts. For example, hotels are the largest sources of employment in tourism for local residents, but they also have the largest disparity in incomes between local staff and expatriate staff holding the same positions (Mbaiwa, 2003). Furthermore, tourism is expected to "help boost cultural exchange activities, strengthen friendship, co-operation and promote mutual understanding between nations" (Vu, 2004). However, tourism may equally increase misunderstanding, stereotyping, xenophobia and other problems. Host communities often exhibit resentment towards luxury resorts and hotels as rising property values force them into a lower living standard (Hall & Jenkins, 1995). Hotel businesses have also been blamed for fostering other social problems such as prostitution and abuse of child labor (Haley & Haley, 1997).

Because of these significant impacts, and the need to limit the scope of the study, this article focuses on the accommodation sector. Our intent was to explore the types of salient factors that influence the intention of hotels to adopt EFPs. The literature was reviewed to identify EFPs in use or under consideration for use in sustainable tourism, ecotourism, or green tourism programs throughout the world. The correlations of these factors with the firms' decision to adopt or not adopt these EFPs were then explored through the theoretical framework of diffusion of innovations (DOIs).

2. Theoretical Framework

Although a limited number of studies have addressed tourism business perspectives of adopting EFPs, thousands of studies had been conducted to examine factors influencing businesses to accept their responsibilities to protect natural resources, improve the quality of the environment, and produce greener and cleaner products. Motivations for integrating environment practices with business activities are among the most discussed topics across different industries and different scientific disciplines during the last two decades (Hoffman, 2000a). Accompanying the wide range of research are a diverse mix of theoretical frameworks. Some of the most widely applied theories include resource-based view theory, institutional change theory, stakeholder and organizational ethics theory, and diffusion of innovation theory. Each of these theories provides certain merit and limitation to explain business motivations of adopting EFPs.

Resource-based view theory, for example, is a further development of neo-classical and ecological economics theories with early contribution from Porter (1985). This approach has been applied in various studies, especially a recent research by Rangel (2000) on motivations of Costa Rican hotels to participate in a sustainable tourism program. The main tenet of resource-based view theory is the link between competitive advantage and the internal resources of the firms. The effectiveness of this link is often measured through customers' perceptions of product improvement based on the adoption of new business practices (Srivastava et al., 2001). From resource-based view perspective, businesses are willing to comply with environmental protection practices because they perceive benefits from doing so, such sustaining competitive advantage (Esty & Porter, 1998; Vazques et al., 2001; Veliyath & Fitzerald, 2000). This is a major departure from classical economic theory which views environmental protection as high cost activity that companies try to avoid. Because it is rooted in economic theory, resource-based view theory is criticized for heavily focusing on economical benefits and not on other factors such as socio-

political exchanges (Fahy, 2000; Lockett & Thompson, 2001) and organizational and institutional motivations (Lux, 2003).

Institutional and stakeholder theories have been applied in several environmental studies to further explore other motivations besides financial and marketing benefits (Hoffman, 2000a; Rangel, 2000; Rivera, 2002, 2004; Soderbaum, 2000). According to institutional theory, social pressures from other actors in the market, such as government and the general public, are important factors that determine a firm's intention to adopt or even over comply with environmentally friendly programs (Rivera, 2002, 2004). Stakeholder theory expands further the range of motivations that stimulate a firm's adoption of EFPs from a cost/benefit decision to a moral choice. In addition, stakeholders are not limited to humans but also include the natural environment (Phillips, 2003).

Although resource-based view theory, institutional theory, and stakeholder theory can help clarify firms' motivations to adopt EFPs, these theories also have limitations relevant to this study. For example, an obstacle to this study was that it was conducted after SARS outbreak in Asia, resulting in a major decrease in the tourism business. Researchers such as Couch et. al. (1995) concluded that it is not appropriate to study business ethics at a time when a company's survival is at stake. Given the circumstance, applying stakeholder theory with its main focus on business ethics was not a practical choice for this study.

Further, in comparison to resource-based in institutional theories, the theory of diffusion of innovation (DOI) by Rogers emerged as a more applicable framework for this study. First, as defined by Rogers (1995), innovations are ideas, practices, or concepts that are perceived as new to the potential adopters. The concept of EFPs, although not a new idea in the international tourism market, is new to tourism companies in Vietnam since tourism is a relatively new industry. DOI theory provides a framework to study firms' motivations to adopt new practices while the resource based view and institutional theory are more applicable in cases of well established sets of practices.

Secondly, as shown in Figure 3.1, DOI theoretical framework includes a variety of motivations that also cover some main tenets of resource-based view or institutional theory. As Rogers (1995) classified, there are three main categories of a firm's motivation to adopt EFPs: (1) the characteristics of innovations; (2) the characteristics of the organization; (3) and the characteristics of the environment in which the organization operates.

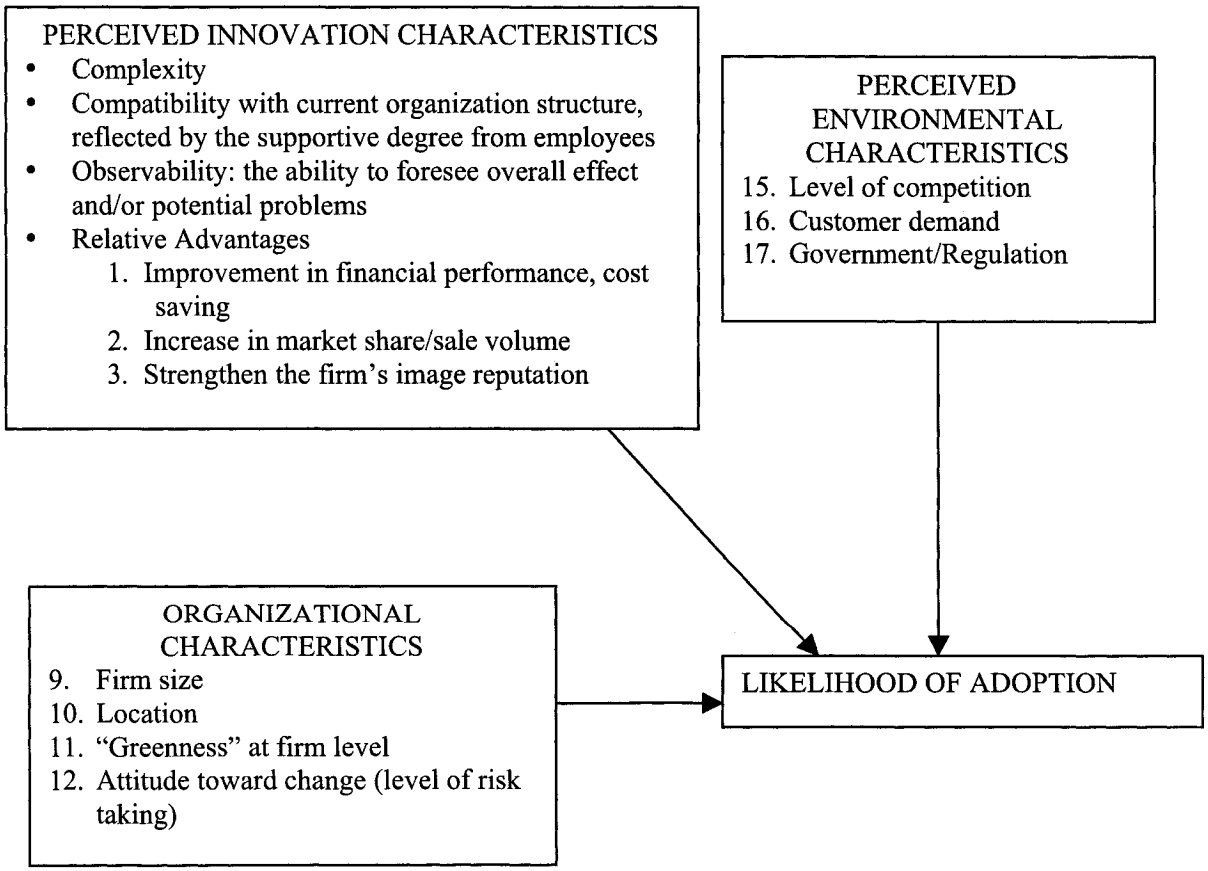

Figure 3.1: Conceptual framework of the study applying Rogers' (1995) model of diffusion of innovations

Innovation characteristics include complexity, compatibility, observability and relative advantages. *Complexity* is the degree to which an innovation is perceived as difficult to understand and use. The most common understanding of complexity is the level of technical difficulty (Martins et al., 2004; Everett M Rogers, 1995; Tabak & Barr, 1998). The more

complex an innovation, the less likely it will be adopted. *Compatibility* is the degree to which an innovation is perceived as being consistent with existing values, past experience, and the needs of potential adopters. *Observability* is the degree to which the results of an innovation are visible to the firm. Observability is generally understood as the ability to foresee the overall effect of adopting the innovations. The easier it is for individuals or organizations to see the results of an innovation, the more likely they are to adopt it (Everett M Rogers, 1995). *Relative advantage* is the degree to which an innovation is perceived as better than the idea it supersedes or substitutes. Relative advantage can be either financial or non-financial. The higher the perceived relative advantage of an innovation, the more likely it will be adopted. Relative advantages mentioned most in adopting environmental innovations are cost savings, improvement of the firm's reputation, and sales volume or market share (Rangel, 2000).

Organizational characteristics include firm size, firm location, a firm's attitude toward environmental protection and a firm's attitude towards adopting changes. Firm size and firm location are controversial factors as of which direction they affect a firm's intention to adopt EFPs. Generally, firm size and firm location are indicators of internal resources that a business has available. Large firms, for example, are often assumed to have more financial and human resources than small firms. Firm's attitude towards environmental protect and adopting change represent organizational norms regarding risk-taking in general and the risk of adopting EFPs in particular.

External environment characteristics represent how businesses perceive certain attributes of the external environment, such as customer demands, industrial rivalry intensity, and government policies/regulations. Commonly, the attributes of external environment are measured in terms of perceived certainty levels, meaning the extent to which changes can confidently be predicted (Downs & Mohr, 1976). In this study, three variables studied within the construct of external environment characteristics are perceived level of competition, perceived level of

certainty about customer demand, and perceived level of certainty about government policy. These factors represent social pressures on a firm as a motivation to adopt EFPs.

Another reason that DOI theory is more applicable for this study is its wide application across geographical regions as well as scientific disciplines. Since Rogers' first publication of the DOI theory in 1962, its consistency has been proven in over 5000 studies across a variety of different disciplines, including the study of environmentally friendly technology (Nijkamp et al., 1999). While this is the first time the DOI framework has been used in a Vietnamese cultural context, it has been cross-culturally applied in various studies in non-English speaking cultural settings such as Indonesia (Chaudhuri, 1994), Saudi Arabia (Al-Gahtani, 2003), and China (E. M. Rogers, 2003).

To summarize, due to its advantage over other theoretical frameworks, the DOI theoretical framework is applied to this study, whereby firms' motivations to adopt EFPs are categorized into three main constructs which are innovation characteristics, organizational characteristics, and external environment characteristics. All of the *innovation characteristics* (relative advantages, observability, and compatibility), except for complexity, are hypothesized to have a positive correlation with the LOA of environmental innovations. Relative advantages are measured by several variables including financial costs and benefits, increase in sales volume/market shares, and increase in the firm's reputation. *Organizational characteristics* include firm size, firm location, greenness level, and level of risk taking. Greenness level and level of risk taking are hypothesized to have a positive influence on a tourism firm's intention to adopt environmental innovations. Because firm size and firm location are exploratory variables, no hypotheses are proposed. *External environment characteristics* include perceived certainty of the level of competitions, of changes in customer demand, and of changes in government policies. They are hypothesized to be positively correlated with LOA.

3. Study Methodology

3.1. Survey Instrument

Since there was no standard set of sustainable tourism practices in Vietnam at the time of this study, a generic list of practices was created from existing programs such as the Nature and Ecotourism Accreditation Program (NEAP: *Nature and Ecotourism Accreditation Program*, 2003) in Australia, the Ecotourism Program from Costa Rica (2003) and "Green Hotel" criteria from the Hyatt Corporation (Enz & Siguaw, 1999). The list was then redefined by two expert panels through a semi-Delphi routine recommended by Delbecq et al. (1975) as the most effective for generating management criteria and decisions given time and budget constraints.

The first expert panel included English-speaking experts in the field of sustainable tourism development. Two experts were from Australia and actually contributed to the construction of NEAP. Two other experts from the U.S. had extensive experience working on environmental protection policies in developing countries, including Vietnam. One Malaysian expert was involved in the development of sustainability criteria for hotels in Malaysia. The experts were asked to select practices they perceived to be important and practical in the context of developing countries like Vietnam. A list of common selected practices was then emailed back to experts for confirmation. After three rounds of independent reviews, the experts unanimously selected 56 practices.

The list was then translated into Vietnamese and re-translated into English to ensure accuracy and minimize language issues. The Vietnamese version was given to a second expert panel comprised of five tourism experts in Vietnam who have extensive experience and knowledge of the tourism sector. Panelists were selected from academic institutions, government administration of tourism, and business organizations to cover a wide range and variety of opinions. The experts were used to confirm items on the lists, to reduce the number of items to a researchable size, and to make sure the important items were not left out. Panelists were

instructed to independently identify practices most important and applicable to the tourism industry in Vietnam. After the first round, 35 practices selected by at least three experts remained on the list. This list was then sent to experts for a second review. After the second round, 15 practices were unanimously selected. A personal interview with each expert was conducted to confirm agreement on 15 practices covering such hotel business activities as use of water, electricity, building design, landscaping, air and noise pollution, recycling, direct contributions to preservation, and working with local communities.

Table 3.1 shows the original scale items used to measure variables for three key constructs and the abbreviation for each item used in statistical analysis of this study. Variables for which represent innovation characteristics were measured on a semantic differential scale from 1 to 7, with 1 being extremely complex/difficult/disadvantaged; 4 being no effect or no change; and 7 being extremely simply/easy/advantaged, according to the wording of each innovation attribute. Variables representing organizational characteristics, except for firm size and location, were measured with a 7-point Likert-type scale with 1 being 'strongly disagree' and 7 being 'strongly agree.' Firm size was determined using several proxy measures for hotels as suggested by Rangel (2000). These proxies included star ratings, total assets, number of rooms, and number of employees. Firm location was presented as a dummy variable, with 0 for the hotels located in a non-natural resource area and 1 for hotels within a natural resource area. External environment characteristics were measured with a 7-point Likert-type scale, with 1 being 'highly unpredictable' and 7 being 'highly predictable.'

The questionnaire was translated into Vietnamese and re-translated into English to ensure the transferability and accuracy of terminologies. The final product was a cover letter and a 9-page long questionnaire. Two pilot tests of survey instrument among 30 hotel managers were conducted. Participants were asked to note the ease of understanding instructions, measurement scales, and the accuracy of word choice. Except for some minor changes in wording, participants reported no difficulties or misunderstanding in answering the questionnaire

Table 3.1: Scale items to operationalize the constructs of study and their original reliability scores

Scale items in each variable	Abbr. in this study
Construct 1: Innovation Characteristics	
Complexity and observability. Adopted from: McCabe (1987). Cronbach's alpha = 0.86	
Level of technical difficulties	TECH1
Level of difficulties in applying/installing	TECH2
Level of consequential adjustment	TECH3
Level of ease to forecast the overall effect	OBSER
Relative advantage. Adopted from: Karagozoglu and Lindell (2000). Cronbach's alpha = 0.8	
Flexible cost saving	FLEXCOS
Level of increase in sale volume	SALE
Level of improvement in overall financial status	FIN
Level of improvement in company's reputation/image	REPU
Compatibility Adopted from: Kocis (1986): Level of support from employees	COMPA
Construct 2: Organizational Characteristics	
Greenness level Adopted from: Horobin and Long (1996) Cronbach's alpha was not calculated	
We are holding the environment and resources of the country in trust for future generations and we have a responsibility to pass these on in good condition.	GREEN1
The fortunes of tourism and the environment are closely linked. Without a beautiful environment, tourism could not flourish and be sustained.	GREEN2
The greater the attraction of a beautiful place the greater the danger that large numbers of visitors will reduce its attractiveness.	GREEN3
It is relevant for tourism businesses of all sizes to encourage the development of a tourism industry which can serve the needs of both current and future generations.	GREEN4
We can all respond to the need to protect the environment, for example by altering some of our everyday business activities.	GREEN5
Attitude toward change. A development from Miles and Snow's perceived uncertainty scale (1978) by Hurley & Hult (1998), later applied by Vazques et al (2001). Cronbach's alpha = 0.869	
Technical innovation, based on research results is readily accepted in our organization	RISK1
Management is actively seeking innovative ideas	RISK2
People are penalized for new ideas that do not work	RISK3
Innovation in our company is perceived as too risky and is resisted	RISK4

Table 3.1 (continued)

Scale items in each variable	Abbr. in this study
Construct 3: External Environment Characteristics	
Perceived competition. Earlier developed by Jaworski and Kohli (1993) has been tested and used by Appiah-Adu and Singh (1998). Cronbach's alpha = 0.71	
Competition in our industry is cut throat	COMPE1
Anything that one competitor can offer other can match	COMPE2
Our competitors are relatively weak	COMPE3
Perceived customer and government certainty Adopted from: Miles and Snow (1978). The Cronbach's coefficient alpha was not presented	
Customers' demand for existing product	CUST1
Customers' demand for new product	CUST2
Government regulatory agencies changes in laws or agency policy on pricing	GOV1
Government regulatory agencies changes in law or agency policy on product standard or quality	GOV2
Government regulatory agencies changes in law or agency policy on environmental standard	GOV3
Government regulatory agencies changes in law or agency policy affecting marketing and distribution methods	GOV4
Government regulatory agencies changes in law or agency policy on acceptable accounting procedure	GOV5

3.2. Study Participants.

The number of accommodation providers in Vietnam, as published in the VNAT website as of November 2002 including hotels, resorts, villas, tourism villages and apartment rentals, was 3,267. However, VNAT refers to this figure as "unofficial" (*Tourism Statistics*, November 2002). A request was sent to VNAT regional offices to provide contact information including business names, managers, and addresses of these 3,267 hotels. A randomly selected sample of 497 hotels was chosen from combined data base of all regions. Because this study focuses on management decisions related to the adoption of environmental innovations, the desired participants were owners, managers, or members of decision making units in hotel organizations. This logic follows that of other organizational studies (Damanpour, 1991; Rangel, 2000; Wolfe, 1994).

3.3. Distribution of Questionnaires

The survey period was from August to December 2003. The surveyors first attempted to set up appointments with the participants. A brief face-to-face meeting was arranged during which the participants received the questionnaire with a pre-paid return envelope. The surveyors explained the purpose of the study, gave instructions on how to fill out and return the questionnaire, and answered clarification questions. The surveyors then came back to retrieve the questionnaire a couple of days later, according to the arrangement with the participants. This method has been used to increase response rates in other tourism studies (Vincent & Santos, 1996). If the questionnaires were not completed at the second meeting, participants were asked to return them by mail. If the participants had not returned the questionnaire by mail, a reminder telephone call was made and a letter sent one and two weeks after the meeting.

4. Results

4.1. Sampling Issues.

After sample selection, it was found that 33 participants were actually duplicates because they also manage another hotel on the list. That reduced the number of selected participants to 464. In addition, 27 participants were unreachable during the survey period because the hotels were closed for reconstruction and/or for renovation. Among 437 remaining participants, 193 returned the questionnaires, resulting in a response rate of 47%. Of those, three participants sent back a blank questionnaire, reducing the number of usable samples to 190.

Several incidents that took place before and during the survey period also reduced the number of hotel businesses in the study population. The first incident was the SARS outbreak in Asia earlier in 2003, which dramatically reduced the number of international tourists. This was followed by the Avian flu, often known as bird flu, which affected the southern part of Vietnam

from November 2003 to March 2004, resulting in further cancellations of international and domestic tours. Without customers, many hotels, especially small hotels with limited financial resources, faced bankruptcy and closure. To survive, these businesses were forced to merge, or to sell their properties to other hotel companies, or had to change their operations into restaurants, night clubs and karaoke clubs in order to serve local customers. According to our estimation, the actual population was closer to 2,500 hotels at the time of the study. Using 193 responses, the sampling error for this survey was calculated to be 8% according to Salant and Dillman (1994).

4.2. Non-response Bias Assessment.

Various ways to assess the nonresponse bias are discussed in the literature, such as comparing the socio-demographic characteristics of the respondents versus those of nonrespondents, or comparing the result between earlier and later responses (Dey, 1997; Salant & Dillman, 1994; Stoop, 2004). In this survey, because the unit of analysis was the individual tourism firm, it was most appropriate to assess the nonresponse bias based on the characteristics of the organizations. Therefore, the star ratings (from 0, or non-classified hotel to 5-star hotel) and types of ownership (state owned, privately owned and joint-venture between a domestic and a foreign partner) were used to check nonresponse bias. With χ^2 equals 8.41 (p-value > 0.1), we concluded that the proportion of star categories among nonrespondents is not different than that of respondents. The Chi-square test of the proportion of ownership types between respondents and nonrespondents also results in a χ^2 of 4.09 and p-value greater than 0.1, indicating no difference between respondents and nonrespondents in terms of type of ownership. Because differences between respondents and nonrespondents were not found in either of the two tests, the nonresponse bias is judged to be insignificant.

4.3. Measurement Validity and Reliability

Figure 3.1 shows three main constructs examined in this study. Table 3.1 shows the scale items and reliability scores for the scales of those constructs. Variables within the innovational characteristics construct were measured by nine items. Ten items were used to measure variables representing the external environment characteristics. Greenness level and risk taking level are the two variables representing organizational characteristics being measured by nine equal interval scale items. Cronbach's coefficient alpha was used to determine the internal consistency of the measurement scale items that were used to operationalize these constructs. According to DeVellis (1991), Cronbach's coefficient alpha levels below 0.60 are unacceptable and indicate a problem with the internal consistency of the questionnaire items. However, Nunnally (1978) argued that in the early stages of research, reliabilities of 0.50 to 0.60 would suffice. Following this logic and given that this study is at the early stage of sustainable tourism development research in Vietnam, the coefficient alpha of 0.527 for attitude toward change scale was deemed acceptable.

However, items RISK3, RISK4, and COMPE3 were all worded negatively, with the coefficient alphas calculated based on the reverse scores of these items. These items all had low correlation with their totals (less than 0.3) and COMPE3 even had a negative correlation with the total. The partial correlation scores were examined, RISK3, RISK4 (p-value ranged from 0.47 to 0.78 for both items), and COMPE3 (p-value ranged from 0.118 to 0.664) all had insignificant partial correlations with the other items in their scales, suggesting that there may be a Vietnamese language/cultural issue with responding to negatively worded statements. Therefore, even though the Cronbach's alpha for external environment was acceptable according to Nunnally (1978), items RISK3, RISK4 and COMPE3 were removed. After removing these items, the Cronbach's alpha was a very respectable 0.722 for attitude toward change scale and 0.793 for external environment characteristics scale.

4.4. Confirmatory Factor Analysis to Identify Variables Related to Proposed Model

As shown in Table 3.1, this study adopted measurement items from other studies. These items comprise measurable variables that operationalize the constructs of innovation, organizational, and external environment characteristics as presented in Figure 3.1. However, because all items were extracted from studies in English and were not originally to tourism studies, there is a potential for discrepancy between the theoretical construct and respondents' understanding of the items in each construct. Therefore, factor analysis was conducted for two purposes. The first purpose was to identify any discrepancy between the theoretical constructs and respondents' understanding of how the scale items related. The second purpose was to create statistically independent variables from respondents' constructs to be used in the regression analysis.

The results of three factor analyses are presented in Table 3.2. The first factor analysis confirmed the operationalized variables that measure the innovation characteristics with six factors emerging from the varimax rotation. These factors explained 90% of the total variance. Most factors loaded in a pattern consistent with the study's theoretical assumptions. All of the technical indicators loaded in factor 1, which represents the complexity issue of innovation characteristics (COMPLEXITY), as shown in Table 3.2. Overall financial benefit loaded in both factor 2 (SALE VOLUME) and factor 3 (COST SAVING) which is theoretically acceptable because financial benefit is related to both the increase in sale volume and saving flexible cost. Factor 4, 5, and 6, respectively, are loaded by observability (OBSERVABILITY), reputation (FIRM IMAGE), and compatibility (COMPATIBILITY) with the current firm's practices.

The second factor analysis was used to determine the operationalized variables that represent the construct of external environment characteristics. Varimax rotation revealed three factors which consistently represent the theoretical construct of external environment characteristics. These three factors explained 76% of total variance. GOV1, GOV2, GOV3,

GOV4, and GOV5 loaded in factor 1 indicating the level of certainty about governmental changes in regulatory policy. CUST1 and CUST2, predominantly loaded in factor 2, indicating the level of certainty about customer demand. The last factor was composed of COMPE1 and COMPE2 representing the perceived level of rivalry in the tourism industry.

Table 3. 2: Results of factor analyses to constructs independent latent variables for logistic regression analysis

	Rotated Factor Pattern					
Variable	Factor1	Factor2	Factor3	Factor4	Factor5	Factor6
	Innovation characteristics					
	Complexity	Sale increase	Cost saving	Observability	Reputation Increase	compatibility
TECH1	**0.925**	0.111	0.122	0.062	0.043	0.073
TECH2	**0.911**	0.118	0.167	0.117	0.050	0.093
TECH3	**0.684**	0.086	0.232	0.449	0.157	0.086
SALE	0.130	**0.825**	0.046	0.239	0.388	0.086
FIN	0.206	**0.681**	**0.480**	0.088	0.019	0.365
FLEXCOST	0.281	0.143	**0.913**	0.148	0.057	0.080
OBSER	0.234	0.230	0.144	**0.856**	0.166	0.231
REPU	0.103	0.265	0.055	0.161	**0.881**	0.280
COMPA	0.139	0.205	0.115	0.238	0.319	**0.855**
	External environment characteristics					
	Certainty about government	Certainty about customers	Perceived level of competition			
GOV3	**0.810**	0.206	0.033			
GOV4	**0.804**	0.042	0.097			
GOV1	**0.772**	0.115	0.020			
GOV5	**0.750**	0.185	0.070			
GOV2	**0.635**	0.361	0.081			
CUST1	0.152	**0.822**	-0.160			
CUST2	0.281	**0.744**	0.082			
COMPE1	-0.021	0.143	**0.891**			
COMPE2	0.197	-0.250	**0.776**			
	Organizational characteristics					
	Greenness level	Risk taking level				
GREEN1	**0.899**	0.183				
GREEN2	**0.835**	0.266				
GREEN4	**0.683**	0.492				
GREEN3	**0.510**	0.124				
RISK1	0.111	**0.883**				
GREEN5	0.268	**0.814**				
RISK2	0.416	**0.698**				

The third factor analysis was used to detect variables measuring organizational characteristics. Varimax rotation resulted in two factor describing organizational characteristics. These two factors explained 71% of the total variance. GREEN1, GREEN2, GREEN3, and GREEN4 loaded in Factor 1 indicating greenness level. Participants, however, seemed to interpret the statement "we can all respond to the need to protect the environment, for example by altering some of our everyday business activities" as being more associated with a risk-taking action than with a positive attitude toward sustainable tourism. Item GREEN5, which was assumed to be a greenness indicator, became one of the risk-taking attitude items loading on factor 2 (RISK TAKING).

Two variables, firm size and firm location, are not included in Table 3.3 because they are not measured by scale items but by other proxies. Among the respondents, 12% indicated their hotels were 1-star, 32.2% were 2-star, 16.95% were 3-star, 9% were 4 or 5-star, and 15% were non-classified, according to hotel standards classified by VNAT. The non-classified hotels included (1) hotels that were brand new thus had not yet finished their application for classification; and (2) hotels that do not meet the requirement of any star rating. Although the star ratings are generally correlated to the size of the hotels, because of the large number of not-yet-classified hotels, the star rating was not included as a proxy measure of firm size. Other proxies, including number of rooms, total assets, and number of employees, were highly correlated to each other (partial beta were 0.65, 0.70, and 0.92, pairwise sequentially with p-value less than 0.0001). A variable was created using a factor component of these three variables to measure firm size.

4.5. Logistic Regression to Relationships between LOA and Independent Variables

Logistic regression analysis was used to examine the influence of innovation, organization, and external environment characteristics on a firm's decision to adopt sustainable tourism practices. LOA as the dependent variable was measured in terms of a binary response decision, with 0 being

rejection and 1 being adoption. A multivariate probability plot was graphed to examine the relationship between dependent and independent variables in the logistic regression model. The graph shows a curvilinear feature indicating some potential quadratic relationships. Scatter plots were then created to provide visual information of the partial relationship among these variables with the LOA. The variables that show potential quadratic form are firm size, perceived competition and perceived customer certainty. Therefore, the overall model of logistic regression became:

$$\text{Adoption likelihood} = \text{Intercept} + \beta_1*(\text{perceived decreasing level of complexity}) + \beta_2*(\text{perceived cost saving}) + \beta_3*(\text{perceived increase in firm's reputation}) + \beta_4*(\text{perceived increase in sale}) + \beta_5*(\text{perceived compatibility}) + \beta_6*(\text{perceived observability}) + \beta_7*(\text{firm location}) + \beta_8*(\text{firm size}) + \beta_9*(\text{firm size})^2 + \beta_{100}*(\text{greenness level}) + \beta_{11}*(\text{risk taking level}) + \beta_{12}*(\text{perceived competition}) + \beta_{13}*(\text{perceived competition})^2 + \beta_{14}*(\text{perceived customer certainty}) + \beta_{15}*(\text{perceived customer certainty})^2 + \beta_{16}*(\text{perceived government certainty})$$

Logistic regression utilizing backward elimination was run first with the overall model of all 15 practices, and then with each individual practice. Overall, eight factors were found to have statistically significant relationships with the LOA (p-value <0.05), as shown in Table 3.3. All variables representing innovation characteristics were significantly correlated with the LOA in hypothesized direction. Firm size, firm location and level of risk-taking are variables within organizational characteristics that significantly affect the LOA. However, firm size, even though the correlation was positive, has a weak relationship with the LOA, as its p-value is over 0.05. Perceived level of competition and customer certainty are factors that were found significant among the external environment characteristics. None of the quadratic effects was found significant in the overall model.

Table 3.3 Results of logistic regression analysis with correlation to likelihood of adoption

Variable	Overall model	**Prac. 1** Do not use residual chemical treatment in landscaping	**Prac. 2.** Collect and use rainwater/ storm water whenever possible	**Prac. 3.** Utilize automatic run-off taps to save water	**Prac. 4** Compatible building forms with the landscape	**Prac. 5** Retain and include native vegetation	**Prac. 6** Use movement sensor switches for outdoor lighting	**Prac. 7** Control electric use in guest rooms
-2 Log (model fit)	1809a	99.6a	64.5a	109.9a	110.4a	102a	86.2a	115.9a
Pseudo R^2	0.183	0.282	0.499	0.287	0.207	0.339	0.265	0.225
% of correct classification	66%	72%	84%	73%	69%	67%	78%	71%
Complexity	0.486a	1.060a	1.049b	0.665a		0.691b	0.953a	0.438b
Cost saving	0.141a	1.333b				0.577c		
Sale increase	0.204a				0.497b			
Compatibility	0.204a		1.117b			0.843b		
Observability	0.435a		0.879b			1.144a	0.533c	
Firm image	0.143b							
Location	-0.243b	-1.166b						
Firm size	0.174c				1.802b	0.648c		
$(\text{Firm size})^2$					-0.769b		-0.550c	
Greenness				-1.129c			-0.987c	
Risk taking	0.115b			0.832a	0.620b			
Rivalry	0.065b		1.267a					0.824a
$(\text{Rivalry})^2$			0.951b	0.787b				
Customer certainty	0.177a		0.555c		0.406c	0.577b		
$(\text{Customer certainty})^2$								
Government certainty								

Correlation Coefficients are statistically significant with
(a) p-value < 0.01; (b) p-value between 0.01 and 0.05 and (c) p-value between 0.05 and 0.1
Correlation Coefficients in blank cells are not significantly different from 0 (p-value>0.1). The corresponding factors have no effect in the selected model

Table 3.3. continued

Variable	**Prac. 8** Control noise level from hotel's activities	**Prac. 9** Do not allow idly running vehicles	**Prac. 10** Control air emission from hotel's activities	**Prac. 11** Provide recycle bins for guest rooms	**Prac. 12** Provide financial and other assistance to clean up tourist attractions	**Prac 13.** Provide financial and other assistance to rehabilitate tourist attractions	**Prac. 14** Employ local residents with fair wages	**Prac. 15** Facilitate cultural understanding between tourists and host community
-2 Log (model fit)	99.1a	98.3a	95.8a	67.7a	103.4a	69.7a	71.5a	114.4a
Pseudo R^2	0.314	0.232	0.304	0.445	0.390	0.455	0.477	0.230
% of correct classification	78%	80%	77%	79%	78%	87%	82%	70%
Complexity		1.058a	0.571c	1.574a	1.447a		1.696a	0.713b
Cost saving				0.748b	1.005a		1.024b	
Sale increase						1.074a		
Compatibility					0.739a	0.990b		
Observability	1.209a	0.601c	1.017a	1.854a				
Firm image	0.883c			0.924c				
Location	-1.247b		-1.191b				-2.146a	-0.890c
Firm size							-1.065c	
$(\text{Firm size})^2$								
Greenness								
Risk taking						1.029b	0.918b	0.485b
Rivalry								
$(\text{Rivalry})^2$						-0.973a		
Customer certainty		0.435c					-0.548c	
$(\text{Customer certainty})^2$						0.310c	-0.506a	
Government certainty	0.468c							

Correlation Coefficients are statistically significant with
(a) p-value < 0.01; (b) p-value between 0.01 and 0.05 and (c) p-value between 0.05 and 0.1
Correlation Coefficients in blank cells are not significantly different from 0 (p-value>0.1). The corresponding factors have no effect in the selected model

5. Discussions of Findings

The objective of this study was to identify factors that influence the LOA of sustainable tourism development practices among tourist accommodation providers in Vietnam. The overall adoption/rejection ratio is 51% and 49%, with the lowest adoption rate being 23% (practice 2: rainwater/stormwater are collected to use in hotel whenever possible), and the highest adoption

rate that of 74% (practice 14: Local residents are employed in some aspect of the operation with a fair wage).

5.1. Innovation Characteristics

The results of this study confirm the conclusion by Rogers (1995) that innovation characteristics are the most influential factors affecting the LOA. Complexity and observability, in particular, are most often found significant (12 out of 15, and 7 out of 15 practices respectively) in this study. As Damanpour (1991) noted, it is important to distinguish between technical and administrative innovations because the adopters may perceive them differently. Most of the innovations were technical, except for practices 11 to 15 which involve working with local communities. The correlation between LOA and complexity was significant regardless of the type of innovation.

The fact that observability is significantly correlated with the LOA indicates that innovations with higher explicit and visible overall results will be more likely to be adopted. This result is consistent with findings in sustainable tourism development studies by Dewhurst and Thomas (2003) and Liu (2003), who found that the best way to motivate tourism businesses to adopt environmentally friendly practices is to show them an example of other businesses who successfully adopted them. Successful adoption, in this case, means that the practices significantly improve the environmental performance of the firm as well as produce visible economic results.

Similarly, relative advantages (measured in term of cost savings, increase in sales volume, and increase in firm's reputation) also appear to be effective motivations to adopt sustainable practices. However, increase in firm image does not appear as strong an influence as other relative advantages. The overall model shows a significant positive correlation between strengthening the firm's image and the LOA. No significant correlation between strengthening firm image and LOA was found (at alpha = 0.05). Improved firm image was hypothesized to be

positively correlated with the LOA, indicating that practices helping companies advertise themselves as environmentally friendly would more likely be adopted, as found by Rangel (2000). However, it did not appear to be the case among hotel businesses in Vietnam. One of the common concerns among tourism businesses in Vietnam is the difficulty of advertising to the international market. Firms lack the resources and knowledge in international marketing to effectively use the attribute of being environmental friendly to improve their image.

The findings about correlations between innovation characteristics and LOA followed a pattern similar to that described by Roger (1995). As Rogers (1995) observed, at the early stage of diffusing an innovation, firms generally do not have complete information about its characteristics. Thus, correlations between LOA and innovation relative advantages may not be explicit. At this early stage, firms tend to pay more attention to complexity of the innovation and prefer innovations that they can observe the results.

5.2. Organizational Characteristics

Among organizational characteristics, firm size location, and level of risk-taking are the variables which were found to be statistically significant in the overall logistic regression model (p-value less than 0.05). The most significant relationship is a positive correlation between level of risk-taking and the LOA. It was found to be significant in the overall model and for 4 out of 15 practices. This finding is consistent with findings from the literature (Rogers, 1995). Firms that are more open to new ideas and changes are also more likely to adopt sustainable tourism practices. In addition, this correlation also presents characteristics of early adopters, as Rogers (1995) concluded, who are often more dynamic and high risk-taking firms.

The relationship between firm size and LOA has been a controversial topic. In regard to adoption of sustainable tourism, Bramwell et al. (1996: 11) noted that small firms "generally lack the resources to keep them abreast of developments and act individually on issues such as sustainability." Middleton and Hawkins (1998) also concluded that small firms would be less

likely to adopt EFPs because of their financial constraints. However, Dewhurst and Thomas (2003) found that small hotels have a stronger sense of attachment to the area where their business is located, and for that reason, are more concerned about the quality of the environment than pursuing profit maximization.

The results of this study show a complicated relationship between LOA and firm size. Several correlations were significant, but some were positive, some negative, and some quadratic. For example, the adoption of practice 14 (local people are employed in some aspects of the hotel with a fair wage) was negatively correlated with the LOA, indicating small firms favor this practice. Smaller hotels often offer fewer services which require less staff training. Therefore, one reason that it is easier for smaller hotels to employ local people in the firm is that smaller hotels can hire local people without an intensive investment in staff training programs. Another negative correlation, but in quadratic form, was found for practice 4 (hotel building designs are compatible with the landscape): both small and large firms did not favor this practice in comparison to medium-size firms. A possible explanation is that it is more difficult to design a very small or a very large hotel to be compatible with the landscape. The results show that the relationship between firm size and LOA among hotels in Vietnam should not be demonstrated as a linear correlation. Rather, this relationship varies depending on the type of innovation. Therefore, it would be more appropriate to address what types of innovation small or large firms are in favor of, rather than how many innovations they would be likely to adopt.

Firm location and "greenness level" also exhibited complicated relationships with LOA. Individual correlation analyses suggest that firm location has a negative correlation with LOA in 5 of 15 practices. The negative correlation indicates that firms which are located in natural resource areas are less likely to adopt sustainable tourism practices. This result contradicts findings in the literature that suggest firms located in close proximity to natural areas are more likely to 'go green' because they are more conscious about their business impacts on the natural environment (Dewhurst and Thomas, 2003). It is important to note that natural resource areas in

Vietnam are often also rural areas. Therefore, the tourism firms in these areas may be less likely to adopt environmentally sustainable practices because they lack certain resources or information, rather than because they are ignorant of business impacts on the environment. While the data from this survey are insufficient to fully explain this relationship, the negative correlations suggest that firms located in natural resource areas may have some special barriers that need to be studied further.

No correlation was found between "greenness level," or attitude toward EFPs, and LOA of most practices (at alpha = 0.05). However, LOA of practice 3 (automatic run-off taps are utilized in the hotel to save water) and practice 6 (pathways, corridors and external areas are lit by movement sensor switchers with light off most of the time, alpha = 0.01) were negatively correlated with greenness at alpha = 0.1. Even though these relationships were not significant, the potential negative correlation requires some attention. Researchers (Dewhurst & Thomas, 2003; Horobin & Long, 1996; Liu, 2003; Ozsomer et al., 1997) tend to agree that the relationship between "greenness level" and the likelihood of adopting environmentally sustainable practices is one of the most complex relationships and difficult to interpret. Schwepker and Cornwell (1991) reviewed 17 studies from 1972 to 1991 concerning the relationship between consumer attitudes towards the environment and their intentions to purchase environmentally sound products. The common finding was that attitude toward the environment, or the 'greenness level' itself, is not sufficient to explain willingness to pay or intention to adopt. Rather, this relationship needs to be studied in consideration of other factors, such as the available resources and level of information that the potential adopters can obtain. For example, in this study saving energy and water can be easily interpreted as a cost-saving action rather than a "green" action. Because the relationship between 'greenness level' and LOA in this study is very weak, it is inappropriate to make a general conclusion. However, further investigation of the practices in which attitude toward sustainable tourism are negatively correlated with the LOA may help explain this unusual relationship.

5.3. External Environment Characteristics

Perceived competition, or level of perceived industry rivalry, was found to be most significantly correlated with the LOA in this study. In some situations (the overall model, practice 2, practice 3, and practice 7), the level of perceived competition in the tourism industry is positively correlated with the LOA. This finding confirms the theoretical proposition that firms perceiving a higher level of competition would be more proactive in adopting EFPs in order to sustain their competitive advantages (Veliyath & Fitzerald, 2000). In addition, in various studies, researchers found that "going green" has become a common practice to gain competitive advantage in highly competitive environments (Appiah-Adu & Singh, 1998; Clelland et al., 2000; Hurley & Hult, 1998; Karagozoglu & Lindell, 2000; Kassinis, 2001; Okumus & Hemmington, 1998; Rangel, 2000). However, a negative correlation in quadratic form was found significant in the case of practice 13 (the company actively provides physical, financial or in-kind assistance for the rehabilitation of areas subjective to negative visitor impact). A possible explanation for this finding is that the practice requires some form of direct financial support for conservation. In a less competitive environment, the firms may not see the advantages of direct contribution to preserving tourism resources. However, in more competitive environments, firms may be more cautious in allocating financial resources to purposes beyond their normal operations.

Perceived customer certainty is another external environment characteristic that was positively correlated with the LOA, although the relationship was very weak. It confirms the hypothesized relationship that firms with a better understanding of their customer demands toward sustainable tourism would be more likely to adopt sustainable tourism innovations. However, one negative correlation found (practice 14) may also indicate that tourism accommodation businesses in Vietnam are willing to be proactive and create sustainable products prior to market needs. Perceived government certainty is the only external factor that was not found to be significantly correlated with the LOA (at a confidence level of 0.05). This is a

particularly interesting finding since Vietnam has just transitioned from a top-down, state controlled economic management system to a market-oriented economy. With this change, it is hypothesized that the firms will be more sensitive to changes in government's policies.

6. Conclusions

As Vietnam is in the early stage of introducing EFPs to the tourism industry, the results of this study are consistent with Rogers' (1995) conclusion about the characteristics of the firms' behaviors. Innovation characteristics, especially complexity, play the most important role in the decision of hotel businesses to adopt sustainable tourism practices. Strong correlations of observability and risk taking with the LOA also emphasize firms' skeptical attitude toward adopting EFPs at this early stage of diffusion. Rogers (1995) also pointed out that, at the early stage of diffusion, firms often lack information about benefits of innovations, making the correlation between innovation relative advantage and LOA less explicit. For example, one of the most common benefits for hotels to adopt EFPs mentioned in literature is of strengthening firms' marketing image (Kotler et al., 2003). In a more established environment such as the Costa Rican Sustainable Tourism program, strengthening hotels' marketing image and gaining competitive advantage was found to be the most important motivation for firms' voluntary participation in environmental protection program (Rangel, 2000). However, the correlation between strengthening firm image and LOA was not significant in case of Vietnamese hotels in this study, which may be the result of a lack of information.

In addition, other factors such as social pressures to adopt EFPs had a weak influence on firms' decisions to adopt EFPs in this study. While perceived competition and customer demands had a certain pressure on LOA, perceived changes in government policies were not significantly correlated with the firm's decisions. As numerous decrees, regulations, and policies from Vietnamese government have been promulgated in recent years, the state shows its strong support for environmental protections and sustainable development. Perhaps Vietnamese hotels sense a

strong commitment from the government in encouraging them to adopt EFPs, which may explain the non-significant relationship between perceived certainty about government policy and LOA. Another plausible explanation is that at the early stage of adopting innovations, firms have not yet sensed a strong social pressure to adopt EFPs. Again, in the case of a more established sustainable tourism environment such as Costa Rica, institutional pressure was found to be an important factor in a firm's decision to comply and over-comply with sustainable tourism standards (Rivera, 2002, 2004).

This study falls into a category of innovation research which views hotels' intention to adopt EFPs as an "organic" and "static" status, with the adoption/rejection decision occurring at the time of study (Wolfe, 1994). In reality, decision-making is often a process itself (Ravichandran, 1999). A hotel may decide to reject an innovation at the time of study but will adopt it later on if its benefits become more explicit. In contrast, a hotel may also adopt an innovation, but later reject it, if its disadvantages become apparent to the business. Another weakness identified in hindsight is that open-ended questions were not included as a follow-up to closed-ended items. Therefore, some relationships, such as the negative correlation between greenness level and adoption intention can not be fully explored. A qualitative study to further explore the nature of the relationships identified, or a follow-up study that examines firms' decision-making processes, would be helpful in providing more complete insights into the adoption intentions of tourism hotels and businesses.

Despite these limitations, this study is one of the few, if not the first, attempts to explore Vietnamese tourism business perceptions toward adopting sustainable tourism practices. It provides some preliminary insights into the barriers and advantages that tourism firms may face when deciding on whether or not to adopt sustainable tourism practices. The findings offer clues for promoting sustainable tourism practices in Vietnam. For example, at this early stage of diffusion, information about innovations is crucial to a firm's decision. VNAT can promote EFPs by providing information to hotels. A good starting point would be to develop a set of codified

standards for EFPs. In addition, VNAT can also encourage and/or sponsor several hotels of different sizes to develop models of environmentally friendly businesses. These businesses can then be used as examples for other firms to observe. Ability to observe, as found in this study, will reduce perception of adopting EFPs as risk taking action and thus promote more business to adopt them.

Chapter 4: Intention to Adopt Sustainable Tourism Practices: An Exploratory Study of the Incentives and Barriers Among Tour Companies in Vietnam

Abstract[3]

With the recent opening of the Vietnamese economy to the international market, tourism has become an important industry which significantly contributes to the national GDP. However, as the number of tourists has grown, negative social and environmental impacts associated with tourism activities have increased. In response, the Vietnamese National Administration of Tourism (VNAT) has shown increasing interest in the promotion of sustainable tourism businesses. This study explores factors that influence a tourism firm's intention to voluntarily participate in such programs. From an estimated population of 298 tour companies, 149 were randomly selected, of which 60 responded providing a 40% response rate. The results show that risk-taking measured in terms of attitude toward adopting new ideas and changes is the most influential factor in the firm's likelihood of adoption. In addition, characteristics of such as perceived level of complexity and perceived potential for strengthening the firm's image also play an important role in the firm's decision to adopt sustainable tourism practices.

Key word: diffusion of innovations, sustainable tourism, Vietnam

1. Introduction

Since the late 1980s, sustainable development has attracted the attention of researchers of various disciplines (Liu, 2003). Throughout this time, there have been many attempts to introduce a generally accepted definition or a common understanding of the concept of sustainable development. Mostly, these definitions and concepts recognize two main dimensions of sustainable development: growth of the economy and ecological sustainability (Briassoulis, 2001; Costanza & Wainger, 1991; Nitze, 1993; Norgaard, 2000; Soderbaum, 2000; van den Bergh &

[3] Paper submitted to ANATOLIA: International Journal of Tourism Research

van der Straaten, 1994). Others have argued that there should be a third dimension: sustaining culture and social identity (Kinsley, 1995; Sharachchandra M. Lele, 1991; O'Hara, 1995).

Tourism has long been viewed as a "green and clean" economic activity that is compatible with sustainable development (deKadt, 1979; Gee et al., 1989; Gun, 1988). However, recent studies have shown that, while impacts on the environment may not be as high as other industries, some tourism activities exhibit unsustainable uses of natural resources (Andereck, 1993; Mowforth & Munt, 1998; Nelson et al., 1999; Rangel, 2000; Wall, 1997). In addition, researchers have raised concerns about the negative impacts of tourism on host communities, particularly with respect to social equity and cultural identity (Ancher, 1973; Boo, 1990; Bramwell et al., 1996; Farrell, 1977; Fennel, 2002). These empirical studies have shown that tourism is not inherently a sustainable economic activity, but rather needs to be studied and managed to achieve this goal.

As defined by Roy (in Fennel 2002: 15), sustainable tourism "is an extension of the new emphasis on sustainable development." From this perspective, the World Tourism Organization defines sustainable tourism development (STD) as follows:

> *Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes, biological diversity and life support systems.*(WTO, 2001)

In addition to various post-war environmental problems, Vietnam currently faces the consequences of the "development-at-all-costs" economic policy of the 1970s and 1980s (D. O'Rourke, 1995). Vietnam is one of the poorest countries in the world, with the lowest annual per capita income in the Southeast Asian region while its population is the fifteenth largest in the world (EIU, 1999). Consequently, "the need to preserve nature in the long term tends sometimes

to be forgotten" in the government's effort to achieve short term economic goals (Dinh, 2003:577).

Recognizing the problem, the Vietnamese government has increased efforts to protect the environment and reduce pollution levels. The Law on Environmental Protection (LEP), promulgated in December 1993, is the umbrella environmental law under which these efforts have been taken. O'Rourke (2001b:5) observed that "since the passage of the LEP, the government has issued a wide range of decrees, directives, and circulars that flesh out the law, and create implementation instruments to realize the goals of environmental regulation and enforcement." The government also encourages the development of environmentally friendly industries as economic alternatives to natural resource exploitation. Tourism, in particular, is expected to play a leading role in balance between economic development and environmental protection (Do, 1996; Vu, 2004).

However, VNAT has also recognized that tourism potential could not be realized without a proper strategic plan (Haley & Haley, 1997). In fact, tourism, specifically mass tourism, has been blamed for seriously compromising the balance of biodiversity in Vietnam (Dinh, 2003). For instance, the rapid rate of large scale hotel construction in the early 1990s is considered an important factor in the reduction of forest coverage in Vietnam (Pham, 1997). The sudden flow of international tourists in the early 1990s also caused social problems in the form of resentment among host communities towards luxury resorts and hotels as rising property values forced residents into a relatively lower living standard (Hall & Jenkins, 1995). The large disparity in incomes between local staff and expatriate staff holding the same positions (Mbaiwa, 2003), along with the abuse of women and child labor (Haley & Haley, 1997), are also considered social problems associated with tourism development.

A series of attempts have been made by the government administration to reduce the negative impacts of tourism on the natural and social environment. For instance, the Tourism Ordinance of 1999 states that:

> *The State shall uniformly administer tourism activities; ensuring the development of tourism in line with cultural and ecological tourism while preserving and fully realizing cultural identity, good traditions and customs of the Vietnamese people.* ("Tourism Ordinance," 1999)

VNAT also confirmed that sustainable tourism practice is the key to success in Vietnam making it the center of the industry's strategic management plan (Haley & Haley, 1997; Pham, 1997; R. A. Smith, 1998; Vu, 2004). In addition, host communities have supported STD by contributing to establishment of various national parks and natural resource-based tourist areas in the country (Ringer, 2002). A recent study by Lindsey and Holmes (2002) showed a willingness of both domestic and international tourists to pay a higher price to support environmental protection in the area.

It is believed that sustainable tourism can only be achieved through cooperation among government agencies, host communities, tourism businesses, and tourists themselves (Hull, 2002; Liu, 2003). However, while Vietnamese government actions and tourist behavior have been much discussed, limited attention has been paid to understand business perspectives regarding sustainable development. This is despite the findings of some researchers such as Horobin and Long (1996), Rangel (2000), Dewhurst and Thomas (2003), Liu (2003), and Miller (2003) that the most successful cases of sustainable tourism always started at the micro or firm level. They concluded that understanding tourism businesses' barriers and incentives is crucial in efforts to get these businesses to adopt sustainable tourism practices.

At this point a clear definition is needed of what a sustainable tourism business is. Mowforth and Munt (1998) identified and summarized 29 alternative terms which have been synonymously used with sustainable tourism. They vary from common terms like 'ecotourism'

and 'green tourism' to more obscure terms such as scientific tourism, soft tourism, and appropriate tourism. Sustainable tourism is also defined as a 'new' tourism that implies 'no-impact', 'responsible', 'green' and 'environmental friendly' practices (Mowforth & Munt, 1998). While these terms help to distinguish the differences between sustainable and non-sustainable tourism activities, they narrowly focus on "the need to preserve the resources on which the tourism industry depends, rather than on the sustainable use of resources" (Dewhurst & Thomas, 2003:384). Furthermore, these classifications seem inappropriate in the sense that they discourage other types of tourism from working towards the common goals of sustainable development.

Therefore, this study adopted the definition of sustainable tourism given by Liu (2003: 461), which includes "all types of tourism (conventional or alternative forms) that are compatible with or contribute to sustainable development." This definition is not limited to tourism firms which operate in the niche market of "green" or "ecotourism," but also includes all businesses that adopt environmentally friendly practices. The objective of this research is to examine the potential internal and external factors affecting the intentions of Vietnamese tourism firms to adopt sustainable tourism practices. Throughout this paper, the term 'intention to adopt' is used interchangeably with 'likelihood of adoption'.

The tourism industry, according to Gee et al. (1989), is made of several components including accommodations providers, tour companies, transportation providers, tourist attractions, and other supporting services and facilities. However, as tour companies comprise the most dynamic component of the Vietnamese tourism industry, while exploratory study aims to contribute to extant literature on STD in general, perceptions of tour companies towards STD is the main focus. In addition, this study aims to extend the literature within the framework of diffusion of innovations (DOI) theory to a new application which is organizational behavior towards the adoption of STD practices.

2. Theoretical Model

Rogers' theory of diffusion of innovation provided the theoretical framework for this study. Since it was first published in 1962, the model has been used in over 5,000 studies and in disciplines ranging from health care, agriculture, information communication, technology to business, marketing and environmental studies (E. M. Rogers, 2003). The model has also been cross-culturally tested and its consistency proven (E. M. Rogers, 2004; Wejnert, 2002). According to Rogers (1995), innovations are ideas, practices, or concepts that are perceived as new to the potential adopters. Internationally, the notion of sustainable tourism is not a new idea. However, viewing sustainable tourism practices as the adoption of environmentally friendly innovations is unique, especially in Vietnam. As such, Rogers' model of DOIs serves as a useful theoretical framework.

With such a large diversity of applications, studies within the DOI literature do not share a fixed set of factors that influence the intention to adopt innovations. However, a common classification of factors that summarized by Rogers (1995; 2003) and recently reviewed by Wejnert (2002) divides these factors into three main groups: (1) innovation characteristics; (2) organizational (or adopter) characteristics; and (3) external environment characteristics. Using these categories, Figure 4.1 shows the DOI conceptual model for this study.

Figure 4.1 depicts three levels of operationalized measures used in this study. The first level consists of theoretical constructs including innovation characteristics, organizational characteristics, and external environment characteristics. Each construct contains several variables or factors which we used in our statistical model to determine their influence on the likelihood of adoption. These second level variables are measures of a firm's benefits and barriers of adopting sustainable tourism practices.

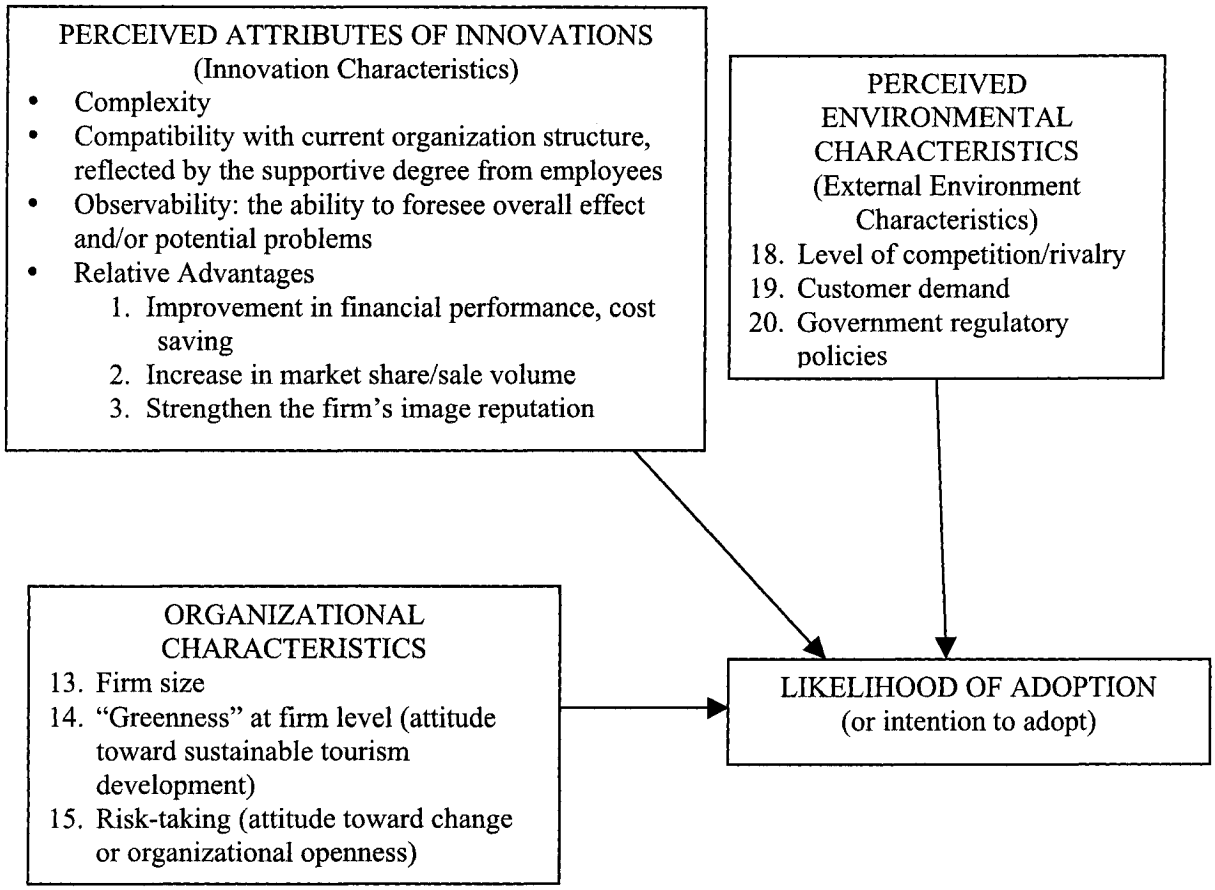

Figure 4.1: Conceptual framework of the study applying Rogers' model of diffusion of innovations (Rogers, 1995).

According to Spector (1992), because of its complex nature it is not highly reliable to use just a single item to measure collective behaviors such as attitudes and motivations toward adoption of environmental innovation. Therefore, we measured our variables of interest using a series of items and these are displayed as the third measurement level of our model. These scale items is discussed in further detail in the next section of this paper.

Many researchers, including Rogers himself, consider *innovation characteristics* to be the most influential group of factors affecting adoption. Empirical studies also generally agree on the direction in which these factors influence likelihood of adoption (Al-Gahtani, 2003). Innovation

characteristics include complexity, relative advantage, observability, and compatibility. *Complexity* is the degree to which an innovation is perceived as difficult to understand and use. The most common understanding of complexity is the level of technical difficulty (Martins et al., 2004; Everett M Rogers, 1995; Tabak & Barr, 1998). Complexity is usually negatively correlated with likelihood of adoption. Thus, the more complex an innovation the less likely it will be adopted (Everett M Rogers, 1995). R*elative advantage* is the degree to which an innovation is perceived as better than the idea it supersedes or for which it substitutes (Everett M Rogers, 1995). Relative advantage can be either financial or non-financial. Variables that are indicators of relative advantage in adopting environmental innovations are: cost saving (Dewhurst & Thomas, 2003), improvement of the firm's reputation, and sales volume or market share (Horobin & Long, 1996; Rangel, 2000). These factors are generally positively correlated with the likelihood of adoption.

Compatibility is the degree to which an innovation is perceived as being consistent with existing values, past experience, and needs of potential adopters. An innovation perceived as incompatible with an organizational setting is more likely to be rejected. As Ramus (2001) observed, support from employees is one of the most appropriate ways to measure compatibility. Support from a firm's employees plays an even more important role in a country that has a collective culture like Vietnam because managers often evaluate resistance of employees prior to making decisions (Ellis, 1995). *Observability* is the degree to which the results of an innovation are visible to others. The easier it is for individuals or organizations to see the results of an innovation, the more likely they are to adopt it. Observability is generally understood as the ability to foresee the overall effect of adopting an innovation.

Organizational characteristics include *firm size*, the firm's innovativeness or openness to new ideas (*risk-taking*), and the firm's attitude toward sustainable tourism (*greenness level*). *Firm size* is perhaps one of the most controversial factors. In the case of adoption of sustainable tourism practices, Bramwell et al. (1996:11) noted that small firms "generally lack the resources

to keep abreast of developments and act individually on issues such as sustainability." However, small firms are more flexible and have a closer relationships with customers, which allows them to be more dynamic and more open to change (Martinez-Ros & Labeaga, 2002). Some researchers such as Shook (1997) consider it best to examine the correlation between firm size and the likelihood of adoption as curvilinear. The curvilinear relationship means that both small and large firms adopt similar number of environmental innovations while medium firms may adopt more or less than that quantity. The difference between small and large firms in this case may not be the quantity of innovation they adopt but the type of innovations.

Greenness level is a factor unique to the study of environmental innovation. This variable represents the firm's attitude toward STD. Since there is limited sustainable tourism research within the DOI as its theoretical framework, there is no common conclusion about the correlation between greenness level and the likelihood of adoption. Dewhurst and Thomas (2003) found a strong positive correlation between attitudes to embrace STD among tourism businesses with the amount of environmental actions they actually took. However, Horobin and Long (1996) were skeptical about this relationship.

Risk-taking, or openness in a firm's attitude toward change, is another organizational characteristic (Avlonitis et al., 1994). Firms that have an 'innovativeness culture' that show a willingness to consider and implement new ideas and changes are most likely to adopt innovations (Vazques et al., 2001; von Krogh & Roos, 1995). Rogers' (1995) summarization of the literature on organizational innovativeness also shows that an organization with an open system, which encourages new ideas and changes, is indeed more innovative than an organization with a closed system.

Lastly, factors in the *external environment characteristics* category are measured in terms of the degree to which a firm can be certain about its external environment, including changes in customer demands, changes in government regulatory policies, and level of threats from rival firms (Downs & Mohr, 1976; Miles & Snow, 1978). The level of certainty about customer

demand and government policies are often found positively correlated with the likelihood of adoption because a stable, supportive environment is always preferable to an unstable one (Kotler et al., 2003). Firms are more likely to invest in a new product/technology or improve their current product demand from customers is fairly certain (Miles & Snow, 1978). Similarly, firms are not likely to invest in new technologies, and products, especially environmentally friendly sound products, if they do not sense a positive attitude from the government (Ozsomer et al., 1997). Research suggests that firms perceive uncertainty in government policy or customer demand as a risk or threat, and thus are not likely to make new investments in related innovations (Ozsomer et al., 1997; Rangel, 2000; Soderbaum, 2000; Vazques et al., 2001; von Krogh & Roos, 1995).

With respect to the impact of perceived level of competition, there is some evidence at the industry level that firms operating in a highly competitive environment, especially small firms, are less likely to adopt new innovation because they are more cautious about financial risks (Appiah-Adu & Singh, 1998). However, other researchers have found that the level of competition to be one of the most important motivations for the firm to adopt environmental innovations (Clelland et al., 2000; Hurley & Hult, 1998; Kassinis, 2001; Okumus & Hemmington, 1998; Rangel, 2000). According to Kotler et al. (2003), and Veliyath and Fitzeland (2000), "going green" by adopting environmental innovations is the best proactive competitive strategy for differentiating a firm from its rivals in a hyper-competitive environment.

To summarize, the dependent variable of interest in this study is the likelihood tourism firms in Vietnam will adopt environmental innovations. Factors that potentially influence likelihood of adoption include innovation characteristics (complexity, relative advantage, observability, and compatibility); organizational characteristics (firm size, greenness level, and risk-taking level); and external environment characteristics (perceived competition, certainty about customer demands and changes in government policies). All of these factors, except for

perceived innovation complexity, are hypothesized to be positively correlated with the likelihood of adoption of environmental innovations.

3. The Study

3.1. Survey Instrument

Since there was no codified set of sustainable tourism practices in Vietnam at the time of this study, a generic list of practices was created from existing programs such as the Nature and Ecotourism Accreditation Program (NEAP: *Nature and Ecotourism Accreditation Program*, 2003) in Australia, the Ecotourism Program from Costa Rica (2003) and "Green Hotel" criteria from the Hyatt Corporation (Enz & Siguaw, 1999). The list was then redefined by two expert panels through a semi-Delphi routine recommended by Delbecq et al. (1975), which is effective for generating management criteria and decisions given time and budget constraints.

The first expert panel included English-speaking experts in the field of STD. Two experts were from Australia both of whom contributed to the construction of NEAP. Two other experts from the U.S. had extensive experience working on environmental protection policies in developing countries, including Vietnam. One Malaysian expert was involved in the development of sustainability criteria for hotels in Malaysia. These experts were asked to select practices that are the most important and the most practical in the context of developing countries like Vietnam. A list of common selected practices was then emailed back to experts for confirmation and to insure consensus.

The list was then translated into Vietnamese and re-translated into English to ensure accuracy and minimize language issues. The Vietnamese version was then given to a second expert panel comprised of tourism experts in Vietnam. Panelists were selected based on their experience and knowledge of the tourism sector, and came from research institutes, government administration, and business organizations. The experts were used to confirm items on the lists, to reduce the number of items, and to make sure important items were not left out. Panelists were

instructed to identify practices most important and most applicable to the tourism industry in Vietnam. A consensus was reached after two rounds, with 13 practices selected from the original list of 45.

Variables representing innovation characteristics were measured on a semantic differential scale from 1 to 7, with 1 being extremely complex/difficult/disadvantaged, 4 being no effect or no change, and 7 being extremely simply/easy/advantaged, according to the wording of each innovation attribute. Variables representing organizational characteristics, except for firm size and location, were measured with a 7-point Likert-type scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Firm size was determined using several proxy measures including average number of customers per month, total assets, and number of employees. External environment characteristics were measured with a 7-point Likert-type scale, with 1 being 'highly unpredictable' and 7 being 'highly predictable.' A cover letter and 7-page questionnaire was constructed using these scale items.

3.2. Survey Participants

As recommended in other organizational studies (Damanpour, 1991; Rangel, 2000; Wolfe, 1994), participants in this study were owners, managers or the member of the decision making unit of tour companies in Vietnam. However, it was difficulty to select an appropriate sample size given the lack of reliable information on the proximate size of the tour company population. The common experience of other researchers is that "Vietnam is a difficult country for research" because of the poor quality of available statistical data (Venard, 1998:79). According to an unofficial interview with a VNAT officer, 76 tour companies currently operate in Vietnam. However, we soon learned that this figure includes only state-owned and joint-venture international tour companies which have a permit to operate inbound and outbound package tours. Therefore, we used the nation-wide phone directory provided by the Vietnamese Telecommunication and Postal Service in an attempt to get a closer estimate of the population.

Companies listed as tour companies, tour ticket offices, tour operators, and travel agencies were selected. Companies with the same name or classified as representative offices, ticket offices, and branches were then removed from the population because they are under the same management. This resulted in a population of 298 tour companies throughout Vietnam. A random sample of 149 companies (50% of the estimated population) was selected.

3.3. Questionnaire Distribution

The survey period spanned August to December 2003. The surveyors first attempted to set up appointments with the participants. A brief face-to-face meeting was arranged during which the participants were given a questionnaire to complete and a pre-paid return envelope. The surveyors explained the purpose of the study, gave instructions on how to fill out and return the questionnaire, and answered clarification questions. The surveyors came back to retrieve the questionnaire a few days later at an arranged time. This method has been used to increase response rates in tourism studies (Vincent & Santos, 1996). If the questionnaires were not completed at the second meeting, participants were asked to return them by mail. If the questionnaire was not returned by mail, a reminder a letter was sent and a telephone call was made one and two weeks after the meeting.

3.4. Non-response Bias

The questionnaire was completed and returned by 60 participants for a 40% response rate. Based on estimated population to be 298, the sampling error was calculated to be 10% according to Salant and Dillman's method (1994). A common way to assess nonresponse bias is by comparing some socio-economic characteristics of respondents relative to nonrespondents (Dey, 1997; Sheaffer et al., 1996; Stoop, 2004). Because the unit of analysis was the organization, we used two proxies (the firm location and type of ownership) to assess nonreponse bias. The firms were located in three administrative regions: north, south and central regions. The three

types of ownership are joint-venture (between a foreign company and a Vietnamese partner), state-owned, and privately owned companies. Chi-square test results showed insignificant differences in terms of location between respondents and nonrespondents. However, the Chi-square test results indicated a significant difference between respondents and nonrespondents in terms of ownership (p-value <0.001). Joint-venture companies were the most responsive, while privately-owned companies were the least responsive to the survey.

A possible explanation for this behavior is that Vietnamese people are generally unfamiliar with scientific studies and have a culture which strongly resists self-disclosure with strangers (Milburn et al., 1991; Sasao, 1994). Joint-venture companies may be influenced by the culture of their foreign partners, thus making them somewhat are more opened to scientific studies (Chudnovsky & Lopez, 2003). However, since this nonreponse bias identified the generalizability of this study may be limited.

3.5. Factor Analysis to Construct Independent Variables According to Proposed Model

Three factor analyses with varimax rotation were conducted to identify three groups of statistically independent variables that operationalize the constructs presented in the proposed model (see Table 4.1). Results of the first factor analysis revealed three variables corresponding with the three factor components. These components explained 87% of the total variance. Results of the second factor analysis revealed three variables corresponding to three factor components that explained 76% of the total variance. The last factor analysis resulted in two variables corresponding to two factor components explaining 71% of the total variance. Generally, the scale items that loaded in each factor were consistent with the hypothesized constructs. For example, five items (Gov1, Gov2, Gov3, Gov4, and Gov5) loaded onto one factor that depicts the certainty level about government policy.

However, several unusual patterns emerged when the internal consistency of the scale items were checked using Cronbach's coefficient alpha. One item in the risk-taking and two items in the perceived competition scales were negatively correlated with the rest of the corresponding scale items, resulting in a low Cronbach's alpha (less than 0.6). This inconsistency may have occurred due to different interpretation among Vietnamese participants because all of these three items were negatively worded. These items were therefore removed from the measurement scales, increasing the consistency to about .7 (Table 4.1). This is considered acceptable (DeVellis, 1991).

Another unexpected finding pertained to the group of factor components depicting organizational characteristics. Because firm size was measured by different proxies, this variable was not included in the factor analysis. However, Green5 stated: "we can all respond to the need to protect the environment, for example by altering some of our everyday business activities." This item was used by Horobin and Long (1996) as a part of greenness scale but in our factor analysis it loaded with the risk-taking items. The discrepancy may be attributed to the fact that the participants in this study are culturally different than those in the Horobin and Long's (1996) study. In addition, as sustainable tourism is a relatively new concept in Vietnam, it is possible that the survey participants interpreted this item as a risk-taking action rather than a 'green' action as it asks for altering business activities. Therefore, we accepted the two variables with loaded scale items as show in Table 4.1 (factor analysis 3).

Table 4.1: Factor analyses and Cronbach's coefficient alpha to measure consistency of measurement scales.

Item	Mean	Factor component 1: Innovation characteristics			Cronbach's coefficient alpha
		Complexity	Financial benefit	Other benefit	
tech1	4.37*	0.892	0.125	-0.007	
tech2	4.51*	0.889	0.156	0.082	
tech3	4.79*	0.750	0.155	0.359	
tech4	5.11*	0.613	0.225	0.360	0.858
costsave	4.16*	0.419	0.759	-0.085	
finance	4.55*	0.159	0.869	0.239	
salevol	4.74*	0.021	0.752	0.438	0.786
image	5.65*	0.063	0.125	0.911	
support	5.52*	0.340	0.259	0.728	0.752
Item	Mean	Factor component 2: External environment characteristics			Cronbach's coefficient alpha
		Perceived government certainty	Perceived competitive level	Perceived customer certainty	
gov4	4.29	0.737	0.310	0.118	
gov5	3.50	0.722	-0.034	-0.038	
gov1	3.45*	0.720	-0.039	-0.094	
gov3	4.33	0.617	-0.073	0.363	
gov2	4.07	0.595	-0.543	0.300	0.734
rival1	6.17	-0.105	0.882	0.164	
rival2	5.37	0.192	0.784	-0.140	0.636**
client1	4.71*	-0.042	0.231	0.879	
client2	4.17	0.149	-0.285	0.849	0.717
Item	Mean	Factor component 3: Organizational characteristics			Cronbach' coefficient alpha
		Greenness level	Risk taking level		
green1	6.75*	0.8921	0.1371		
green2	6.53*	0.8337	0.2604		
green4	6.05*	0.6459	0.4767		
green3	5.60*	0.5237	0.1466		0.658
risk1	5.05*	0.0956	0.8689		
green5	5.60*	0.2743	0.7824		
risk2	5.65*	0.3367	0.7492		0.739**

* significantly different from neutral value of 4 (p-value =<0.05)
** value of Crobach's coefficient alpha after remove negatively worded item from the corresponding scale

3.6. Logistic Regression Examining the Affect of Selected Factors on the Likelihood of Adoption

The ten variables constructed by the factor analyses were used as independent variables in the logistic regression analysis to examine the effect of the influencing factors on likelihood of adoption. The eleventh variable, firm size, is not in Table 4.2 because it was measured by proxies. The proxies included number of employees, average number of customers per month, and company's total assets. However, 73% of participants refused to answer the question concerning number of customers and/or total assets. Various explanations are possible for this high refusal including respondents' unfamiliarity with scientific research and their hesitance to reveal information to strangers (Sasao, 1994). A third explanation is the sensitivity of the content because the information can be used for calculating taxes. Unfortunately, as Venard (1996) observed, avoiding taxes seems to be a common practice among Vietnamese tourism companies. For example, an agricultural co-operative produces and distributes milk, opens a restaurant, proposes tourist excursions in the region, and establishes its own textile import/export business. The turnover would be classified entirely in the agricultural sector which is in a lower tax bracket than a tourism business (Venard, 1996). Because of this lack of information, the number of employees remains as the only valid measurement for firm size.

As mentioned earlier, 13 practices were selected through expert panels. Participants were asked to state the likelihood that their companies would adopt each practice with a binary response of yes/no. Adoption rates ranged from 6% to 93%. However, due to the small sample size, there was not sufficient information for the logistic regression model to detect influence of the independent variables on likelihood of adoption in the following cases

> Practice 3: "The purpose of interpretation activities is to provide customers with opportunities to learn more about the natural and cultural heritage of the area they are visiting through their own languages."- 4 non-adoptions.

Practice 8: "Some forms of briefing are delivered to customers to minimize their negative impacts on the local community and its lifestyle."- 5 non-adoptions.

Practice 10: "Company actively provides financial support/sponsor training programs on conservation for staff and general public."- 4 adoptions.

Practice 11: "Customers are discouraged from purchasing any forms of endangered species or rare wildlife including foods, stuffed animals, bones, tusks, teeth, fur, or any parts of the animals."- 4 non-adoptions.

Therefore, these practices were not included in the logistic regression analysis. The multivariate probability procedure was run to check the condition of multivariate normality. The data appear to be multivariate normal and no curvilinear pattern was identified. The final model for logistic regression analysis is:

$$\text{Adoption likelihood} = \text{Intercept} + \beta_1*(\text{perceived complexity}) + \beta_2*(\text{perceived financial benefit}) + \beta_3*(\text{perceived other benefit}) + \beta_4*(\text{firm size}) + \beta_5*(\text{greenness level}) + \beta_6*(\text{risk taking level}) + \beta_7*(\text{perceived competition}) + \beta_8*(\text{perceived customer certainty}) + \beta_9*(\text{perceived government certainty})$$

4. Discussion of Findings

The results of this study contribute to the literature in several aspects. First, this study provides insight into business attitudes and behavior towards STD. This is an important extension of the STD literature because despite a large variety of STD research from different perspectives, including customer surveys, STD planning and policies, etc., few provide a close-up look at business perspectives (Liu, 2003). This is particularly true with businesses in developing countries (Rangel, 2000; Rivera, 2004). Moreover, although theory of DOIs has been extensively applied across different disciplines including studies of sustainable products, green technology, etc., this study extends the theory's application to STD, a heretofore unexplored dimension of the theory. In addition, one of the justifications for using the DOIs theoretical framework for this research was because it has been cross-culturally validated. Various studies employing the

framework have been conducted in different countries such as Saudi Arabia (Al-Gahtani, 2003), China, Indonesia, Thailand, etc. (E. M. Rogers, 2003). However, this is the first research application of the framework in Vietnam with its unique political, cultural, and economical context.

Table 4.2 shows the results of the logistic regression analysis depicting the correlational relationships between the independent variables and the likelihood of adopting STD practices. Generally, the findings were consistent with the finding of other studies using the DOI framework, suggesting its applicability to Vietnamese cultural context.

4.1. Innovation Characteristics

Among the innovation characteristics, complexity and other benefits are the factors that most influenced the firm's intention to adopt STD practices (Table 4.2). This result is consistent with Rogers' (1995) finding that innovation characteristics, especially complexity, are the factors that most influence likelihood of adoption. Complexity contains, but is not limited to, the technological challenges inherent in environmental innovations. In fact, during interviews, some survey participants expressed concerns about the administrative and management challenges to adopting the practices. For example, they were not sure how they might contribute to the preservation of resources in the area, or how to organize staff training around environmental issues. Note that these quantitative data are 'unofficial' and should be considered as anecdotes since participants did not permit interviewers to record conversations.

The combination of employee support and strengthened firm image (referred to as "other benefits") was another significant factor positively correlated with likelihood of adoption. The nature of tourism products is intangible and customers cannot test or examine the quality before consumption, rather they have to depend on the firm's reputation (Gee et al., 1989). In addition, another important feature of tourism products is their dependence on employee performance, especially interpretive staff. Therefore, the firm's image is largely conveyed to customers through

employee performance, beliefs, and behavior (Kotler et al., 2003). If employees strongly support the adoption of environmental innovation, they will convey this sustainable tourism image to the customer. As Kotler et al. (2003) observed, 'being green' is an effective marketing tool that travel companies can apply to strengthen their marketing image and sustain their competitive advantage. The positive correlation between strengthening the firm image and likelihood of adoption indicates that Vietnamese tourism firms acknowledge the opportunity to use environmentally friendly business practices for marketing. Thus, a practice that seems to contribute more to the firm's green publicity efforts is more likely to be adopted.

In order to explore the relationship between financial benefits and likelihood of adoption, Downs and Mohr (1976) and Wolfe (1994) suggested that it may be better to study low-cost and high-cost innovations separately. In this study, this correlation, although positive, was only significant in only two cases. This was an unexpected finding given the developing country context. We assumed business firms would have more concerns about financial performance. However, two practices with which the correlation between financial benefit and likelihood of adoption are both high cost innovations (donation to rehabilitate of tourist attractions and intensive training for interpretive staff on ecological business). This finding confirms the necessary of separating high-cost and low-cost innovation as suggested in DOI literature.

Table 4.2: Results of logistic regression presenting the correlations between independent variables and the likelihood of adoption

Variable	Overall model	Company's products based around activities that help customers to personally experience the nature	The majority (>50%) of marketing images for the products incorporate nature as a feature or background	Interpretation for customers has a defined theme and is developed and delivered to accommodate the needs of different target groups	All operational staff have a basic understanding of the natural and conservation value of the area	Interpretive staff have specific knowledge of measures taken to ensure the operation is ecologically sustainable and are able to explain to customers.	Encourage staff to take regular, relevant professional development	Contribute (financial and in-kind assistance) to rehabilitate of tourist attractions	Employ locals with fair wages	Encourage customers to purchase locally produced mementos during their visit
-2L	361.3*	45.1*	38.9*	23.5*	32.9*	22.7*	42.2*	19.9*	29.5*	34.9*
Cox &Snell R^2	0.283	0.160	0.295	0.289	0.327	0.490	0.217	0.434	0.466	0.254
% of correct classification	74.9	71.1	65.8	80.0	82.1	89.2	67.6	97.4	84.6	79.5
Decreasing level of complexity	0.591*	Ns	Ns	1.747*	0.937*	1.348*	Ns	0.976*	Ns	Ns
Other benefit	0.332*	0.847*	1.097**	Ns	Ns	Ns	Ns	Ns	1.688*	0.844*
Financial benefit	0.529*	Ns	Ns	Ns	Ns	1.116*	Ns	1.019*	Ns	Ns
Firm size	Ns	Ns	Ns	Ns	Ns	-0.026**	Ns	Ns	Ns	Ns
Risk taking level	0.489*	Ns	1.187*	1.236**	0.922*	1.505*	1.154*	1.409*	Ns	Ns
Greenness level	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns
Perceived government certainty	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns
Perceived competitive level	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns	1.009**
Perceived customer certainty	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns	Ns

Ns: not significant with p-value > 0.1 * significant with p-value =< 0.05 ** significant with p-value =< 0.1

Because STD is a relatively new concept in Vietnam, there were few if any existing examples of sustainable business available to observe. Therefore, the effects of observability and trialibility on likelihood of adoption were not applicable within the context of our study. In addition, from a different angle, these effects also embedded in with other factors within organizational and external characteristics in this study.

4.2. Organizational Characteristics

Risk-taking level was the most influential factor in this study, correlating with likelihood of adoption on 6 of 9 innovations and in the overall model. As Liu (2003) found, firms are most skeptical in the early stage of STD. They are not likely to adopt environmental innovations unless some successful examples are illustrated; firms are more likely to adopt sustainable tourism practices if they can foresee the benefits. Since sustainable tourism is a relatively new concept in Vietnam, tour companies had not been exposed to successful examples. As a result, Vietnamese businesses perceive adopting environmental innovations as a risk-taking action. Therefore, the more a firm is dynamic and open to innovation, the more likely that it will adopt sustainable tourism practices. This result is consistent with findings from other studies using the DOI theoretical framework which found that in the introduction stage of an innovation, the early adopters are often high risk-taking, dynamic, and open-system companies (Everett M Rogers, 1995).

Greenness level and firm size were not significantly correlated with likelihood of adoption. As this study was exploratory and thus included limited indicators for firm size, the data is insufficient to fully explain this outcome. Greenness level, as Horobin and Long (1996) and Dewhurst and Thomas (2003) found, is the most controversial factor in terms of its relationship with the intention to adopt sustainable tourism practices. While Dewhurst and Thomas (2003) found greenness level to be a significant influence on a firm's decision to adopt environmental

practices, Horobin and Long (1996) found no correlation. Schwepker and Cornwell (1991) concluded that the relationship between greenness level and the intention to adopt environmentally friendly products needs to be considered as a part of other influences such as financial resources and source of information.

4.3. External Environment Characteristics

External environment characteristics had the least influence on the intention to adopt sustainable tourism practices, with none of the three variables (certainty level of customer demand, government regulatory policies, and industry rivalry level) correlating with likelihood of adoption (p-value>0.05). This is a particularly unexpected given that Vietnam has only recently been transformed from a Soviet style economy to a market-oriented approach. One might assume that tourism companies would therefore be sensitive to changes in government regulatory policies. Recently, there were also several significant changes in the regulations regarding tourism businesses. Private ownership was legally recognized by the law for the first time in the late 1980's. The tourism law and most ordinances were developed during the 1990's and these changes accounted for changes in privately owned sector which allow them to offer international package tours. These changes caused confusion in the tourism market and made some tourism companies rethink their strategic management plans. In addition, since the country has only recently joined the international market, tourism companies lack information about customers, especially international travelers. Therefore, most companies have a passive, wait-and-see attitude when it comes to adopting innovations that alter their business activities. As shown in Table 5.1, mean scores for both certainty levels of customer demand and changes in government regulatory policies were at a neutral value (neither certain nor uncertain). This indicates that companies do not perceive the external environment as highly unstable but they do not see it as an opportunity either.

The mean score for perceived level of competition is 5.8 (out of a maximum value of 7) indicating that tour companies perceive a very high level of competition in the industry. When the competitive level is high and companies cannot predict changes in the external environment especially changes in customer demand, alterations of business conducts are highly risky. Therefore, environment innovations are more likely to be adopted in a high risk-taking than in a low risk-taking company.

The data were insufficient to run a logistic regression analysis examining the differences between adopters and nonadopters of practice 3, 8, 10, and 11. In it's place, ANOVAs were used to compare the means of the independent variables between the adopters and nonadopters using standardized scores. The results indicate that there was no statistically significant difference between the two groups in terms of organizational or perceived external environment characteristics (p-value>0.05). However, among adopters and nonadopters the mean of perceived innovation characteristics differed. For adopters, all means were on the positive side with the exception of perceived increase in sales volume, whereas for nonadopters they were all negative. The ANOVA results suggest that adopters perceived these practices as being less complex, and having higher financial and other benefits (combination of increasing firm's reputation and employee support) than nonadopters (p-values< 0.001). These results are consistent with the findings from logistic regression analyses and they help confirm that perceived innovation characteristics have the most influence on the firm's intention to adopt environmental innovations.

5. Conclusions

The most important conclusion from the findings of this study is an intertwined effect between observability, triability of an innovation, with high risk external environment, and a risk-taking attitude of an organization on a firm's intention to adopt STD practices. As Vietnamese

tourism firms do not perceive a certain environment and do not have the ability to observe effect of adopting STD, risk-taking comes out as the most influential factor. External environment characteristics do not significantly affect likelihood of adoption, since firms are ambivalent about changes in government regulatory policies and customer demand, but they perceive a high level of industry rivalry. Because sustainable tourism is at an early stage in Vietnam, it is difficult for companies to predict the overall outcome of adopting environmental innovations. Strengthening firm image, the level of an innovation's complexity, and financial benefits are factors potentially affecting tourism firms' likelihood of adoption.

These findings suggest that VNAT should focus on the characteristics of environmental innovations in their effort to promote sustainable tourism practices, especially to help firms determine the complexity and benefits of innovations. Assistance from government agencies, international tourism organizations, and environmental NGOs can be utilized to reduce the complexity of innovations. For example, environmental interpretation courses could be organized by an environmental organization which tour guides from different firms can attend. In this way, organizing and logistic tasks for firms are eliminated and thus makes it less complex for firms to comply. Providing sufficient information about tourism markets, especially international markets is also another tool for VNAT to promote sustainable tourism. When firms have more certainty about changes in the external environment, adoption of sustainable tourism practices appears to be less risky and more feasible. VNAT should also consider developing a model of a successful sustainable tourism business. As VNAT has a strong influence on some state-owned companies, one of these companies could be held up as a model and this model shared with other firms. Once a successful example is shown, benefits of sustainable tourism practices can be proven and thus they are more attractive to firms.

As previously mentioned, nonresponse bias may exist in terms of firm ownership. It is possible that privately owned companies are under represented in this study. In addition, because open-ended questions were not included due to space limitation, we were unable to provide a

qualitative description of the firms' behaviors. Despite these weaknesses, this study is the first attempt to provide insights into the incentives and barriers that Vietnamese tourism companies face when considering the adoption of sustainable tourism practices. Further research, possibly qualitative or mixed methods with a larger sample size, may help to provide a full vision of STD in Vietnam.

Chapter 5: Business Perspectives of Adopting Sustainable Tourism Practices: A study of Tourism Companies in Vietnam

Abstract [4]

This is an exploratory study of Vietnamese tourism businesses perception toward voluntary adopting sustainable tourism practices (STPs) with diffusion of innovation is the underpinning theoretical framework. The survey was conducted in Vietnam from August to December 2003 with the participants of 149 tour companies and 464 hotels, among which 40% responded. The results of logistic regression analyses show that complexity of STPs and the firms' risk-taking attitude are highly correlated with likelihood of adoption. This finding indicates that tourism firms perceive adopting STPs as a risk-taking action as sustainable tourism is a relatively new concept in Vietnam. However, a strong correlation between perceived marketing benefits and likelihood of adoption suggests that companies perceive sustainable tourism as positive marketing image which strengthen company reputation and competitiveness.

Key word: diffusion of innovation, sustainable tourism development, Vietnam tourism industry

1. Introduction

Sustainable tourism became a critical research topic in tourism management (at both micro and macro levels) in the 1980s (Liu, 2003). Continuous efforts have been made all over the world to formulate sustainable tourism programs that are suitable for different conditions and different levels in different countries. Examples include national programs like the Australian Nature and Ecotourism Accreditation Program (NEAP, 2003) and the Costa Rican Sustainable Tourism Program (CST, 2003); the Saskatchewan Ecotourism Accreditation Program (ESS, 1999) at the regional level in Canada, and the Green Hotel Program developed by the Hyatt Corporation at the corporate level (Enz & Siguaw, 1999).

[4] Paper submitted to Society and Natural Resources

Most researchers agree that a successful sustainable tourism program requires support and participation from the government, local communities, visitors, tourism businesses, the media and international forces such as non-governmental organizations, (NGOs; (Butler, 1999; Dewhurst & Thomas, 2003; Horobin & Long, 1996; Sharachchandra M Lele, 1991; Liu, 2003). However, Dewhurst and Thomas (2003) and Liu (2003) found that successful examples of sustainable tourism often begin at the micro or firm level. Thus, a tourism firm's voluntary participation can play a crucial role in the success of a sustainable tourism program (Rangel, 2000). Despite growth in the sustainable tourism literature, empirical research has not reached a consensus on the motivations of business organizations or the nature and importance of the incentives and barriers a business faces when considering voluntary participation in a sustainable tourism program.

Immediately after a long period of war, Vietnam followed an economic policy that excluded transactions with all nations outside of the Soviet bloc and/or communist rim. This policy discouraged many international economic activities, including trade and tourism. In response to dramatic changes in the Soviet bloc and Eastern European countries, in 1986 the Vietnamese Communist Party announced a new market-based economic policy, often known as 'doi moi.' International tourists started to visit Vietnam, beginning with businesspersons looking for new markets. Later, many tourists came to visit to enjoy the country cultural sites and natural beauty. This kind of tourism continues to increase (Hoang, 1998). Recognizing the enormous economic opportunity that tourism offered, the Vietnamese government declared tourism a focus of *doi moi* (*SRV: Party Congress Socioeconomic Report- Report on Socioeconomic Development Orientations and Tasks for the Five-year 1996-2000 period,* 1996).

As a newcomer to the international tourism market, Vietnam had a unique opportunity to build its tourism industry from scratch, incorporating lessons learned from the experience of others. For instance, observing the negative impacts of tourism on the natural and cultural

resources of Thailand, Indonesia, Malaysia, and other Southeast Asian countries, the Vietnam National Administration of Tourism (VNAT) has worked to develop a well-thought out tourism development plan that safeguards these resources before they are threatened:

> *The State shall uniformly administer tourism activities; ensuring the development of tourism in line with cultural and ecological tourism while preserving and fully realizing cultural identity, good traditions and customs of the Vietnamese people.* ("Tourism Ordinance," 1999)

Assuming that tourism firms are a critical dimension of this effort, this study examined potential factors correlates to Vietnamese tourism businesses' intention to adopt (or the likelihood of adoption, interchangeably) sustainable tourism practices. Specifically, this study addressed three research questions: (1) What are the factors that associate with hotels' intention to adopt sustainable tourism practices? (2) What are the factors that associate the intentions of tour companies' to adopt sustainable tourism practices? (3) Are there any differences between the motives and barriers of tour companies and hotels' in adopting sustainable tourism practices?

The results suggest that the characteristics of a sustainable tourism practice, especially its perceived complexity of the practice, are the most important factors as they are highly correlated with both hotel and tour businesses' intention to adopt the practice. Organizational characteristics such as the firm's size, its attitude toward sustainable tourism development, and its attitude toward taking risks had weaker correlations in both cases. The external environment characteristics include pressure from government regulations, customers and competitors were least correlated to both tour and hotel businesses' likelihood of adoption. The results also suggest that tour companies are somewhat more sensitive to the risk aspect of adopting sustainable tourism practices than is the case with hotels. In addition, because of differences hotel and tour company businesses, these kinds of firms are somewhat different regarding the practices that they favor.

2. The Tourism Industry in Vietnam and the Current State of Sustainable Tourism Practice

The tourism industry, according to Gee et al. (1989), is made up of several components, including tour companies, accommodations providers, transportation providers, tourist attractions, and supporting services and facilities. Before *doi moi*, tourism was not considered to be an economic activity in Vietnam. Private ownership and operation of businesses were not legally recognized by Vietnamese law. Most tourism facilities were used to accommodate state employees enjoying bonus vacations received for outstanding performance. After *doi moi*, the VNAT identified two new management tasks. One task was to manage an increasing flow of international tourists into the country without a clear general legal policy from the government such as the policy regarding visa issuance.

The other task was to regulate and oversee companies in the industry with different types of ownership. Before *doi moi*, only state (or public) ownership of business was legally recognized. This traditional type of ownership still comprises a large proportion of the tourism industry. State owned companies are usually medium to large in size and subsidized by the government. Three new types of ownership were created as a result of open-market policy, including privately owned, joint-venture, and *equitized* companies. Privately owned companies vary from small family-run businesses to large corporations with multiple owners. Joint-venture companies are domestic companies with international corporate investors. These companies are often large and have strong financial resources provided by the foreign partners. *Equitized companies* are perhaps unique to the Vietnam experience. State owned companies in danger of bankruptcy were allowed to equitize by selling up to 49% of their shares to private investors. By equitizing, the state maintained control of these companies while increasing their funding from other sources. Equitized companies are often medium or large size.

These differences in ownership and thus the management style of tourism companies in Vietnam may result in differences in attitudes towards voluntary participation in sustainable

tourism programs. As the two management tasks described above are relatively new to VNAT, the agency has experienced difficulty in coordinating the tour company and hotel components of the tourism industry with the transportation and tourist attractions components (Haley & Haley, 1997). Most tourist attractions, such as forests, are often multiple-use resources also important for other economic sectors, such as the forest products industry. Transportation of tourists comprises only a small proportion of the country's transportation infrastructure, facilities and services, and the tourism industry has limited influence on formulation of transportation policy. This study therefore focused on tourism accommodations and tour operators, referred to in this paper as hotels and tour companies, respectively.

Mowforth and Munt (1998) identified and summarized 29 alternative terms which have been synonymously used with sustainable tourism. They vary from common terms like 'ecotourism' and 'green tourism' to more obscure terms such as "scientific tourism," "soft tourism," and "appropriate tourism." Sustainable tourism has also been defined as a 'new' tourism that implies 'no-impact', 'responsible', 'green' and 'environmental friendly' practices (Mowforth & Munt, 1998). While these terms help distinguish differences between sustainable and non-sustainable tourism activities, they narrowly focus on "the need to preserve the resources on which the tourism industry depends, rather than on the sustainable use of resources" (Dewhurst & Thomas, 2003:384). Furthermore, these classifications seem inappropriate in the sense that they discourage other types of tourism from working towards the common goals of sustainable development.

Therefore, we adopted the approach suggested by Liu (2003: 461), in which sustainable tourism is defined as "all types of tourism (conventional or alternative forms) that are compatible with or contribute to sustainable development." This definition of sustainable tourism is not restricted to those tourism firms operating only in the niche market of "green" or "ecotourism," but also applies to all tourism businesses that adopt environmentally friendly practices. The objective of this research is to examine potential internal and external factors affecting the

intentions of Vietnamese tourism firms to adopt sustainable tourism practices. The term "intention to adopt" is used interchangeably with "likelihood of adoption" in this paper.

3. Diffusion of Innovations Theory as Conceptual Framework

Rogers' (2003) theory of diffusion of innovation provided the theoretical framework for this study. Since it was first published in 1962, the model has been used in over 5,000 studies in disciplines ranging from health care, agriculture, information communication, technology to business, marketing and environmental studies (E. M. Rogers, 2003). The model has also been cross-culturally tested and its consistency proven (E. M. Rogers, 2004; Wejnert, 2002). According to Rogers (1995), innovations are ideas, practices, or concepts that are perceived as new to the potential adopters. Internationally, the notion of sustainable tourism is not a new idea. However, viewing sustainable tourism practices as the adoption of environmentally friendly innovations is unique, especially in Vietnam. As such, Rogers' model of diffusion of innovations serves as a useful theoretical framework.

With such a large diversity of applications, studies within the diffusion of innovation literature do not share a fixed set of factors that influence the intention to adopt innovations. However, a common classification of influencing factors include three main groups: (1) innovation characteristics; (2) organizational (or adopter) characteristics; and (3) external environment characteristics (Rogers 1995, 2003, Wejnert, 2002). Each group contains several factors that depict the corresponding construct. According to Spector (1992), in social science it unreliable to use one-item question to measure collective behaviors such as attitudes and motivations toward adoption of environmental innovation because of the complex nature of the topic. Therefore, we measured our variables of interest using a series of items and these are displayed as the third measurement level of our model. Table 5.1 presents three measurement

levels in the conceptual framework and their hypothesized relationships with likelihood of adoption.

Many researchers, including Rogers himself, consider *innovation characteristics* to be the most influential group of factors affecting adoption. Empirical studies also generally agree on the direction in which these factors influence likelihood of adoption (Al-Gahtani, 2003). Innovation characteristics include complexity, relative advantage, observability, and compatibility. *Complexity* is the degree to which an innovation is perceived as difficult to understand and use. The most common understanding of complexity is the level of technical difficulty (Martins et al., 2004; Everett M Rogers, 1995; Tabak & Barr, 1998). Generally, complexity is negatively correlated with likelihood of adoption. Thus, the more complex an innovation the less likely it will be adopted (Everett M Rogers, 1995). R*elative advantage* is the degree to which an innovation is perceived as better than the idea it supersedes or for which it substitutes (Everett M Rogers, 1995). Relative advantage can be either financial or non-financial. Variables that are indicators of relative advantage in adopting environmental innovations are: cost saving (Dewhurst & Thomas, 2003), improvement of the firm's reputation, and sales volume or market share (Horobin & Long, 1996; Rangel, 2000). These factors are generally positively correlated with the likelihood of adoption.

Compatibility is the degree to which an innovation is perceived as being consistent with existing values, past experience, and needs of potential adopters. An innovation perceived as incompatible with an organizational setting is more likely to be rejected. As Ramus (2001) has observed, support from employees is one of the most appropriate ways to measure compatibility. Support from a firm's employees plays an even more important role in a country that has a collective culture, such as Vietnam. This is because managers often evaluate resistance of employees prior to making decisions (Ellis, 1995). *Observability* is the degree to which the results of an innovation are visible to others. The easier it is for individuals or organizations to

see the results of an innovation, the more likely they are to adopt it. Observability is generally understood as the ability to foresee the overall effect of adopting an innovation.

In order to simplify statistical analyses, innovation characteristics are depicted by three main variables: complexity, financial benefit, and all other benefits (see Table 5.1). Innovation characteristics, except for complexity, are hypothesized to be positively correlated with likelihood of adoption.

Organizational characteristics include *firm size*, the firm's innovativeness or openness to new ideas (*risk-taking*), and the firm's attitude toward sustainable tourism (*greenness level*). *Firm size* is perhaps one of the most controversial factors. In the case of adoption of sustainable tourism practices, Bramwell et al. (1996:11) noted that small firms "generally lack the resources to keep abreast of developments and act individually on issues such as sustainability." However, small firms are more flexible and typically have a closer relationship with their customers. This allows them to be more dynamic and more open to change (Martinez-Ros & Labeaga, 2002). Some researchers such as Shook (1997) consider it best to think of the correlation between firm size and the likelihood of adoption as curvilinear. When the curvilinear relationship is significant, both large and small firms are at the same innovativeness level. In this case, quantitative analysis may not be sufficient to differentiate behavior of a large versus a small firm. Rather, the focus should be the type of innovation each firm is likely to adopt.

Greenness level is a factor unique to the study of environmental innovation. This variable represents the firm's attitude toward sustainable tourism development. Since there is limited research within the diffusion of innovation literature as to the use of greenness level in the theoretical framework, there is no common conclusion about the correlation between greenness level and the likelihood of adoption. Dewhurst and Thomas (2003) found a strong positive correlation between attitudes to embrace sustainable tourism development among tourism businesses with the amount of environmental actions they actually took. However, Horobin and Long (1996) were skeptical about this relationship.

Risk-taking, or openness in a firm's attitude toward change, is another organizational characteristic (Avlonitis et al., 1994). Firms that have an 'innovativeness culture' that show a willingness to consider and implement new ideas and changes are most likely to adopt innovations (Vazques et al., 2001; von Krogh & Roos, 1995). Rogers' (1995) summarization of the literature on organizational innovativeness also shows that an organization with an open system, which encourages new ideas and changes, is indeed more innovative than an organization with a closed system.

Lastly, factors in the *external environment characteristics* category are measured in terms of the degree to which a firm can be certain about its external environment, including changes in customer demands, changes in government regulatory policies, and level of threats from rival firms (Downs & Mohr, 1976; Miles & Snow, 1978). The level of certainty about customer demand and government policies are often found positively correlated with the likelihood of adoption because a stable, supportive environment is always preferable to an unstable one (Kotler et al., 2003). Firms are more likely to invest in a new product/technology or improve their current product if demand from customers is fairly certain (Miles & Snow, 1978). Similarly, firms are not likely to invest in new technologies and products, especially environmentally friendly sound products, if the government does not have a positive attitude about them (Ozsomer et al., 1997). Research suggests that firms perceive uncertainty in government policy or customer demand as a risk or threat, and thus are not likely to make new investments in related innovations (Ozsomer et al., 1997; Rangel, 2000; Soderbaum, 2000; Vazques et al., 2001; von Krogh & Roos, 1995).

There is some evidence with respect to the impact of perceived competitiveness at the industry level. Firms that operate in a highly competitive environment, especially small firms, are less likely to adopt new innovation because they are more cautious about financial risks (Appiah-Adu & Singh, 1998). However, other researchers have found that competitiveness is one of the most important motivations for a firm to adopt environmental innovations (Clelland et al., 2000; Hurley & Hult, 1998; Kassinis, 2001; Okumus & Hemmington, 1998; Rangel, 2000). According

to Kotler et al. (2003), and Veliyath and Fitzeland (2000), "going green" by adopting environmental innovations is the best proactive competitive strategy for differentiating a firm from its rivals in a hyper-competitive environment.

To summarize, the dependent variable of interest in this study is the likelihood of adoption of environmental innovations among tourism firms in Vietnam. Factors that potentially influence likelihood of adoption include innovation characteristics (complexity, financial benefits, and all other benefits/advantages), organizational characteristics (firm size, greenness level, and risk-taking level), and external environment characteristics (perceived competition, certainty about customer demands and changes in government policies). All of these factors, except for perceived innovation complexity, are hypothesized to be positively correlated with the likelihood of adoption of environmental innovations, as shown in Table 5.1.

Table 5.1: Measurement levels within the diffusion of innovations conceptual framework

All independent variables (level 2), except for complexity, are hypothesized to be positively correlated with likelihood of adoption.

Level 1	Level 2	Level 3
Innovation Characteristics	*Complexity and observability.* (McCabe, 1987)	Level of technical difficulties (TECH1)
		Level of difficulties in applying/installing (TECH2)
		Level of consequential adjustment (TECH3)
		Level of ease to forecast the overall effect (OTHER1)
	Relative advantage (financial and all others) (Karagozoglu & Lindell, 2000; Kocis, 1986)	Flexible cost saving (C0ST)
		Level of increase in sale volume (OTHER2)
		Level of improvement in overall financial status (FINANCE)
		Level of improvement in company's reputation/image (OTHER3)
		Level of support from employees (OTHER4)

Table 5.1. continued

Level 1	Level 2	Level 3
Organizational Characteristics	*Greenness level* (Horobin & Long, 1996)	We are holding the environment and resources of the country in trust for future generations and we have a responsibility to pass these on in good condition.(GREEN1)
		The fortunes of tourism and the environment are closely linked. Without a beautiful environment, tourism could not flourish and be sustained.(GREEN2)
		The greater the attraction of a beautiful place the greater the danger that large numbers of visitors will reduce its attractiveness.(GREEN3)
		It is relevant for tourism businesses of all sizes to encourage the development of a tourism industry which can serve the needs of both current and future generations.(GREEN4)
		We can all respond to the need to protect the environment, for example by altering some of our everyday business activities.(GREEN5)
	Risk-taking (Hurley & Hult, 1998; Miles & Snow, 1978; Vazques et al., 2001)	Technical innovation, based on research results is readily accepted in our organization (RISK1)
		Management is actively seeking innovative ideas (RISK2)
		People are penalized for new ideas that do not work (RISK3)
		Innovation in our company is perceived as too risky and is resisted (RISK4)
External environment characteristics	*Perceived competition* (Appiah-Adu & Singh, 1998; Jaworski & Kohli, 1993)	Competition in our industry is cut throat (RIVAL1)
		Anything that one competitor can offer other can match (RIVAL2)
		Our competitors are relatively weak (RIVAL3)
	Perceived customer and government certainty (Miles & Snow, 1978)	Customers' demand for existing product (DEMAND1)
		Customers' demand for new product (DEMAND2)
		Government regulatory agencies changes in laws or agency policy on pricing (GOV1)
		Government regulatory agencies changes in law or agency policy on product standard or quality (GOV2)
		Government regulatory agencies changes in law or agency policy on environmental standard (GOV3)
		Government regulatory agencies changes in law or agency policy affecting marketing and distribution methods (GOV4)
		Government regulatory agencies changes in law or agency policy on acceptable accounting procedure (GOV5)

4. The Study

4.1. Survey Instrument

Since there was no codified set of sustainable tourism practices in Vietnam at the time of this study, a generic list of practices was created from existing programs such as the Nature and Ecotourism Accreditation Program (NEAP: *Nature and Ecotourism Accreditation Program*, 2003) in Australia, the Ecotourism Program from Costa Rica (2003) and "Green Hotel" criteria from the Hyatt Corporation (Enz & Siguaw, 1999). The list was then redefined by two expert panels through a semi-Delphi routine recommended by Delbecq et al. (1975) This approach was effective for generating management criteria and decisions given time and budget constraints.

The first expert panel included English-speaking experts in the field of sustainable tourism development. Two experts were from Australia, both of whom contributed to the construction of the NEAP. Two other experts from the U.S. had extensive experience working on environmental protection policies in developing countries, including Vietnam. One Malaysian expert was involved in the development of sustainability criteria for hotels in Malaysia. These experts were asked to select the most important and practical practices in the context of developing countries like Vietnam. Two lists of common selected practices (one list for hotels and another for tour companies) were then e-mailed back to experts for confirmation and to insure consensus.

These lists were then translated into Vietnamese and re-translated into English to ensure accuracy and minimize language issues. The Vietnamese versions were then given to a second expert panel comprised of tourism experts in Vietnam. Panelists were selected based on their experience and knowledge of the tourism sector. They came from research institutes, government administration, and business organizations. The experts confirmed items on the lists, reduced the number of items, and insured that important items were not overlooked. Panelists were instructed to identify practices most important and applicable to the tourism industry in Vietnam. A

consensus was reached after two rounds, with 13 tour companies practices selected from the original list of 45, and 15 hotel practices selected from the original list of 56.

Variables representing innovation characteristics were measured on a semantic differential scale from 1 to 7, with 1 being extremely complex/difficult/disadvantaged, 4 being no effect or no change, and 7 being extremely simply/easy/advantaged, according to the wording of each innovation attribute. Variables representing organizational characteristics, except for firm size and location, were measured with an equal interval scale, ranging from 1 (strongly disagree) to 7 (strongly agree). Firm size was determined using several proxy measures including average number of customers per month, total assets, and number of employees. External environment characteristics were measured with an equal interval scale, with 1 being 'highly unpredictable' and 7 being 'highly predictable.' Two questionnaires were separately designed for tour companies and hotels based on selected practices.

4.2. Study Participants

As recommended in other organizational studies (Damanpour, 1991; Rangel, 2000; Wolfe, 1994), participants in this study were owners, managers or a member of the decision making unit of tourism companies in Vietnam. However, it was difficulty to select an appropriate sample size given the lack of reliable information on the proximate size of the tour company population. The common experience of other researchers is that "Vietnam is a difficult country for research" because of the poor quality of available statistical data (Venard, 1998:79). The nation-wide phone directory provided by the Vietnamese Telecommunication and Postal Service was used to estimate of the population of tour companies. Companies registered as tour companies, tour ticket offices, tour operators, and travel agencies were selected. Companies with the same name or classified as representative offices, ticket offices, and branches were then removed from the population because they are under the same management. This process

identified a population of 298 tour companies throughout Vietnam. A random sample of 149 companies (50% of the estimated population) was selected.

The number of accommodation providers in Vietnam, as published in the VNAT website as of November 2002 including hotels, resorts, villas, tourism villages and apartment rentals, was 3,267. However, VNAT refers to this figure as 'unofficial' (*Tourism Statistics*, November 2002). A request was sent to VNAT regional offices to provide contact information of hotels in their areas. Hotels that were inactive (closed for renovation/repair or out of business) were excluded from the population because managers were unable to contact. In addition, group of hotels that were managed by the same person was only selected once. After this adjustment, the population for was estimated for hotels be approximately 2,500. A randomly selected sample of 497 hotels was chosen from this data base. Because this study focuses on management decisions related to the adoption of environmental innovations, the desired participants were owners, managers, or member of decision making unit in the organization. This logic follows that of other organizational studies (Damanpour, 1991; Rangel, 2000; Wolfe, 1994).

4.3. Questionnaire Distribution

The survey period spanned August to December 2003. Vietnamese-speaking surveyors first attempted to set up appointments with study participants. A brief face-to-face meeting was arranged during which the participants were given a questionnaire to complete and a pre-paid return envelope. The surveyors explained the purpose of the study, gave instructions on how to fill out and return the questionnaire, and answered clarification questions. The surveyors then came back to retrieve the questionnaire a few days later at an arranged time. This method has been used to increase response rates in tourism studies (Vincent & Santos, 1996). If the questionnaires were not completed at the second meeting, participants were asked to return them

by mail. If the questionnaire was not returned by mail, a reminder letter was sent and a telephone call was made one and two weeks after the meeting, respectively.

Nonresponse Bias

Even though the samples were carefully selected to only include a manager once, 33 hotels among 497 selected actually had the same manager as another hotel on the list. This reduced the usable sample size of hotels to 464 (20% of the estimated population). The questionnaire was completed and returned by 193 hotel participants and 60 tour company participants. Three hotel participants sent back blank questionnaires, reducing the usable responses to 190. Thus the total number of responses was 250, resulting in an overall response rate of 40%. Based on the estimated population size, the sampling error was calculated to be 10% according to Salant and Dillman's method (1994).

A common way to assess nonresponse bias is to compare socio-economic characteristics of respondents relative to nonrespondents (Dey, 1997; Sheaffer et al., 1996; Stoop, 2004). Because the unit of analysis was the organization, we used two proxies (the firm location and type of ownership) to assess nonresponse bias for both hotels and tour companies. The firms were located in three administrative regions: north, south and central regions. The three types of ownership were joint-venture (between a foreign company and a Vietnamese partner), state-owned, and privately owned companies. Chi-square test results showed no significant differences in terms of location between respondents and nonrespondents (p-value>0.1) of both hotels and tour companies. However, with p-value less than 0.01, the Chi-square test results indicated a significant difference between respondents and nonrespondents in terms of ownership among tour companies, this difference was not statistically significant among hotels. Joint-venture tour companies were the most responsive, while privately-owned companies were the least responsive to the survey.

A possible explanation for this difference is that Vietnamese people are generally unfamiliar with scientific studies and have a culture which strongly resists self-disclosure with

strangers (Milburn et al., 1991; Sasao, 1994). Joint-venture tour companies may have a different culture influenced by their foreign partners, thus making them somewhat more open to survey research (Chudnovsky & Lopez, 2003). Given this finding, the generalizability for privately owned tour companies is somewhat limited and results should be interpreted with caution.

5. Statistical Analysis

5.1. Internal Consistency

Cronbach's coefficient alpha was used to assess the reliability and consistency of measurement scales. Cronbach's coefficient alpha for all measurement scale ranged from 0.52 to 0.87 (Nunnally, 1978). Examining scales with the lowest Cronbach's coefficient alpha (risk-taking and perceived competitiveness), RISK3, RISK4, and RIVAL3 (see detail in Table 5.1) were found to be negatively correlated with other items in corresponding scales. However, these correlations were statistically insignificant (p-value>0.1). Because all these items were worded negatively, it may be that due to cultural differences, Vietnamese participants respond differently to negatively worded questions than did the English speaking audiences use in the earlier studies in which the scale was developed/used (Hurley & Hult, 1998; Miles & Snow, 1978; Vazques et al., 2001). In addition, since the correlation coefficients of these items were statistically insignificant, these items were removed from the scales. After removal, the internal consistencies of scales improved, with Cronbach's coefficient alphas ranging from 0.65 to 0.87 (see Table 5.2).

5.2. Factor Analysis

Three factor analyses were conducted to depict variables presenting three hypothesized constructs: innovation characteristics, organizational characteristics, and external environmental characteristics. The results of factor analyses are shown in Table 5.2. Most factor components

included variables that are consistent with theoretical construct. For example, the first factor analysis included three variables: (1) *complexity* loaded with all the technical difficulties measurement items(TECH1, TECH2, TECH3); (2) *financial benefits* loaded with cost saving and improving financial performance (COST and FINANCE);, and (3) *all other benefits* loaded with observability improving firm image, compatibility, increase market share (OTHER 1 to 4)

Table 5.2: Variables depict theoretical construct as results of factor analyses and their reliable assessment

Construct	Item	Variable			Cronbach's coefficient alpha
		Complexity	Other benefits	Financial benefits	
Innovation characteristics (explain 75% of total variance)	TECH2	**0.901**	0.118	0.195	
	TECH1	**0.896**	0.079	0.163	
	TECH3	**0.765**	0.313	0.193	0.87
	OTHER3	0.103	**0.881**	-0.009	
	OTHER4	0.201	**0.769**	0.198	
	OTHER2	0.063	**0.713**	0.398	
	OTHER1	0.445	**0.578**	0.219	0.81
	COST	0.351	0.070	**0.836**	
	FINANCE	0.158	0.454	**0.760**	0.74
		Greenness	Risk-taking		
Organizational characteristics (explain 67% of total variance)	GREEN1	**0.892**	0.137		
	GREEN2	**0.834**	0.260		
	GREEN4	**0.646**	0.477		
	GREEN3	**0.524**	0.147		0.77
	RISK1	0.096	**0.869**		
	GREEN5	0.274	**0.782**		
	RISK2	0.337	**0.749**		0.79
		Perceived certainty about changes in government policies	Perceived certainty about customer demand	Perceived competitiveness	
External environment characteristics (explain 74% of total variance)	GOV3	**0.801**	0.202	0.053	
	GOV4	**0.775**	0.092	-0.055	
	GOV1	**0.768**	0.067	-0.018	
	GOV5	**0.753**	0.119	-0.094	
	GOV2	**0.667**	0.258	-0.138	0.83
	DEMAND1	0.110	**0.865**	0.063	
	DEMAND2	0.282	**0.766**	0.010	0.71
	RIVAL1	-0.023	-0.057	**0.863**	

RIVAL2	-0.105	0.126	**0.826**	0.65

The variables created by factor components show that the external environment characteristics are also consistent with the theoretical construct. The variable measuring perceived certainty about changes in government policies included all items about certainty of government policy (GOV1 to 5). The results are similar, with variables depicting perceived certainty about customer demand (loaded with DEMAND1 and DEMAND2) and perceived competitiveness (loaded with RIVAL1 and RIVAL2).

However, one item, Green5, which reads: "we can all respond to the need to protect the environment, for example by altering some of our everyday business activities," did not load as expected. This item was used by Horobin and Long (1996) as a part of greenness scale but in our factor analysis it loaded with the risk-taking items. The discrepancy may be attributed to the fact that participants in this study are culturally different than those in Horobin and Long's (1996) study. In addition, because sustainable tourism is a relatively new concept in Vietnam, it is possible that the survey participants interpreted this item as a risk-taking action rather than a 'green' action, as it asks for altering business activities. Therefore, we accepted the two variables with loaded scale items as shown in Table 5.2.

The last variable, firm size was measured by several different proxies according to the type of firm. For hotels, proxies measuring firm size included number rooms, number of employees, and total assets. For tour companies the proxies were number of employees and total asset companies. These proxies were combined into one linear regression principle component to measure firm size.

5.3. Comparisons Among Types of Ownership

Figure 5.1 provides a visual comparison of adoption rates among different types of companies along with the Chi-square test result is shown in Table 5.3. Adoption rates were

calculated as the number of innovations being adopted by each company type over the total number of innovations. While adoption rates do not vary among hotels, joint-venture tour companies were more likely to adopt sustainable tourism practices than other types of companies. Table 5.3 shows the results of ANOVA and Chi-square tests to detect the differences among different types of ownership. If statistically significant differences were found, Tukey pairwise comparisons were performed to determine which groups differed.

Table 5.3: Chi-square and ANOVA tests to compare the differences due to the differences of ownership type

Variable	Test	Tour company	Hotel
Intention to adopt	Chi-square (4x2 table)	Joint venture significantly adopted more (p-value = 0.046)	No significant difference (p-value = 0.45)
Complexity	ANOVA	No significant differences (p-value =0.237)	No significant differences (p-value =0.113)
Financial benefit	ANOVA and Tukey pairwise comparison	Equitized companies perceived higher financial benefits than other companies (p-value = 0.028)	No significant differences (p-value =0.355)
All other benefits	ANOVA and Tukey pairwise comparison	No significant differences (p-value =0.151)	Join venture companies perceived higher other benefits than other companies (p-value<0.001)
Greenness	ANOVA	No significant differences (p-value =0.495)	No significant differences (p-value =0.477)
Risk-taking	ANOVA	No significant differences (p-value =0.392)	No significant differences (p-value =0.688)
Perceived competitiveness	ANOVA	No significant differences (p-value =0.283)	No significant differences (p-value =0.298)
Perceived customer certainty	ANOVA	No significant differences (p-value =0.285)	No significant differences (p-value =0.837)
Perceived government	ANOVA and Tukey	No significant differences (p-value =0.895)	State-owned companies are more certain about

certainty	pairwise comparison	government policies (p-value = 0.06)

Overall, in both the case of tour companies and hotels, no statistically significant difference was found among companies' perception of innovation complexity regardless ownership type. Similarly, companies with different types of ownership were not statistically significant different in terms of their greenness level, risk-taking attitude, perceived competitiveness, and perceived certainty about customer demands. However, in the case of tour companies, equitized companies perceived somewhat higher financial benefits from adopting environmental innovations. Among hotels, joint-venture companies perceived higher levels of other benefits, while state owned companies perceived more certainty about changes in government policies. This result indicates that, while companies of different types do not have totally different perceptions towards adopting sustainable tourism practices, they may have different motivations. For example, equitized tour companies may be more concerned with financial benefits, while a joint-venture hotel may focus more on marketing image when deciding on whether or not to adopt sustainable practices.

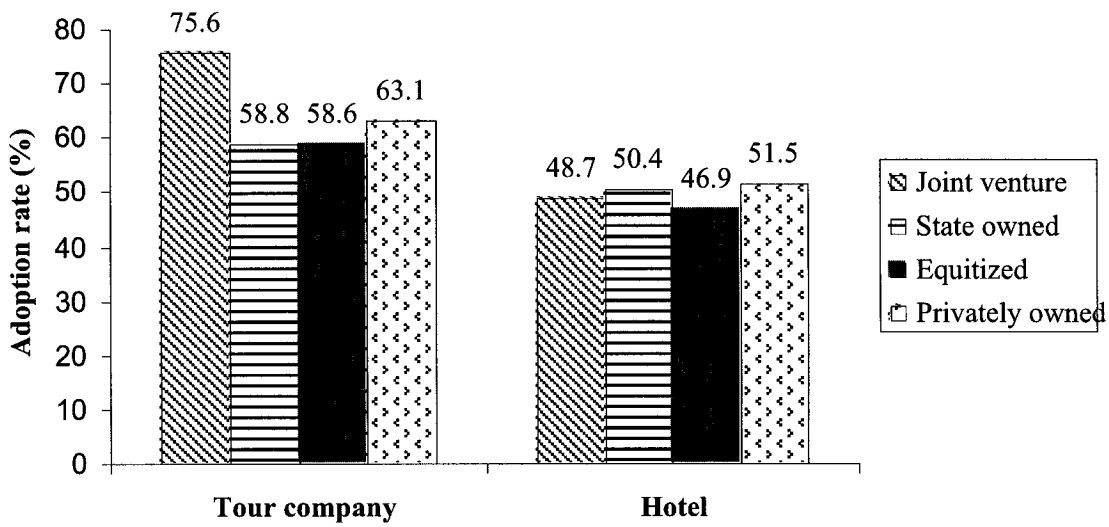

Figure 5.1: Adoption rates (in percentage) of sustainable tourism practices by different types of tour companies and hotels in Vietnam

5.4. Logistic Regression Analysis

The dependent variable in the logistic regression is the firm's intention to adopt sustainable tourism practices. Survey participants were asked to express this intention through a binary yes/no response after considering the advantages and difficulties of adopting a practice. A multivariate probability plot revealed a curvilinear pattern among the independent variables. Scatter plots were used to assess the curvilinear pattern. For hotels, firm size and perceived competitiveness were identified as having a curvilinear relationship with intention to adopt. No curvilinear pattern was found among tour companies. The logistic regression model is presented as followed:

$$\text{Likelihood of adoption} = Y = \beta_0 + \sum_{i=1}^{9} \beta_i x_i + \beta_{10} x_4^2 + \beta_{11} x_9^2$$

In which:

β 's are the correlation coefficients

x_1: complexity
x_2: financial benefit
x_3: other benefits
x_4: firm size
x_5: greenness
x_6: risk-taking
x_7: perceived certainty about government polices
x_8: perceived certainty about customer demand
x_9: perceived level of competition or competitiveness
(The last two quadratic terms account for the curvilinear effect of firm size and perceived level of competition, and are only applied to hotels)

Logistic regression analyses were conducted with a backward elimination selection procedure (significance level = 0.1) to examine the influence of the independent variables on likelihood of adoption of each of 15 hotel practices, and each of 13 tour company practices. However, for tour companies, in addition to having a small sample size, only 39 companies provided complete answers for the following two practices:

Practice 3: "The purpose of interpretation activities is to provide customers with opportunities to learn more about the natural and cultural heritage of the area they are visiting through their own languages."- 4 non-adoptions.

Practice 11: "Customers are discouraged from purchasing any forms of endangered species or rare wildlife including foods, stuffed animals, bones, tusks, teeth, fur, or any parts of the animals."- 4 non-adoptions.

Data were insufficient to detect correlations between the independent variables and likelihood of adoption for these two practices. Results of the logistic regression analyses are summarized in Table 5.4.

Table 5.4: Results of logistic regressions for 15 hotel practices and 11 tour company practices

- The sign represent direction of correlation with positive sign means the variable is positively correlated with the likelihood of adoption and negative sign depict negative correlation
- Significant level = 0.1
- Second order: correlation coefficient associated with x^2

Variable	Accommodation company		Tour company	
	Sign of correlation coefficient (when significant)	Number of times found significant (among 15 practices)	Sign of correlation coefficient (when significant)	Number of times found significant (among 11 practices)
Complexity (measured in decreasing level)	+	12	+	4
Financial benefits	+	5	+	1
All other benefits	+	10	+	6
Firm size	- and +	4 (2 negative second order 1 positive first order 1 negative first order)	-	1
Greenness level	-	1	-	1
Risk-taking	+	5	+	6

Perceived certainty about government regulatory policies	+	2	Na	0
Perceived certainty about customer demand	+	6	Na	0
Perceived competitiveness	+	4 (2 second order)	+	1

Overall, the results confirm the hypothesized relationships between the independent variables and likelihood of adoption. Complexity (measured from high to low), financial benefits, and other benefits are positively correlated with likelihood of adoption. Perceived certainty about government policies, customer demand, and perceived level of competition are also positively correlated with the likelihood of adoption as hypothesized. However, organizational characteristics variables exhibited a more complicated relationship with the likelihood of adoption. For example, a quadratic relationship was found between firm size and adoption intention. Greenness level, which was hypothesized to be positively correlated with likelihood of adoption, was negatively correlated. This finding is particularly unexpected.

Furthermore, innovation characteristics are the dominant factors, especially complexity and other benefits, as their correlations with a firm's intention to adopt sustainable tourism practices were found significant in most cases. External environment characteristics exhibited the least relation to likelihood of adoption. In fact, their correlations with intention to adopt were found to be statistically significant in only one case and the relationship was very weak.

6. Conclusions

The results of this study are consistent with the findings in the literature by Rogers (2003), Al-Gahtani (2003), Martins et al (2004) and Wejnert (2002) that innovation characteristics, especially complexity, are most important factors influencing a firm's intention to adopt an innovation. However, as complexity plays a very critical role in a hotel's intention to

adopt sustainable tourism practices (80% of all cases, see Table 5.3), other benefits have more influence on tour companies. To better understand this relationship, it is necessary to distinguish between technical and administrative innovations. According to Damanpour (1991), technical innovations involve changes or development in an organization concerning technology or mechanical procedures, while administrative innovations often involve changes in management tactics, policies, or procedures. Technical innovations are often applied to manufacturing firms while administrative innovations are more applicable for service providers.

Because of differences between technical and administrative innovations, complexity contains different aspects according to the type of innovation. As in case of technical innovations, complexity contains technical issues, such as installment, operation, maintenance, as well as organizational issues such as training employees to operate new machines, reorganize production procedures, etc. For administrative innovations, complexity can also involve technical challenges such as installing a new program into a firm's computer system, but more often involves organizational and management elements such as employee training, changing managerial structure, or even changing the organizational culture. The products of tourism business, whether hotels or tour companies, are services that provided to tourists (Gee et al., 1989; Kotler et al., 2003). However, in a production process, hotel services require much higher tangible inputs than the services provided by tour companies. For example, hotel buildings and landscapes are part of the service provided to hotel customers while a tour company's office facilities contribute very little to the quality of tour services.

Following this rationale, sustainable tourism practices for hotels include both technical and administrative innovations, while for tour companies these practices are mostly administrative. In fact, among the 15 hotel practices selected by the expert panels, 11 are technical while all 13 practices selected for tour companies are administrative. Because of this more diverse set of practices, hotel managers appear to be more sensitive to the complexity of an

innovations compared to tour company managers. As shown in Table 5.3, complexity correlated to the adoption intention of 80% of hotel managers, but only 45% of the tour company managers.

As there are intangible components to the products and services of both hotels and tour companies, it is impossible to assess quality before consumption (Lundberg, 1990). Customers therefore must rely on a firm's reputation when making purchase decisions. Thus, a tourism firm's reputation is a critical to its competitive advantage. Innovations that strengthen the firm's image are therefore more likely to be adopted (Kotler et al., 2003). 'Other benefits' which strengthen a firm's image also strongly influence the adoption intention of both hotels and tour companies. More than 50% of the time, 'other benefits' influenced both hotel and tour company manager's intention to adopt.

The 15 hotel practices also have a wider range of required financial investment. For example, design and construction of hotel building compatible with surrounding landscape may require a substantial investment, while providing recycling bins in guest rooms is a relatively low cost practice. In contrast, the tour company environmental innovations are somewhat less variable in term of financial investment because they mostly focus on staff, especially interpretive staff, environmental training and knowledge. This may explain why hotels were more concerned with an innovation's financial benefits (correlated with likelihood of adoption of five innovations) than were tour companies (correlated with likelihood of adoption of one innovation).

Among organizational characteristics, risk-taking had the most influence on adoption intentions. This pattern has been observed in other studies focusing on early stage of sustainable tourism development, namely Dewhurst and Thomas (2003), Rangel (2000), and Rivera (2004). Because sustainable tourism is a relatively new concept in Vietnam, and tourism firms often lack access to international market information (Haley & Haley, 1997), it is logical that firms are skeptical of the results of adopting environmental innovations. As a consequence, sustainable tourism practices are considered risky actions and more likely to be adopted by higher risk-taking firms.

Greenness level unexpectedly was found to be negatively correlated with likelihood of adoption, albeit extremely weakly (one hotel practice and one tour practice). The greenness measurement scale was adopted from a study by Horobin and Long (1996) in which the correlation with the adoption of sustainable tourism practices was not significant. Generally, greenness level is a factor that is very hard to accurately measure and interpret. According to Horobin and Long (1996), and Dewhurst and Thomas (2003), being environmentally responsible is a positive social norm that respondents tend to agree with but not comply with in their actual behavior towards the environment. Schwepker and Cornwell (1991) explain that the relationship between greenness level and intention to conduct environmental action is very hard to interpret because it is often confounded by other factors such as financial status and level of education. No significant correlation between greenness level and hotel size (p-value = 0.25) or tour company size (p-value=0.73) was found, suggesting that greenness level among Vietnamese tourism companies does not vary by a company's financial potential. This finding indicates that Vietnamese tourism firms acknowledge environmental responsibility as a positive social norm that may be good for publicity purposes, but is not a norm with which they are willing or able comply with.

The relationship between firm size and likelihood of adoption is complex, especially in the case of hotels. All possible relationships between firm size and likelihood of adoption, including quadratic correlations (indicating both small and large firms intent to adopt similar number of practices), positive linear correlations (large firms are more likely to adopt), negative linear correlations (small firms are more likely to adopt), were found. This finding affirms the hypothesis that a quantitative approach (the number of innovations adopted) may not be the best method to differentiate small and large firms. Rather, a qualitative approach (the type of innovations that small or large firms are likely to adopt) may be a better method to examine the relationship between firm size and likelihood of adoption. For example, practice 14, "employing local residents with fair wages," is preferable to small hotels, while practice 5, "retaining and

including native vegetation in the hotel's landscaping," is more likely to be adopted by a large hotel. As small hotels have fewer employees and provide fewer services, it is more convenient for them to hire local people with minimum training, while large hotels often seek more skilled employees. Local people may lack needed skills. Similarity, small hotels typically have a very limited area designated for landscaping. Many mini-hotels in Vietnam do not have any area for landscaping, relying instead on bonsai and other indoor plants. Thus retaining native vegetation is impractical or even impossible for small hotels, while it is easier for large hotels with larger grounds.

External environment characteristics had the least relation with a tourism firm's adoption intentions. Perceived certainty about changes in government regulatory policies had almost no correlation with likelihood of adoption. This is a particularly interesting finding since Vietnam has just changed from a top-down state controlled economic system to a market-oriented economy. With this change it was hypothesized that firms would be more sensitive to changes in government's policies. However, as discussed earlier, environmentally responsibility may become a positive social norm supported by the government. Tourism firms may perceive that any changes in government regulatory policies regarding sustainable tourism will be supportive and thus do not firms' intention to adopt.

Perceived certainty about customer demand, while having no impact on a tour company's intention to adopt sustainable tourism practices, is positively correlated with the hotel sector's likelihood of adoption. This may be explained by the variety of customers that hotels serve. While tour companies' target customers are tourists who purchase package tours and other travel services, hotels customers are more varied, including tourists, businesspersons, political delegations, and other customers who need temporary accommodations or catering services. It may therefore be easier to predict tourist demand for a 'green destination' than for a green hotel service. Adopting a sustainable tourism practice, such as water-saving bathroom fixtures, may be perceived by some customers to diminish a hotel's luxury and service quality. Therefore, hotels

may be more sensitive about the certainty of customer demands than is the case with tour companies.

Perceived level of competition, even though it has a weak relationship, is positively correlated with likelihood of adoption. The positive correlation suggests that, although this is not yet a common reaction, competitiveness has become a motivation for tourism companies to adopt more 'green' practices. This finding confirms Kotler et al (2003) and Ranger's (2000) conclusion that being an environmentally friendly business can contribute to an important marketing image that tourism companies can apply to gain competitive advantage.

Overall, as sustainable tourism is a relatively new concept in Vietnam, adopting environmentally friendly practices is a new business conduct among tourism companies. At this early stage, innovation characteristics and risk-taking attitude of a company play critical role in its intention to adopt an innovation. This finding is consistent with Rogers (1995) conclusion about general characteristics of early-adopters which proves that diffusion of innovation framework is applicable in Vietnamese cultural context.

Based on these findings, a feasible plan to promote sustainable tourism in Vietnam can start from constructing a codified set of standards for sustainable and environmentally friendly practices. This set of standards will help to make innovation characteristics more transparent to tourism businesses to make their owned evaluation of advantages and disadvantages in adopting them. In addition, VNAT should also encourage several companies to become sustainable tourism businesses and use them as model for other companies to observe. Showing successful examples, as Liu (2003) found, is the best way to encourage tourism business to voluntarily participate in sustainable tourism program.

References

Al-Gahtani, S. S. (2003). Computer Technology Adoption in Saudi Arabia: Correlates of Perceived Innovations Attributes. *Information Technology for Development, 10*: 57-69.

Ancher, B. H. (1973). The Impact of Domestic Tourism. *Bangor Occasional Papers in economics, 2*.

Andereck, K. L. (1993). The Impacts of Tourism on Natural Resources. *Park and Recreation, 28*(6): 26- 34.

Appiah-Adu, K., & Singh, S. (1998). Customer Orientation and Performance: a Study of SMEs. *Management Decision, 36*(6): 385-394.

Avlonitis, G. J., Kouremenos, A., & Tzokas, N. (1994). Assessing the Innovativeness of Organization and its Antecedents: Project Innovstrat. *European Journal of Marketing, 28*(11): 5-28.

Bansal, P. (2002). The corporate challenges of sustainable development. *Academy of Management Executive, 16*(2): 122-131.

Bigoness, W. J., & Perreault Jr., W. D. (1981). A Conceptual Paradigm and Approach for the Study of Innovators. *Academy of Management Journal, 24*(1): 68-92.

Boo, E. (1990). *Ecotourism: Potentials and Pitfalls*. Washington, D.C.: World Wildlife Fund-U.S.

Bossel, H. (2000). The Human Actor in Ecological - Economic Models: Policy assessment and simulation of actor for sustainable development. *Ecological Economics, 34*: 337-355.

Bourdieu, P. (1995). Social Space and Symbolic Power. In D. McQuarie (Ed.), *Readings in contemporary sociological theory: from modernity to post- modernity* (pp. 323-334). New Jersey: Prentice Hall.

Bramwell, B., Henry, I., Jackson, G., Goyia Prat, A., Richards, G., & van der Straaten, J. (1996). *Sustainable Tourism Management: Principles and Practices*. Tilburg: Tilburg University Press.

Briassoulis, H. (2001). Sustainable Development and its Indicators: Through a (Planner's) Glass Darky. *Journal of Environment Planning and Management, 44*(3): 409-427.

Butler, R. W. (1974). Social Implication of Tourism Development. *Annals of Tourism Research, 2*(2): 100- 111.

Butler, R. W. (1999). Sustainable Tourism: A State-of-art Review. *Tourism Geographies 1, 1*: 7-25.

Chaudhuri, A. (1994). The Diffusion of an Innovation in Indonesia. *Journal of Product and Brand Management, 3*(3): 19-26.

Chudnovsky, D., & Lopez, A. (2003). Diffusion of Environmentally Friendly Technologies by Multinational Corporations in Developing Countries. *International Journal of Technology Management & Sustainable Development, 2*(1): 5-18.

Clelland, I. J., Dean, T. J., & Douglas, T. J. (2000). Steeping Towards Sustainable Business: an Evaluation of Waste Minimization Practices in US Manufacturing. *Interface, 30*(3): 104-127.

Coben, R. (1995). Vietnam Forecasts need for $9 billion in investment to handle tourism boom. *Journal of Commerce and Commercial, 406*(28608): 5A.

Costanza, R., & Wainger, L. (1991). Ecological Economics. *Business Economics*.

Couch, G., Hoffman, J. J., & Lamont, B. (1995). The Effect of Firm Survival Situations on Managerial Ethics. *Journal of Employment Counseling, 32*(2).

CST. (2003, 2003). *Protecting the Paradise: Costa Rica Sustainable Tourism Program*. Department of Natural Resources of Costa Rica Tourist Board and the Costa Rica National Accreditation Commission. Retrieved Jan 10th, 2003, from the World Wide Web: http://www.turismo-sostenible.co.cr

Daly, G. C., & Ehrlich, P. R. (1996). Socioeconomic equity, sustainability, and Earth's carrying capacity. *Ecological Application, 6*: 991- 1001.

Damanpour, F. (1991). Organizational Innovation: a Meta-analysis of Effects of Determinants and Moderators. *Academy of Management Journal, 34*(3): 555-590.

Damanpour, F., & Evan, W. M. (1984). Organizational Innovation and Performance: The Problem of Organizational Lag. *Administrative Science Quarterly, 29*: 392-409.

Dasgupta, P., Levin, S., & Lubchenco, J. (2000). Economic Pathway to Ecological Sustainability. *BioScience, 50*(4): 339- 351.

deKadt, E. (1979). *Tourism- passport to development?* New York: Oxford University Press.

Delbecq, A. L., Ven, A. H. V. d., & Gustafson, D. H. (1975). *Group Techniques for Program Planning: a Guide to Nominal Group and Delphi Processes*. Glenview, Illinois: Scott, Foresman and Company.

DeVellis, R. F. (1991). *Scale Development - Theory and Application* (Vol. 26). Newbury Park, California: SAGE Publications, Inc.

Dewhurst, H., & Thomas, R. (2003). Encouraging Sustainable Business Practices in a Non-regulatory Environment: A Case Study of Small Tourism Firms in a UK National Park. *Journal of Sustainable Tourism, 11*(5): 383-403.

Dey, E. L. (1997). Working with Low Survey Response Rates: The Efficacy of Weighting Adjustment. *Research in Higher Education, 38*(2): 215-227.

Dinh, H. T. (2003). Social Sciences and Biodiversity- Connections between the Global and the Local in Vietnam. *International Social Science Journal, 55*(4): 577-581.

Do, M. (1996, 6/28-7/1/1996). *Political Reports of the Vietnamese Communist Party's Secretary General.* Paper presented at the 8th Vietnam National Party Congress of the Communist Party, Hanoi, Vietnam.

Downs, G. W., & Mohr, L. B. (1976). Conceptual Issues in the Study of Innovations. *Administrative Science Quarterly, 21*: 700-714.

EIU. (1999). *Vietnam - Country Profile* (Two years Project 1356-4145). London: The Economist Intelligence Unit.

Ellis, C. (1995). *Vietnam- Culture Shock! - A guide to customs and etiquette.* Portland: Graphic Art Center Publishing Company.

Enz, C. A., & Siguaw, J. A. (1999). Best Hotel Environmental Practices. *Cornell Hotel and Restaurant Administration Quarterly, 40*(5): 72.

ESS. (1999). *Saskatchewan Ecotourism Accreditation Program*. The Ecotourism Society of Saskatchewan. Retrieved, from the World Wide Web: www.ecotourism.sk.ca

Esty, D., & Porter, M. (1998). Industrial Ecology and Competitiveness: Strategic Implications for the Firm. *Journal of Industrial Ecology, 2*(1): 35-43.

Fahy, J. (2000). The Resource-based View of the Firm: Some Stumbling-blocks on the Road to Understanding Sustainable Competitive Advantage. *Journal of European Industrial Training, 24*(2): 94-104.

Farber, S. (1991). Local and global incentives for sustainability: failures in economic system. In R. Costanza (Ed.), *Ecological economics: the science and management of sustainability* (pp. 344-354). New York: Columbia University Press.

Farrell, B. H. (1977). *The social and economic impact of tourism on pacific Communities*. Santa Cruz: University of California- Santa Cruz Center for South Pacific Studies.

Fennel, D. A. (2002). *Ecotourism- an Introduction*. New York: Routledge - Taylor and Francis Group.

Fiol, C. M. (2001). Revisiting an identity- based view of sustainable competitive advantage. *Journal of Management, 27*: 691-699.

Gatto, M., & Leo, G. A. d. (2000). Pricing Biodiversity and Ecosystem Services: The never-ending story. *BioScience, 50*(4): 347- 355.

Gee, C. Y., Makens, J. C., & Choy, D. J. (1989). *The travel industry* (2nd ed.). New York: Van Nostrand Reinhold.

Gil, M. J. A., Jimenez, J. B., & Lorente, J. J. C. (2001). An Analysis of Environmental Management, Organizational Context and Performance of Spanish Hotels. *Omega- The International Journal of Management Science, 29*: 457 -471.

Gopalakrishnan, S., Wischnevsky, J. D., & Damanpour, F. (2003). A Multilevel Analysis of Factors Influencing the Adoption of Internet Banking. *Transactions on Engineering Management, 50*(4): 413-426.

Gun, C. A. (1988). *Tourism Planning* (2nd ed.). New York: Taylor and Francis.

Hackett, S. (1998). *Environmental and natural resources economics: theory, policy and the sustainable society*: M.E. Sharpe.

Haley, U. C. V., & Haley, G. T. (1997). When the Tourists Flew in: Strategic Implications of Foreign Direct Investment in Vietnam's Tourism Industry. *Management Decision, 355*(8): 595-604.

Hall, C. M., & Jenkins, J. M. (1995). *Tourism and Public Policy*. London and New York: Rouledge.

Hansen, O. E., Sondergard, B., & Meredith, S. (2002). Environmental Innovations in Small and Medium Sized Enterprises. *Technology Analysis and Strategic Management, 14*(1): 37-56.

Hoang, V. (1998). *Travel and Tourism Services* (Marketing report). Hanoi: The U.S. Commercial Service in Hanoi, Vietnam.

Hoffman, A. (2000a). Integrating Environmental and Social Issues into Corporate Practice. *Environment, 42*(5): 22-33.

Hoffman, A. (2000b). Integrating environmental and social issues into corporate practice. *Environment, 42*(5): 22-33.

Honey, M. (1999). *Ecotourism and Sustainable Development: Who owns paradise?* Washington, D.C.: Inland Press.

Honey, M. S. (1999). *Ecotourism and Sustainable Development: Who Owns Paradise?* Washington D.C.: Inland Press.

Horobin, H., & Long, J. (1996). Sustainable Tourism: The Role of Small Firm. *International Journal of Contemporary Hospitality Management, 8*(5): 15-19.

Hull, J. S. (2002). A Vision for Ecotourism on the Lower North Shore of Quebec. *Téoros, 21*(3): 50-56.

Hurley, R. F., & Hult, G. T. M. (1998). Innovation, Market Orientation, and Organizational Learning: An Integration and Empirical Examination. *Journal of Marketing, 62*: 42-54.

Jaworski, B., & Kohli, A. (1993). Market Orientation: Antecedents and Consequences. *Journal of Marketing, 57*: 53-70.

Jepson Jr., E. J. (2001). Sustainability and Planning: Diverse Concepts and Close Associations. *Journal of Planning Literature, 15*(4): 499-510.

Karagozoglu, N., & Lindell, M. (2000). Environmental Management: Testing the Win-Win Model. *Journal of Environment Planning and Management, 43*(6): 817-829.

Kassinis, G. I. (2001). Locations, Networks and Firm Environmental Management Practices. *Journal of Environmental Planning and Management, 44*(6): 815-832.

Kearns, K. P. (1992). Innovations in local governments: a sociocognitive network approach. *Knowledge and Policy, 5*(2): 45-67.

Kinsley, M. (1995). Sustainable Development. *Public Management, 76*(10): 6- 9.

Kocis, S. M. (1986). *The Adoption and Diffusion Methods for Estimating Recreation Use in the Pacific Northwest Region of the U.S. Forest Service.* Unpublished Master Thesis, University of Idaho, Moscow.

Kotler, P., John, B., & Makens, J. C. (2003). *Marketing for Hospitality and Tourism* (3 ed.). Upper Saddle River, New Jersey: Prentice Hall.

Lele, S. M. (1991). Sustainable Development: A Critical Review. *World Development, 19*(6): 607-621.

Lele, S. M. (1991). Sustainable development: A critical review. *World Development, 19*(6): 607-621.

Lindsey, G., & Holmes, A. (2002). Tourist Support for Marine Protection in Nha Trang, Vietnam. *Journal of Environmental Planning and Management, 45*(4): 461-480.

Liu, Z. (2003). Sustainable Tourism Development: A Critique. *Journal of Sustainable Tourism, 11*(6): 459-475.

Lockett, A., & Thompson, S. (2001). The Resource - based View and Economics. *Journal of Management, 27*: 723- 754.

Lundberg, D. E. (1990). *The Tourist Business* (6th ed.). New York: Van Nostrand Reinhold.

Lux, K. (2003). The Failure of the Profit Motive. *Ecological Economics, 44*: 1-9.

Luzaz, E. J., & Cosse, K. J. (1998a). Willingness to Pay or Intention to Pay: The Attitude-behavior Relationship in Contingent Valuation. *The Journal of Socio-Economics, 27*(3): 427-445.

Luzaz, E. J., & Cosse, K. J. (1998b). Willingness to pay or intention to pay: The attitude-behavior relationship in contingent valuation. *The Journal of Socio- Economics, 27*(3): 427-445.

Mahoney, J. T. (2001). A Resource- based Theory of Sustainable Rents. *Journal of Management, 27*: 651-660.

Marris, G., Allcock, A., & Sipaseuth, K. (2003). Managing Tourism in the Protected Areas of the Lower Mekong Region. *Parks- Protected Areas as Engines for Development, 13*(3): 23-35.

Martinez-Ros, E., & Labeaga, J. M. (2002). The Relationship Between Firm Size and Innovation Activity: a Double Decision Approach and an Application to Spanish Manufacturing Firms. *Economic Innovation New Technology, 11*(1): 35-50.

Martins, C. B. M. J., Steil, A. V., & Todesco, J. L. (2004). Factors Influencing the Adoption of the Internet as a Teaching Tool at Foreign Language School. *Computers and Education, 42*: 353-374.

Mbaiwa, J. E. (2003). The Socio-Economic and Environmental Impacts of Tourism Development on the Okavango Delta, North-western Botswana. *Journal of Arid Environment, 54*: 447-467.

McCabe, D. (1987). Buying Group Structure: Constriction at the Top. *Journal of Marketing, 51*: 89-98.

McDonnald, M. (2000, Sunday, September 17, 2000). Ho Chi Minh highway headache. *San Jose Mercury News,* pp. 1A, 20A.

McIntosh, R. W., & Goeldner, C. R. (1990). *Tourism: Principles, Practices, Philosophies* (6th ed.). New York: John Wiley.

Metzger, T., & McEwen, D. (1999). Measurement of Environmental Sensitivity. *Journal of Environmental Education, 30*(4): 38.

Middleton, V. T. C., & Hawkins, R. (1998). *Sustainable Tourism: A Marketing Perspective.* Oxford: Butterworth-Heinemann.

Milburn, N., Gary, L. E., Booth, J. A., & Brown, D. (1991). Conducting Epidemiological Research in a Minority Community. *Journal of Community Psychology, 21*(6): 747-773.

Miles, R. E., & Snow, C. C. (1978). *Organizational Strategy Structure, and Process*. New York: McGraw-Hill Book Company.

Miller, G. A. (2003). Consumerism in Sustainable Tourism: A Survey of UK Consumers. *Journal of Sustainable Tourism, 11*(1): 17-39.

Mody, A., & Wheeler, D. (1987). Toward a vanishing middle: Competition in the World Garment Industry. *World Development, 15*: 1269-1284.

Mowforth, M., & Munt, I. (1998). *Tourism and Sustainability: new tourism in the Third World.* New York: Routledge.

Murphy, P. E. (1985). *Tourism: A Community Approach.* New York: Methuen.

Nature and Ecotourism Accreditation Program (2003, 2003). Ecotourism Australia. Retrieved Jan 10, 2003, from the World Wide Web: http://www.ecotourism.org.au

NEAP. (2003, 2003). *Nature and Ecotourism Accreditation Program.* Ecotourism Australia. Retrieved Jan 10, 2003, from the World Wide Web: http://www.ecotourism.org.au

Nelson, J. G., Butler, R., & Wall, G. (Eds.). (1999). *Tourism and Sustainable Development: A Civic Approach* (2 ed. Vol. 2). University of Waterloo: Heritage Resource Centre.

Neto, F. (2003). A New Approach to Sustainable Tourism Development: Moving Beyond Environmental Protection. *Natural Resources Forum, 27*: 212-222.

Nguyen, T. (2000). *Who is responsible for environmental degradation in Vietnam?* [Internet]. Vietnam Datacommunication Company. Retrieved 12/13/00, 2000, from the World Wide Web: http://home.vnn.vn/chuyen_de

Nijkamp, P., Rodenburg, C. A., & Verhoef, E. T. (1999). The Adoption and Diffusion of Environmentally Friendly Technologies Among Firms. *Journal of Technology Management, 17*(4): 421-437.

Nitze, W. A. (1993). The Economic Case for Sustainable Development. *Issues in Science and Technology, 9*(4): 29- 32.

Norgaard, R. B. (2000). Ecological Economics. *BioScience, 50*(4): 291.

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

O'Hara, S. U. (1995). Sustainability: social and ecological dimensions. *Review of Social Economy, 54*(4): 529- 551.

Okumus, F., & Hemmington, N. (1998). Barriers and Resistance to Change in Hotel Firms: an Investigation at Unit Level. *International Journal of Contemporary Hospitality Management, 10*(7): 283-288.

O'Rourke, D. (1995). Economics, Environment, and Equity: Policy Integration During Development in Vietnam. *Berkeley Planning Journal, 10*: 15-35.

O'Rourke, D. (1995). Economics, Environment, and Equity: Policy integration during development in Vietnam. *Berkeley Planning Journal, 10*: 15-35.

O'Rourke, D. (2001a). Motivating a Conflicted Environmental State: Community-driven regulation in Vietnam.

O'Rourke, D. (2001b). Motivating A Conflicted Environmental State: Community-Driven Regulation in Vietnam. In P. B. Evans (Ed.), *Livable Cities: The Politics of Urban Livelihood and Sustainability*. Berkeley: University of California Press.

Ozsomer, A., Calantone, R. J., & Benedetto, A. D. (1997). What Makes Firms More Innovative? A Look at Organizational and Environmental Factors. *Journal of Business and Industrial Marketing, 12*(6): 400-416.

Padel, S. (2001). Conversion to Organic Farming: A Typical Example of the Diffusion of Innovation? *Sociologia Ruralis, 41*(1): 40-61.

Parikh, J. K., & Parikh, K. S. (1998). Valuing environment in developing countries: a challenge. In P. Bartelmus (Ed.), *Environmental Accounting in Theory and Practice* (pp. 321- 335). Great Britain: Kluwer Academic Publishers.

Peters, M. (1969). *International Tourism*. London: Hutchinson.

Pham, T. L. (1997, 22-23 May 1997). *The Ecotourism in Vietnam: Perspective and Challenges*. Paper presented at the International Conference on Sustainable Tourism in Vietnam, Hue, Vietnam.

Phillips, R. (2003). *Stakeholder Theory and Organizational Ethics*. San Francisco: Berrett-Koehler Publishers, Inc.

Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance.* New York: Free Press.

Protecting Paradise: Certification Programs for Sustainable Tourism and Ecotourism (June 2002). [Report]. The Institute for Policy Studies. Retrieved January 6, 2003, from the World Wide Web: http://ips-dc.org/ecotourism/protectingparadise/

Ramus, C. A. (2001). Organizational Support for Employees: Encouraging Creative Ideas for Environmental Sustainability. *California Management Review, 43*(3): 85-104.

Rangel, J. R. (2000). *Does it pay to be green in the developing world? Participation in Costa Rican Voluntary environmental program and its impact on hotels' competitive advantage.* Unpublished Doctoral Dissertation, Duke University.

Ravichandran, T. (1999). Redefining Organizational Innovation: Towards Theoretical Advancement. *Journal of High Technology Management Research, 10*(2): 243(232p).

Reinhardt, F. (2000). Sustainability and the Firm. *Interface, 30*(3): 26-41.

Ringer, G. (2002). Convicts and Conservation: Con Dao National Park, Vietnam. In R. Harris & T. Griffin & P. Williams (Eds.), *Sustainable Tourism: A Global Perspective* (pp. 221-237). New York: Butterworth- Heinemann.

Rivera, J. (2002). Assessing a voluntary environmental initiative in the developing world: The Costa Rican Certification for Sustainable Tourism. *Political Science, 35*(4): 333.

Rivera, J. (2004). Institutional Pressures and Voluntary Environmental Behavior in Developing Countries: Evidence From the Costa Rican Hotel Industry. *Society and Natural Resources, 17*: 779-797.

Rogers, E. M. (1995). *Diffusion of Innovations* (4th ed.). New York: The Free Press.

Rogers, E. M. (2003). *Diffusion of Innovations* (5th ed.). New York: Free Press.

Rogers, E. M. (2004). A Prospective and Retrospective Look at the Diffusion Model. *Journal of Health Communication, 9*: 13-19.

Salant, P., & Dillman, D. A. (1994). *How to Conduct Your Own Survey*. U.S.: John Wiley and Sons, Inc.

Sasao, T. (1994). Using Surname-based Telephone Survey Methodology in Asian-American Communities: Practical Issues and Caveats. *Journal of Community Psychology, 22*: 283-295.

Schwepker, C. H., & Cornwell, T. B. (1991). An Examination of Ecological Concerned Consumers and Their Intention to Purchase Ecologically Packaged Products. *Journal of Public Policy and Marketing, 10*(2): 77-101.

Sheaffer, R. L., Mendenhall, W., & Ott, R. L. (1996). *Elementary Survey Sampling* (5th ed.). Belmont: Duxbury Press.

Shook, S. R. (1997). *Innovation and the U.S. Residential Construction Industry: An Integrated Model of Determinants of Firm Innovativeness for Engineered Wood Products.* Unpublished Doctorate Dissertation, University of Washington, Seattle.

Smith, R. A. (1998). Sustainable Tourism in Vietnam. *Annals of Tourism Research, 25*(3): 765-767.

Smith, V. L. (1977). *Hosts and Guests: The anthropology of tourism.* Philadelphia: University of Pennsylvania Press.

Soderbaum, P. (2000). Business Companies, Institutional Change and ecological sustainability. *Journal of Economic Issues, XXXIV*(2): 435- 443.

Spector, P. E. (1992). *Summated Rating Scale Construction* (Vol. 82). Newbury Park: Sage Publications, Inc.

Srivastava, R. K., Fahey, L., & Christensen, H. K. (2001). The Resource-based View and Marketing: The Role of Market-based Assets in Gaining Competitive Advantage. *Journal of Management, 27*: 777-802.

SRV: Party Congress Socioeconomic Report- Report on Socioeconomic Development Orientations and Tasks for the Five-year 1996-2000 period. (1996, July 1, 1996). Paper presented at The 8th National Party Congress of The Communist Party, Hanoi, Vietnam.

Stoop, I., A.L. (2004). Surveying Nonrespondents. *Field Methods, 16*(1): 23.

Tabak, F., & Barr, S. H. (1998). Innovation Attributes and Category Membership: Explaining Intention to Adopt Technological Innovations in Strategic Decision Making Context. *Journal of High Technology Management Research, 9*(1): 17-34.

Tourism Ordinance, Chapter 1 (1999).

Tourism Statistics (November 2002). Vietnam National Administration of Tourism. Retrieved July, 2003, from the World Wide Web: http://www.vietnamtourism.gov.com

van den Bergh, J. C. J. M., & van der Straaten, J. (Eds.). (1994). *Toward Sustainable Development: Concepts, Methods, and Policy*. Washington DC: Inland Press and International Society for Ecological Economics.

Vazques, R., Santos, M. L., & Alvarez, L. I. (2001). Market Orientation, Innovation and Competitive Strategies in Industrial Firms. *Journal of Strategic Marketing, 9*: 69-90.

Veliyath, R., & Fitzerald, E. (2000). Firm Capabilities, Business Strategies, Customer Preferences and Hypercompetitive Arenas: The sustainability of competitive advantages with implications for firm competitiveness. *CR, 10*(1): 56-82.

Venard, B. (1996). Vietnamese Distribution Channels. *International Journal of Retail and Distribution Management, 24*(4): 29-40.

Venard, B. (1998). Vietnam in Mutation: Will It Be the Next Tiger or a Future Jaguar? *Asia Pacific Journal of Management, 15*: 77-99.

Victor, P. A. (1980). Economics and the challenge of environmental issues. In H. E. Daly (Ed.), *Economics, Ecology, Ethics: Essays toward a steady- state economy* (pp. 194-214). San Francisco: W.H. Freeman and Company.

Vincent, V., & Santos, G. d. l. (1996). Improving Tourism Survey Response Rate. *Annals of Tourism Research, 23*(4): 939-940.

von Krogh, G., & Roos, J. (1995). A Perspective on Knowledge, Competence and Strategy. *Personnel Review, 24*(3): 56-76.

Vu, K. (2004, June 12th, 2004). *Cultural Tourism and Poverty Reduction.* Paper presented at the Asia-Pacific Tourism Ministerial Meeting, Hue, Vietnam.

Wall, G. (1997). Is Ecotourism sustainable? *Environmental Management, 21*(4): 483- 491.

Wejnert, B. (2002). Integrating Models of Diffusion of Innovations: A Conceptual Framework. *Annual Review Sociology, 28*: 297-326.

Wolfe, R. A. (1994). Organizational innovation review, critique and suggested research directions. *Journal of Management Studies, 31*(3): 405-431.

WTO. (2001). *The Concept of Sustainable Tourism.* World Tourism Organization. Retrieved March, 2003, from the World Wide Web: http://www.worldtourism.org/sustainable/concepts.htm

Yudelson, J. (2004). Marketing Sustainable Design Services. *Consulting-Specifying Engineer, Management Report*: 53-55.

Appendix

Appendix 1: Questionnaire for Hotel Managers

Dear Sir/ Madam,

Thank you very much for your participation in our survey. This is a cooperative study between Department of Resource Recreation and Tourism, University of Idaho, USA and the Department of Tourism and Hospitality, National Economics University, Hanoi, Vietnam. This project is aimed to promote sustainable tourism practices among businesses in Vietnam. The results of this project will be available to the public, and will be delivered to you upon request. Also, the results will be reported to the Vietnamese National Administration of Tourism for further references.

Your name, company and information in this survey will be used for academic purpose only and will be kept confidential according to restrictions of social science study. Please take a couple of minutes to complete this questionnaire.

If you have any question regarding this project, please contact

Yen Hai Le
PhD Candidate/ Research Assistant
Department of Resource Recreation and Tourism
College of Natural Resource
University of Idaho
PO BOX 441139
Moscow, Idaho 83844-1139, USA
Phone: 208-885-7911
Phone number in Vietnam: 0912315168
Email: le0127@uidaho.edu

Due to limited number of participants, your opinion is very important to us. Thank you very much for your cooperation.

Question 1: Please rate each practice using 7-point scale presented as following. Each number does not contain any specific meaning but only represents your opinion about each practice and how they if being adopted would affect your company's performance. Please circle only ONE number for each affect

Practice 1: No residual pesticides or herbicides are used in landscaping.
My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 2: Water saving equipments (low flush toilets, small sinks, low flow shower heads) are installed in all guestrooms
My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 3: Rainwater/ stormwater are collected to use in hotel whenever possible.

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 4: Automatic run-off taps are utilized.

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 5: Building forms of the hotel have to be compatible with the landscape

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 6: Native vegetation has been retained or included in landscaping the facilities.

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 7: Pathways, corridors and external areas are lit by movement sensor switchers with light off most of the time.
My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 8: Key tag switches and automatic controls (or alternatives i.e. using housekeeping staff) are used to control electric equipments in guest rooms when they are not in use.
My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 9:Usual noise levels from all activities at the site are not significantly more than the background noise in nearby natural areas or adjacent residences.
My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 10: All vehicles are required not to leave running when idle
My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 11:All air emission must meet or exceed standard/requirement

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 12: There are no offensive odors associated with air emissions.

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 13: Provide recycling bins for guest rooms.

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 14: The company actively provides financial or in-kind assistance including sending hotel staff to clean out visitors' litter or rubbish at tourist attractions.
My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 15: The company actively provides physical, financial or in-kind assistance for the rehabilitation of areas subjective to negative visitor impact

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 16: Local residents are employed in some aspect of the operation and paid a fair wage.

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 17: Some forms of briefing is delivered to customers to minimize negative impacts on the local community and its lifestyle (e.g. attire, subjects discussed or language, items that should not be touched, areas that should not be entered, places, items or people that should not be photographed in some or all situations, performance of some behaviors).

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Question 2: Have your company adopt each of above practices? Please circle only ONE answer for each practice, the meaning of each number is following

1. Yes we already adopted it
2. No, but we seriously consider adopting it within the next 5 years
3. No, we just will wait and see
4. No and we will not consider adopting it.

Practice 1: No residual pesticides or herbicides are used in landscaping.	1	2	3	4
Practice 2: Water saving equipments (low flush toilets, small sinks, low flow shower heads) are installed in all guestrooms	1	2	3	4
Practice 3: Rainwater/ stormwater are collected to use in hotel whenever possible.	1	2	3	4
Practice 4: Automatic run-off taps are utilized.	1	2	3	4
Practice 5: Building forms of the hotel have to be compatible with the landscape	1	2	3	4
Practice 6: Native vegetation has been retained or included in landscaping the facilities.	1	2	3	4
Practice 7: Pathways, corridors and external areas are lit by movement sensor switchers with light off most of the time.	1	2	3	4
Practice 8: Key tag switches and automatic controls (or alternatives i.e. using housekeeping staff) are used to control electric equipments in guest rooms when they are not in use.	1	2	3	4
Practice 9:Usual noise levels from all activities at the site are not significantly more than the background noise in nearby natural areas or adjacent residences.	1	2	3	4
Practice 10: All vehicles are required not to leave running when idle	1	2	3	4
Practice 11:All air emission must meet or exceed standard/requirement	1	2	3	4
Practice 12: There are no offensive odors associated with air emissions	1	2	3	4
Practice 13: Provide recycling bins for guest rooms	1	2	3	4
Practice 14: The company actively provides financial or in-kind assistance including sending hotel staff to clean out visitors' litter or rubbish at tourist attractions.	1	2	3	4
Practice 15: The company actively provides physical, financial or in-kind assistance for the rehabilitation of areas subjective to negative visitor impact	1	2	3	4
Practice 16: Local residents are employed in some aspect of the operation and paid a fair wage	1	2	3	4
Practice 17: Some forms of briefing is delivered to customers to minimize negative impacts on the local community and its lifestyle (e.g. attire, subjects discussed or language, items that should not be touched, areas that should not be entered, places, items or people that should not be photographed in some or all situations, performance of some behaviors)	1	2	3	4

Question 3: How many rooms does the hotel have? _____

Question 4: How many stars does the hotel have? _____

Question 5: How many employees does the hotel have?_____

Question 6: If you were to put a market value on your hotel, how much would you charge for your total assets? USD_____

Question 7: What type is your company? Please circle ONE appropriate number

1. Joint-venture (between a domestic and an international corporation)
2. 100% state-owned
3. Domestic Joint-venture (among different domestic companies)
4. 100% domestically private-owned
5. Other. Please specify_____

Question 8: *Use the scale below to indicate your opinion about each of the following statement. Please circle only ONE number*

1	2	3	4	5	6	7
Strongly disagree	Moderately disagree	Disagree	No opinion	Agree	Moderately agree	Strongly agree

1.	We are holding the environment and resources of the country in trust for future generations and we have a responsibility to pass these on in good condition.	1	2	3	4	5	6	7
2.	The fortunes of tourism and the environment are closely linked. Without a beautiful environment, tourism could not flourish and be sustained.	1	2	3	4	5	6	7
3.	The greater the attraction of a beautiful place the greater the danger that large numbers of visitors will reduce its attractiveness.	1	2	3	4	5	6	7
4.	It is relevant for tourism businesses of all sizes to encourage the development of a tourism industry which can serve the needs of both current and future generations.	1	2	3	4	5	6	7
5.	We can all respond to the need to protect the environment, for example by altering some of our everyday business activities.	1	2	3	4	5	6	7
6.	Technical innovation, based on research results is readily accepted in our organization	1	2	3	4	5	6	7
7.	Management is actively seeking innovative ideas	1	2	3	4	5	6	7
8.	People are penalized for new ideas that do not work	1	2	3	4	5	6	7
9.	Innovation in our company is perceived as too risky and is resisted	1	2	3	4	5	6	7
10.	Competition in our industry is cut throat	1	2	3	4	5	6	7
11.	Anything that one competitor can offer other can match	1	2	3	4	5	6	7
12.	Our competitors are relatively weak	1	2	3	4	5	6	7

Question 9: *Please use the scale 1 to 7 from "Highly unpredictable" to "Highly predictable" to finish following sentences. It does not matter whether your answer is right or wrong. Rather, we would like to have your honest opinion to the best of your knowledge.*

	Highly unpredictable					**Highly predictable**	
1. Customers' demand for existing product is	1	2	3	4	5	6	7
2. Customers' demand for new product is	1	2	3	4	5	6	7
3. Government regulatory agencies changes in laws or agency policy on pricing are	1	2	3	4	5	6	7
4. Government regulatory agencies changes in law or agency policy on product standard or quality is	1	2	3	4	5	6	7
5. Government regulatory agencies changes in law or agency policy on environmental standard is	1	2	3	4	5	6	7
6. Government regulatory agencies changes in law or agency policy affecting marketing and distribution methods	1	2	3	4	5	6	7
7. Government regulatory agencies changes in law or agency policy on acceptable accounting procedure is	1	2	3	4	5	6	7

Thank you very much for your cooperation

Appendix 2: Questionnaire for Tour Company Managers

Dear Sir/ Madam,

Thank you very much for your participation in our survey. This is a cooperative study between Department of Resource Recreation and Tourism, University of Idaho, USA and the Department of Tourism and Hospitality, National Economics University, Hanoi, Vietnam. This project is aimed to promote sustainable tourism practices among businesses in Vietnam. The results of this project will be available to the public, and will be delivered to you upon request. Also, the results will be reported to the Vietnamese National Administration of Tourism for further references.

Your name, company and information in this survey will be used for academic purpose only and will be kept confidential according to restrictions of social science study. Please take a couple of minutes to complete this questionnaire.

If you have any question regarding this project, please contact

Yen Hai Le
PhD Candidate/ Research Assistant
Department of Resource Recreation and Tourism
College of Natural Resource
University of Idaho
PO BOX 441139
Moscow, Idaho 83844-1139, USA
Phone: 208-885-7911
Phone number in Vietnam: 0912315168
Email: le0127@uidaho.edu

Due to limited number of participants, your opinion is very important to us. Thank you very much for your cooperation.

Question 1: Please rate each practice using 7-point scale presented as following. Each number does not contain any specific meaning but only represents your opinion about each practice and how they if being adopted would affect your company's performance. Please circle only ONE number for each affect

Practice 1: The product is based around activities that help customers to personally experience nature (observing nature, smelling fresh air, tasting foods…)

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 2:The majority (over 50%) of marketing images for the product incorporate nature as a feature or background.

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 3: The goal of interpretation service (tour guiding) is to allow customers to learn more about the natural and cultural heritage of the area they are visiting through their languages.

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 4: Interpretation is designed and planned to ensure that it is both relevant and appropriate to the target audience(s).

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 5: All operational staff who have contact with customers have a basic understanding of the natural and conservation value of the area.

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 6: All operational staff that have contact with customers are given instruction or training materials that provide information on the natural and conservation value of the area

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation

Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 7: Guides and all staff delivering interpretation are encouraged to undertake regular, relevant professional development (in-house training course, paid leave to attend course/ conferences or access to seminars/ materials provided by specialists or appropriate agencies)

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 8:Some forms of briefing is delivered to customers to minimize negative impacts on the local community and its lifestyle (e.g. attire, subjects discussed or language, items that should not be touched, areas that should not be entered, places, items or people that should not be photographed in some or all situations, performance of some behaviors)

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 9: The company actively provides physical, financial or in-kind assistance for the rehabilitation of areas subjective to negative visitor impact

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 10: The company actively sponsors for training programs on conservation practices for general public

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 11: The company does not purchase any items that are derived from rare or threatened species

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 12: Local residents are employed in some aspect of the operation and paid a fair wage

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Practice 13: Customers are encouraged to purchase locally produced mementos during their experience.

My company investment in this practice will result in

Dramatic decrease in flexible cost	1	2	3	4	5	6	7	Dramatic increase in flexible cost
Dramatic increase in sale volume	1	2	3	4	5	6	7	Dramatic decrease in sale volume
Dramatic improvement in overall financial performance	1	2	3	4	5	6	7	Dramatic decline in overall financial performance
Dramatic improvement in overall company image/reputation	1	2	3	4	5	6	7	Dramatic decline in overall company image/ reputation
Strong support from employees	1	2	3	4	5	6	7	Strong oppose from employees

This practice is

Technically simple	1	2	3	4	5	6	7	Technically complex
Easy to apply	1	2	3	4	5	6	7	Special in application
No consequential adjustment	1	2	3	4	5	6	7	Large consequential adjustment
Easy to forecast the overall effect	1	2	3	4	5	6	7	Hard to forecast overall effect

Question 2: Have your company adopt each of above practices? Please circle only ONE answer for each practice, the meaning of each number is following

5. Yes we already adopted it
6. No, but we seriously consider adopting it within the next 5 years
7. No, we just will wait and see
8. No and we will not consider adopting it.

Practice 1: The product is based around activities that help customers to personally experience nature (observing nature, smelling fresh air, tasting foods…)	1	2	3	4
Practice 2:The majority (over 50%) of marketing images for the product incorporate nature as a feature or background	1	2	3	4
Practice 3: The goal of interpretation service (tour guiding) is to allow customers to learn more about the natural and cultural heritage of the area they are visiting through their languages.	1	2	3	4
Practice 4: Interpretation is designed and planned to ensure that it is both relevant and appropriate to the target audience(s).	1	2	3	4
Practice 5: All operational staff who have contact with customers have a basic understanding of the natural and conservation value of the area.	1	2	3	4
Practice 6: All operational staff that have contact with customers are given instruction or training materials that provide information on the natural and conservation value of the area	1	2	3	4
Practice 7: Guides and all staff delivering interpretation are encouraged to undertake regular, relevant professional development (in-house training course, paid leave to attend course/ conferences or access to seminars/ materials provided by specialists or appropriate agencies)	1	2	3	4
Practice 8:Some forms of briefing is delivered to customers to minimize negative impacts on the local community and its lifestyle (e.g. attire, subjects discussed or language, items that should not be touched, areas that should not be entered, places, items or people that should not be photographed in some or all situations, performance of some behaviors)	1	2	3	4
Practice 9: The company actively provides physical, financial or in-kind assistance for the rehabilitation of areas subjective to negative visitor impact	1	2	3	4
Practice 10: The company actively sponsors for training programs on conservation practices for general public	1	2	3	4
Practice 11: The company does not purchase any items that are derived from rare or threatened species	1	2	3	4
Practice 12: Local residents are employed in some aspect of the operation and paid a fair wage	1	2	3	4
Practice 13: Customers are encouraged to purchase locally produced mementos during their experience.	1	2	3	4

Question 3: How many branches/representative does your company have (including in and outside of Vietnam)?

_____ offices

Question 4: How many employees does your company have?

_____ employees

Question 5: If you were to put a market value on your company, how much would you charge for your total assets? USD_____

Question 6: What type is your company? Please circle ONE appropriate number

6. Joint-venture (between a domestic and an international corporation)
7. 100% state-owned
8. Domestic Joint-venture (among different domestic companies)
9. 100% domestically private-owned
10. Other. Please specify_____

Question 7: *Use the scale below to indicate your opinion about each of the following statement. Please circle only ONE number*

1	2	3	4	5	6	7
Strongly disagree	Moderately disagree	Disagree	No opinion	Agree	Moderately agree	Strongly agree

13. We are holding the environment and resources of the country in trust for future generations and we have a responsibility to pass these on in good condition.	1	2	3	4	5	6	7
14. The fortunes of tourism and the environment are closely linked. Without a beautiful environment, tourism could not flourish and be sustained.	1	2	3	4	5	6	7
15. The greater the attraction of a beautiful place the greater the danger that large numbers of visitors will reduce its attractiveness.	1	2	3	4	5	6	7
16. It is relevant for tourism businesses of all sizes to encourage the development of a tourism industry which can serve the needs of both current and future generations.	1	2	3	4	5	6	7
17. We can all respond to the need to protect the environment, for example by altering some of our everyday business activities.	1	2	3	4	5	6	7
18. Technical innovation, based on research results is readily accepted in our organization	1	2	3	4	5	6	7
19. Management is actively seeking innovative ideas	1	2	3	4	5	6	7
20. People are penalized for new ideas that do not work	1	2	3	4	5	6	7
21. Innovation in our company is perceived as too risky and is resisted	1	2	3	4	5	6	7
22. Competition in our industry is cut throat	1	2	3	4	5	6	7
23. Anything that one competitor can offer other can match	1	2	3	4	5	6	7
24. Our competitors are relatively weak	1	2	3	4	5	6	7

Question 8: *Please use the scale 1 to 7 from "Highly unpredictable" to "Highly predictable" to finish following sentences. It does not matter whether your answer is right or wrong. Rather, we would like to have your honest opinion to the best of your knowledge.*

	Highly unpredictable						**Highly predictable**
1. Customers' demand for existing product is	1	2	3	4	5	6	7
2. Customers' demand for new product is	1	2	3	4	5	6	7
3. Government regulatory agencies changes in laws or agency policy on pricing are	1	2	3	4	5	6	7
4. Government regulatory agencies changes in law or agency policy on product standard or quality is	1	2	3	4	5	6	7
5. Government regulatory agencies changes in law or agency policy on environmental standard is	1	2	3	4	5	6	7
6. Government regulatory agencies changes in law or agency policy affecting marketing and distribution methods	1	2	3	4	5	6	7
7. Government regulatory agencies changes in law or agency policy on acceptable accounting procedure is	1	2	3	4	5	6	7

Thank you very much for your cooperation