

THE INTENTION TO PURCHASE A NIGHT'S STAY IN A HOTEL:
AN EMPIRICAL TEST OF THE HINES' MODEL OF
RESPONSIBLE ENVIRONMENTAL BEHAVIOR

by

Mary Elizabeth Gustin

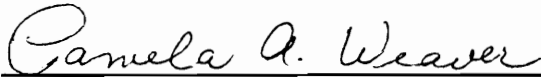
Dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

in

Hotel, Restaurant and Institutional Management

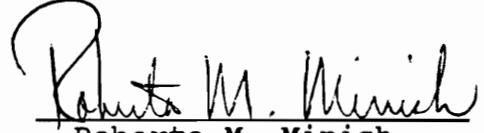
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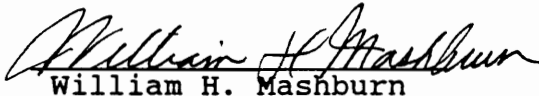
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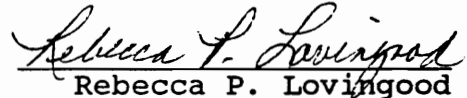
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by

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(ABSTRACT)

This study was approached with a desire to move forward the body of knowledge concerning environmental research as it pertains to the hospitality industry. The endeavor was undertaken with the belief that concern and awareness about the environment is not a passing fad but a fundamental shift in society. In order for any business to survive it must keep up with changes and meet the demands of consumers. The research efforts in this study were aimed at establishing the validity and reliability of a consumer behavior model specifically related to environmental behavior.

The purpose of this dissertation was to evaluate a consumer's intention to stay in a hotel based on the environmental strategies used by that hotel. Hines (1984) developed a conceptual environmental consumer behavior model based on a meta-analysis of literature on environmentally responsible behavior. Hines' conceptual Model of Responsible Environmental Behavior utilized knowledge, abilities, attitudes, personal responsibility and locus of control to predict environmental behavior. The goal of this study was to

empirically test an adapted version of Hines' Model of Responsible Environmental Behavior. This adapted version utilized knowledge, attitudes and perceived self-efficacy to predict consumers' intentions to purchase a night's stay in a hotel.

Canonical correlation analysis was used to test the relationship between intention and each of the variables (knowledge, attitudes and perceived self-efficacy) in Hines' model. The multivariate test of significance revealed that each variable had a positive relationship to intention to purchase. The Hines' Model of Responsible Environmental Behavior was more useful in predicting consumers' intention to purchase a night's stay in a particular hotel than each variable individually. The model tested in this study has laid the foundation for developing a sound environmentally responsible consumer behavior model. The research findings suggest that a hotel implementing environmental strategies can increase business for that hotel.

Acknowledgements

First, I would like to acknowledge my parents, Fred and Mary Jo Gustin, for the support and understanding extended to me over the past four years. The person that I am today would not have been possible without these two wonderful influences in my life. My parents have provided me with the freedom and ability to achieve the goals and accomplishments I have reached today. Thank you for always believing in me.

I would like to acknowledge the contributions of Pamela A. Weaver, my committee chair, mentor and most importantly my friend. She has provided me with skills, support, tremendous hours of tedious work and unfaltering faith in my abilities to achieve the final goal. The relationship established between Pam and me is one of the most valuable aspects gained through this process. Thank you for going beyond the expected role of committee chair.

I would like to acknowledge Ken McCleary for the wisdom of hospitality marketing passed on to me. My endeavors into marketing during an independent study with Ken have provided me with a discipline that I will continue to explore. Thank you for your support and advice given to me over the past four years.

I would like to thank Roberta Minish for the support and advice shared with me during the past two years. I have had

the pleasure of not only working with her as a committee member but also teaching HTM 1414. It is a pleasure to work with such a remarkable person. Thank you for showing me the proper road to follow as a professional in academia.

I would also like to thank Rebecca Lovingood for your sound advice and guidance in fine tuning the works of my research. Your wisdom in the area of energy management and the guidelines needed to properly complete my dissertation are greatly appreciated. Thank you for all your support and advice.

I would also like to thank Bill Mashburn for introducing me to the area of energy management through a week long workshop in North Carolina and an independent study. Your expert knowledge in the area of energy management has been of great value to the completion of this research. It has been a pleasure to work with such a kind and wise person.

I would also like to thank Richard Rich for believing in my research and providing me with numerous hours of discussion and guidance. The books, articles and research documents passed on to me have greatly enhanced the quality of my research. Thank you for caring about the environment as much as I do and being such a generous person.

Libby Gustin

Blacksburg, Virginia
April 1994

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CHAPTER I

INTRODUCTION

While to some businesses this attitude [insistence that business act environmentally responsibly] may be seen as an obstacle to financial growth and stability, it is in fact a tremendous opportunity not only to reshape the nature of the relationship between business and community, but it is also a tremendous opportunity for businesses to assert leadership in the environmental movement, thereby positioning themselves to earn both the trust of the public and the increased profits that will surely result from that trust. (Bobrow & Fritz, 1991, p. 8)

Man's relationship with the environment surfaced as a national issue in 1970 when Earth Day was officially established. More than two decades later, the environmental movement has not only affected lives at a personal level but has infiltrated the business arena. By 1990, public concern for environmental quality had reached unprecedented levels (Dunlap & Mertig, 1992) and now this grass roots movement is calling for proactive responses from businesses (Magrath, 1992).

In order to attract and maintain consumers effectively,

a business must anticipate the needs and desires of consumers. With the resurgence of grass roots activism (Grover, 1989), especially the environmental movement, it becomes important to determine the role environmental issues play in consumers' purchasing decisions. The purpose of this dissertation was to evaluate the impact of the environmental strategies employed by a company on an individual's decision to purchase a company's product. Specifically, the present study evaluated a consumer's intention to stay in a hotel based on the environmental strategies used by that hotel.

This chapter will briefly describe the basic concepts used in the study, the significance of the current research and the problem statement. The scope and method of the study are outlined. In conclusion, this chapter will describe the plan of the dissertation.

Understanding Behavior

In consumer research, much attention has been given to Fishbein's Behavioral Intentions Model (FBI), which is based on the theory of reasoned action. The FBI model has been used extensively in consumer research to help understand a variety of behaviors. Like the FBI model, the Hines Model of Responsible Environmental Behavior (1984) was developed to help understand consumer behavior. Hines' model is a conceptual model developed for the specific purpose of

investigating consumer behavior in regard to the environment. Since Hines' developed her model specifically to explain or predict environmental behavior, it was explored thoroughly. Although the FBI model was not developed specifically for environmental behavior, it laid the foundation for understanding consumer behavior and therefore was also explored.

The Fishbein Behavioral Intentions Model (1980) is an empirically tested consumer behavior model that has been used in research across an extensive number of academic fields (McArdle, 1972; Fishbein & Coombs, 1974; Davidson & Jaccard, 1975; and Beatty and Kahle, 1988). The FBI Model has been used to explain behavior related to the environment (Olsen, 1981; Seligman, Kriss, Darley, Fazio, Becker, & Pryor, 1979; McGuinness, Jones, & Cole, 1977; Macey & Brown, 1983; Bowman & Fishbein, 1978). The majority of these studies suggested that the FBI Model requires additional variables to explain environmental behavior. The results of these studies are discussed in the literature review section.

The Hines Model of Responsible Environmental Behavior is a conceptual model developed to predict a consumer's intention toward environmental behavior (Hines, Hungerford, & Tomera, 1987). Consumers' abilities and desires toward the ecological environment are the main categories of variables hypothesized to affect a consumer's purchase intention. An adapted version

of Hines' model was tested, using knowledge, attitudes and locus of control as the predicting variables. Each of these models and the hypothesized relationship among the variables are delineated.

The Theory of Reasoned Action

Predicting and understanding human behavior is the goal of the theory of reasoned action. In order to determine a human's intentions, Fishbein and Ajzen extended Dulany's (1968) theory of propositional control into the theory of reasoned action (TORA).

Dulany's (1968) theory relies on specific actions and situations to predict behavioral intention. Specifically, Dulany's theory predicts behavioral intention by summing the multiplicative of the reinforcement hypothesis and the behavioral hypothesis. The reinforcement hypothesis was the degree to which an individual thinks a specific response will lead to reinforcement or reward multiplied by the value the individual places on the reward. The behavioral hypothesis was the degree to which the individual believes a particular behavior was expected by someone else multiplied by the degree of the individual's desire to conform. Fishbein extended Dulany's empirical research, which was conducted as laboratory experiments, to social psychology.

According to the theory of reasoned action, a human's

intentions, which are functions of attitude and subjective norms, determine behavior (Fishbein & Ajzen, 1980). Attitudes and subjective norms are a function of beliefs.

The theory of reasoned action is based on the assumption that human beings are rational, make systematic use of information available to them, and exert volitional control over their socially relevant actions (Ajzen & Fishbein, 1980). As shown in Figure 1.1, Fishbein's Behavioral Intentions Model conceptualizes the theory of reasoned action. (See Figure 1.1.) The consumer's attitude toward the environment and social referents are the variables used in this model to predict purchase intention. The theory and model will be discussed in detail in the literature review section.

Hines' Model of Responsible Environmental Behavior

Hines' Model of Responsible Environmental Behavior was developed from a meta-analysis of environmental behavior research (Hines, 1984). As shown in Figure 1.2, the environmental behavior research suggests that intention to act is an artifact of a number of variables. (See Figure 1.2.)

According to Hines' Model, personality factors, knowledge of issues, knowledge of action strategies, and action skills are directly related to intention to act. These variables can

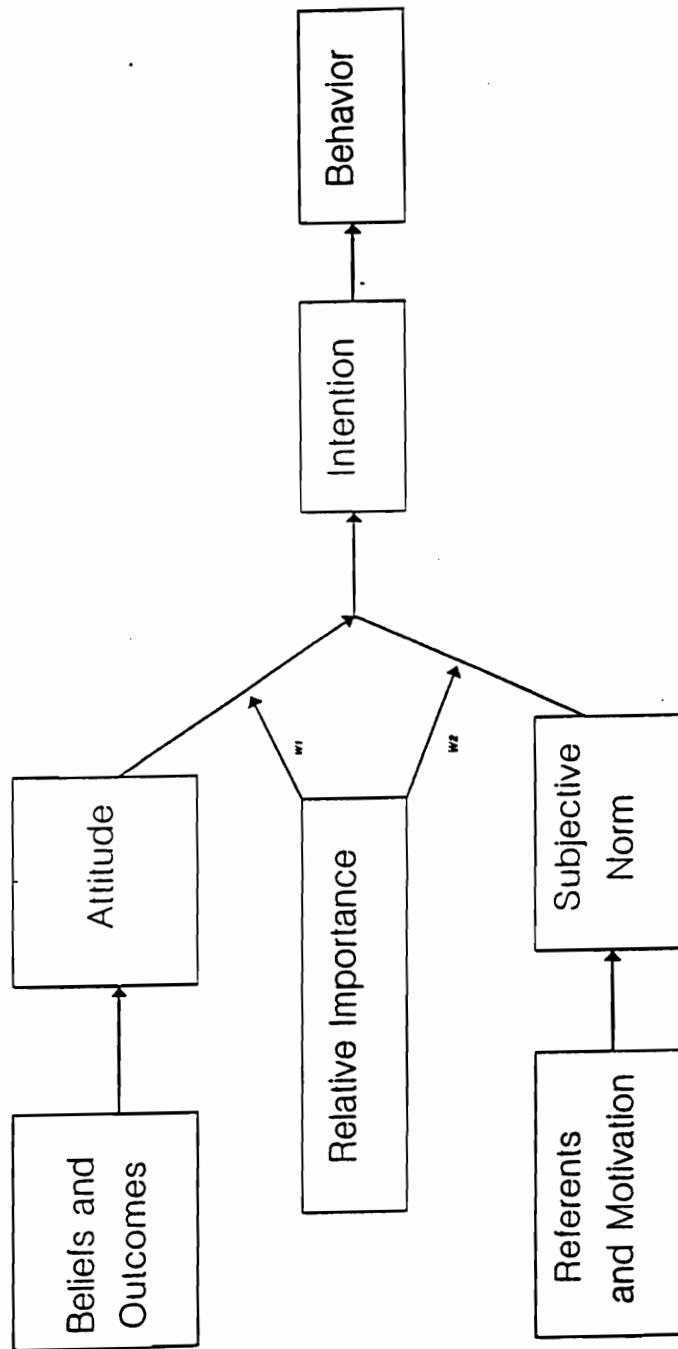


Figure 1.1: Fishbein Behavioral Intentions Model (Ajzen & Fishbein, 1980)

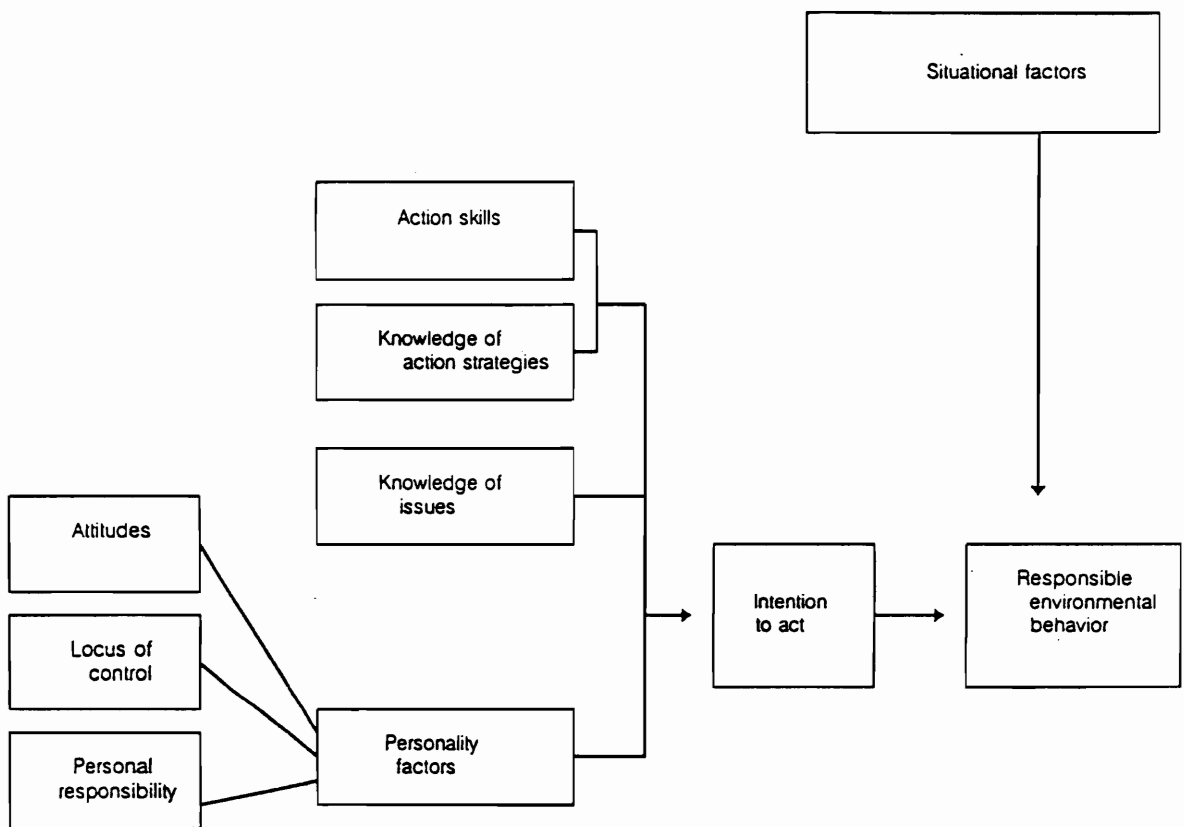


Figure 1.2: Hines' Model of Responsible Environmental Behavior (Hines, 1984)

be grouped into abilities (knowledge and skill variables) and desires (personality variables). Abilities must be present for the behavior to take place, but abilities alone do not lead to action. The desire to act must also be present. The role of situational factors (e.g., economic constraints, social pressures) represented in the model could either counteract or strengthen the direct variables in the model.

As shown in Figure 1.3, Hungerford & Volk (1990) developed a behavior flow chart based on Hines' Model. (See Figure 1.3.) The flow chart divides the variables that predict environmental behavior into three categories: entry-level, ownership, and empowerment. The variables in each of these three categories are broken down into major and minor variables. The flow chart classifies the variables in Hines' Model. The classifications contribute clarity to the model by illustrating the magnitude of the variables.

Variables from the Hines' Model Used in the Present Study

Knowledge of ecology and locus of control were the variables used in the adapted Hines' model. The term perceived self-efficacy was used in the present study to refer to Hines' measure of the construct locus of control. In Hines' model the construct locus of control was developed from studies on both personal efficacy and locus of control. Hines interpreted the variables of locus of control and efficacy, as

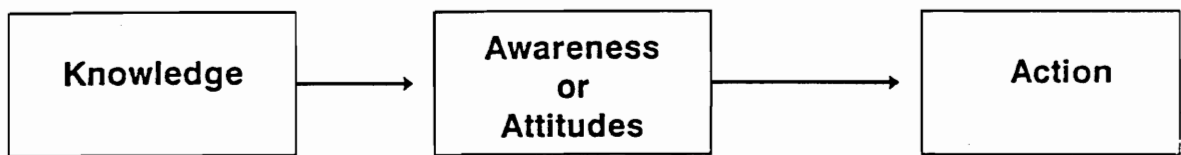


Figure 1.3: Behavior Flow Chart (Hungerford and Volk, 1990)

measuring the same construct.

Knowledge

As shown in Figure 1.4, the behavioral change system requires knowledge as a basic component of an action (Hungerford & Volk, 1990). According to the model in Hungerford and Volk (1990), behavior is linked to the following assumption, "If we make human beings more knowledgeable, they will, in turn, become more aware of the environment and its problems and, thus, be more motivated to act toward the environment in more responsible ways" (p.9). This suggests that before a consumer will have any intention to act (as shown in the behavioral model) a base of knowledge must exist. Therefore, an assessment of a consumer's knowledge base concerning the environment is a critical component to determine if individuals have the appropriate decision making tools to make an environmentally responsible purchase decision. In the current study, knowledge consisted of a measurement of an individual's knowledge of environmental issues.

Knowledge of action strategies was omitted because the hotel will be developing the action strategies. Knowledge of action skills was not incorporated into the model for this study because the hotel would be responsible for setting up the action plans. In this case, the consumer's decision to participate is no longer a function of their action skills.

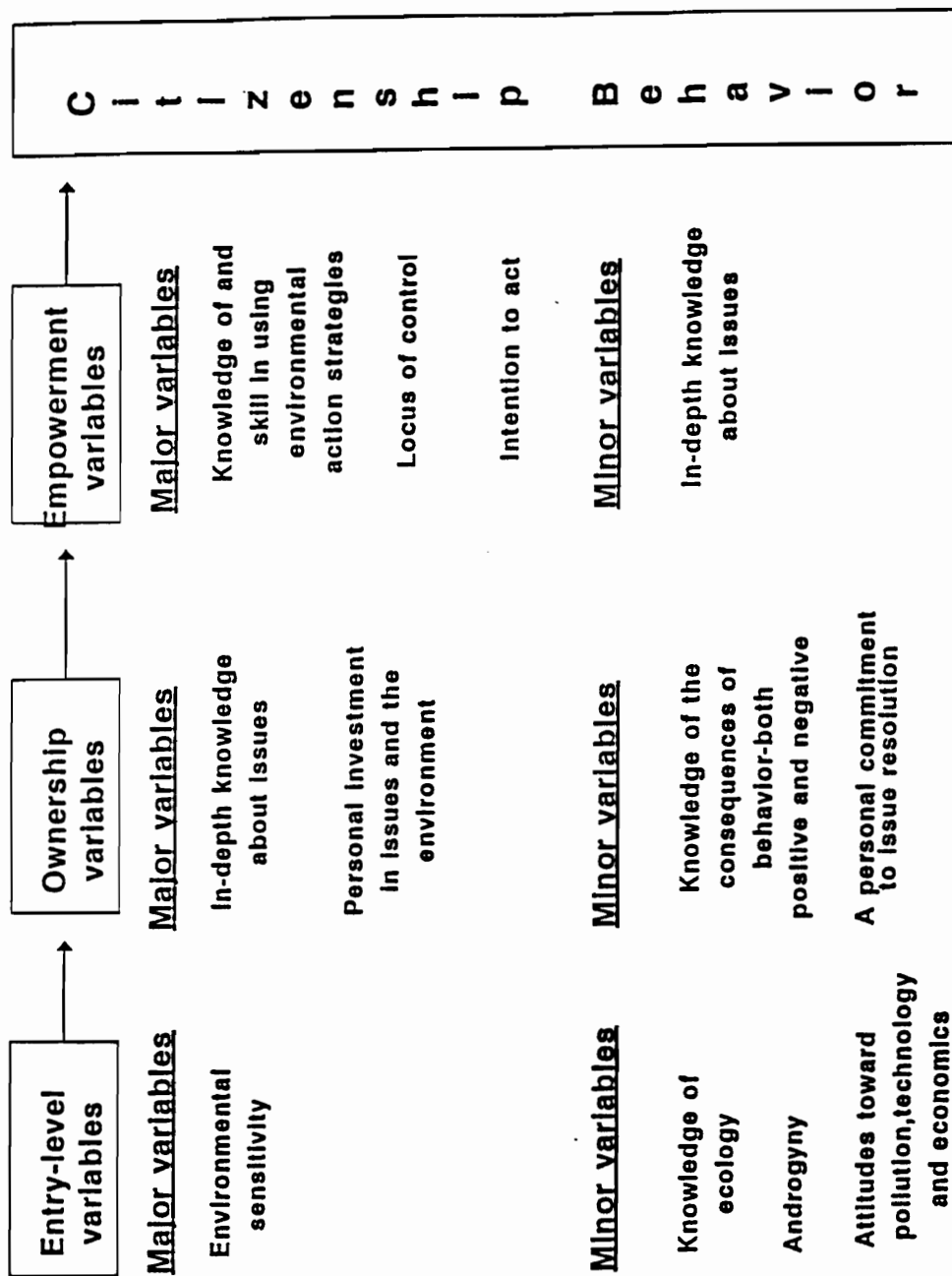


Figure 1.4: Behavioral Change System (Hungerford and Volk, 1990)

Therefore, the interest in this study was to determine if the consumer had enough knowledge about the environment to make a purchase decision based on the hotel's environmental strategies.

Perceived Self-Efficacy

Perceived Self-Efficacy (locus of control) is an empowerment variable in the behavioral flow chart. Empowerment variables give human beings the sense that they can make changes and help solve environmental issues (Hungerford & Volk, 1990). Perceived Self-Efficacy is a critical variable in determining a consumer's purchase intention because without efficacy consumers will not believe that their efforts to act environmentally responsible will make a difference. Therefore, they will not engage in such behaviors.

Adapted Hines' Model

The present study tested an adapted version of the Hines' model. The following variables were utilized to predict a consumer's intention to purchase a night's stay in a hotel: attitude, knowledge, and perceived self-efficacy. According to Hines' Model, knowledge and personality factors (attitudes, locus of control, and personal responsibility) are determinants of predicting intention to act.

Definition of Major Constructs

Attitude: a person's general and enduring positive or negative feelings towards performing the behavior in question.

Knowledge: a person's cognizance of the existence of environmental issues.

Perceived Self-Efficacy: an individual's perception that their efforts to engage in a behavior will bring about a change.

Justification of Study

Consumers are demanding that government and private industry take a proactive stance to resolve environmental problems (Cummings & Cummings, 1991; Schwartz & Miller, 1991; Chase & Smith 1992; Poole, 1991). Environmental efforts for businesses are no longer a matter of altruism, correctness, or positioning but a matter of survival (Magrath, 1992).

Today consumers' concern for the environment can be seen in their purchase decisions. For example, companies such as Exxon have been boycotted by consumers for not acting environmentally responsibly. Also, consumer demand has changed the packaging efforts in the fast food industry (Liddle, 1990). However, these demands have not yet put pressure on the hotel industry. But, as consumers become more

aware of how a hotel can act environmentally responsibly, the type of pressure placed on the fast food industry, governments and other businesses will also impact the hotel industry. Hotel operators who develop a proactive environmental strategy should be in a better position than those with a reactive strategy.

Environmental practices are good business. A company that acts environmentally responsibly will increase demand, create positive public relations, and save on operating costs (Rowe, 1992; Jaquette, 1992; Kay & Saunders, 1992; Poole, 1991; Rowe, 1990). Green marketing, appealing to customer demand for goods that will not harm the environment, is a fundamental marketing shift not a passing fad ("Where is the," 1992). As can be seen in the following illustrations, environmental practices are good business.

In 1990, a study conducted by The Roper Organization and a telephone survey conducted by Greenwatch revealed that a majority of respondents (82% for the Greenwatch survey) are willing to pay 5 to 7% more for environmentally friendly products (Hume, 1991; Levin, 1990). Marriott is experiencing the benefits of consumers' willingness to pay more for environmentally friendly products. Due to high demand, Marriott doubled the number of "green rooms," hotel rooms that offer purified air and water for a \$10 premium.

The Boston Marriott conducted a guest survey in response

to the implementation of in-room water conservation strategies at their property. The survey indicated that 90 percent of the respondents were satisfied with the changes.

The Boston Park Plaza, owned by Saunders Hotel Group, conducted a survey of 1,000 of their guests to evaluate the implementation of their comprehensive environmental program. The changes (see Boston Park Plaza in the next section) were not only accepted but desired by 94% of the guests surveyed (Kay, 1993). According to Tedd Saunders, Vice President of Saunders Hotel Group, "in the past eight months, \$750,000 worth of new convention business has come to us as a direct result of our environmental program" (Sims, 1992, p.22).

Problem Statement

A consumer's concern about the environment has been targeted toward businesses that are not considered environmentally responsible. This concern has put pressure on businesses to implement environmentally conscious strategies. For example, fast food restaurants have altered the packaging of their products as a result of consumer demands. Also, to meet consumer concerns toward plastic bags, grocery stores are offering consumers a choice between plastic or paper bags. Plastic bags are not environmentally sound because they are made from a non-renewable resource, printed with a toxic metal, and are not biodegradable (Earth Works Group, 1990).

Hotels are not considered environmentally sound because of their use of disposable amenities and products, heated pools, great amounts of daily laundering, and a number of other factors which impact the environment (Rowe, 1992). According to Jim Golden, Vice President of the Energy Efficient Building Association, hotels are among the least energy efficient buildings (Maney, 1992). Since hotels are typically not considered ideal environmental organizations, it is only a matter of time before the consumer will put pressure on the hotel industry to be more environmentally conscious (Rowe, 1992).

By taking advantage of the opportunities to act environmentally responsibly, hotels will save money and reap the benefits of positive publicity. Most hotels have refrained from implementing environmental strategies because they are concerned with how these strategies will impact a consumer's decision to purchase a night's stay. Hotel operators need a way to predict a consumer's decision to purchase a night's stay in a hotel when considering environmental strategies.

The theory of reasoned action states that intentions to perform lead to behavior. The theory shows that attitude and subjective norms predict intentions. The Hines' model suggests that in addition to attitudes, knowledge and perceived self-efficacy contribute to predicting consumers'

environmental behavior. This study will address the following research questions:

1) Are attitudes toward environmental strategies in a hotel useful in predicting a consumer's intention to purchase a night's stay?

2) Is a consumer's general knowledge about the environment useful in predicting a consumer's intention to purchase a night's stay in a hotel when considering environmental strategies ?

3) Is a consumer's perceived self-efficacy toward participating in environmental strategies in a hotel useful in predicting intention to purchase a night's stay?

4) Is the adapted Hines' Model of Responsible Environmental Behavior effective in predicting a consumer's intention to purchase a night's stay in a hotel when considering environmental strategies?

Plan of the Dissertation

This dissertation will consist of five chapters. In this chapter, the idea, concept, and basic theory were introduced. Also, justification for the research and the research questions to be addressed were discussed. The second chapter will review the literature on the Fishbein Model, Hines' Model of Responsible Environmental Behavior, and environmental research pertinent to the hospitality industry. In chapter

three, the research hypotheses and the method to test the hypotheses will be discussed. The fourth chapter will be a discussion of the results obtained from the study. The last chapter (five) will summarize the findings, draw conclusions, and offer suggestions for further research.

CHAPTER II

LITERATURE REVIEW

This chapter consists of a review and synthesis of the literature relevant to Hines' Model of Responsible Environmental Behavior and environmentally responsible behavior in the hospitality industry. Because many of the components of Hines' Model were based on the theory developed in the Fishbein Behavioral Intentions Model, the FBI Model will also be reviewed. The purpose of this chapter is to identify, analyze, and integrate the theoretical underpinnings of the model used in the current study. The topics discussed in the literature review will consist of three sections: the Fishbein Behavioral Intentions (FBI) Model, the Hines model of Responsible Environmental Behavior, and the state of the ecological environment in the hospitality industry.

The Fishbein Behavioral Intentions Model

Martin Fishbein (1975) developed the theory of reasoned action (TORA) to predict human behavior. TORA identifies a person's intention to engage in a behavior as the immediate determinant of the person's overt behavior. Ajzen and Fishbein (1980) stated, "We make the assumption that most actions of social relevance are under volitional control and consistent with this assumption, our theory views a person's

intention to perform (or not perform) a behavior as the immediate determinant of action" (p.5).

The Fishbein Behavioral Intentions Model (FBI) was developed to test TORA. (See Figure 1.1.) The FBI Model posits that an individual's intention to perform a behavior is a function of the individual's attitude toward the object and the influence of social referents. A person's intention can be identified by two measures: (1) the person's attitude toward the behavior (A_g); and, (2) the person's subjective norm (SN). In order to understand how the model operates it is imperative to understand each of the variables in the model as well as each's relationship to one other.

The application of the FBI model depends upon how well the intention-behavior measures correspond. Behavior and intention are composed of four elements: the action, the target at which the action is directed, the context in which the action is performed, and the time at which it is performed. Because intention is directly related to behavior, it is important to identify and discuss the variables that determine intention. Intention is a function of attitudes and subjective norms.

Attitudes

Attitudes are determined from an assessment of consumer beliefs about the action, and the evaluative aspects of those

beliefs (Fishbein & Ajzen, 1975). Attitude assessment is defined by the following formula:

$$A_B = \sum_{i=1}^N b_i e_i$$

The equation determines a person's overall attitude toward a behavior (A_B) by multiplying the person's beliefs about the consequences of the act (b) by the evaluation (e) of the consequences. The i refers to number of beliefs measured.

The attitude measure, when both components of the equation are used, has been shown in a wide arena of research topics to correlate highly with the actual attitude (Fishbein & Coombs, 1974; Fishbein and Feldman, 1963; Jaccard & Davidson, 1972; Rosenberg, 1956; Wilson, Mathews, & Harvey, 1975; Sheppard et al., 1988; Bowman & Fishbein, 1978).

Subjective Norms

Subjective norms are based on a person's normative beliefs (NB), and their motivation to comply (MC). Subjective Norms can be determined according to the following equation:

$$SN = \sum_{i=1}^N (NB)_i (MC)_i$$

People's subjective norms are determined by multiplying a person's normative belief (NB) by their motivation to comply (MC) to this endorsement. The i represents the number of

referents measured. The NB and MC measures are highly correlated with SN (Bowman & Fishbein, 1978; and Sheppard et al., 1988).

The Entire Model

The full model used to determine a person's intention is a weighted combination of the two components: A_g and SN. The behavioral intention formula is :

$$I = W_1 [A_g] + W_2 [SN]$$

The elicitation process is used to determine the consumer's attitudes and social referents. The process asks non-directive questions of a group that must represent the target population. Ryan and Etzel (1976) have suggested that this process is too simplistic to assess consumer attitudes.

Other studies have shown that the elicitation process for specific segments and products results in higher correlations among attitude and intentions than predetermined lists (Cowling, 1973; Fishbein, 1971; Bright & Stammer, 1971; Bruce, 1971; Tuck & Nelson, 1969; Mazis et al., 1975). Based on studies in which the beliefs were central to the individual (e.g. racial issues), Fishbein suggests that only 5 to 9 of the elicited outcomes are actually salient.

Tests of the FBI Model

The FBI model has been tested across studies and over time. These studies illustrate the validity of the model, the predictive ability of the model, and the relationship of the variables.

Validity and Predictive Ability

Through a meta-analysis of 87 separate studies, Sheppard, Hartwick, and Warshaw (1988) determined strong support for the overall predictive ability of the FBI Model. The model works best when it measures a single behavior (not goal) involves no choice (alternatives) and uses a measure of intention (not estimation). The meta-analysis revealed that many studies that use the FBI model do not necessarily meet all three of these qualifications. Although these qualifications are violated, strong predictive validity still exists.

Through experimental manipulations on constructs, TORA was compared with the Miniard and Cohen Model (MCM), a behavioral intention model (Netemayer & Bearden, 1992). TORA had greater predictive ability and it was determined that it should be used if the research goal is to maximize prediction of behavioral intentions. However, the MCM did a better job of separating the effects of informational and normative influence.

Ryan and Bonfield (1975) identified a number of studies focusing on consumer research that used the FBI Model. In these studies the model indicated the ability to predict and explain the variance in behaviors and intentions over a wide range of purchase intentions and purchase behavior. Ryan and Bonfield (1980) tested the external and pragmatic validity of the model and found evidence that it is theoretically sound.

Although Ryan and Bonfield's research (1980) supported the external and pragmatic validity of the model, they believed that more work was needed on the methods used to determine salient outcomes and referents.

Ryan and Etzel (1976) used the elicitation process to measure comparisons across toothpaste brands for similar groups. The order in which outcomes and referents were elicited were compared to individual importance rankings. Ryan and Etzel (1976) found that the outcomes and referents used for inclusion as measurements may be a function of how often the item is mentioned by different members of the group (using at least 50% as the rule of thumb). They concluded that the sample used to elicit the outcomes and referents should always be generated from the group to be studied. The order of item elicitation is more useful than importance rankings.

Relationship of Variables

The goal of the theory of reasoned action is to predict a person's actual behavior. In order for the theory to be useful the intention must be highly correlated to the actual behavior. In Sheppard et al.'s (1988) meta-analysis, a strong intention-behavior relationship was found. Examples of other studies supporting the intention-behavior correlation include: McArdle's work (1972) with alcohol programs; Fishbein and Coombs' (1974) study of voting behavior; Davidson and Jaccard's (1975) study of the use of birth control pills; and Beatty and Kahle's (1988) work on soft drink consumption.

According to the theory, all variables other than attitudes and subjective norms are external to the model. External variables may indirectly influence intentions and behavior through the variables incorporated in the model. Ajzen and Fishbein (1980) concluded that external variables may influence the relative importance of the attitude and subjective norm variables.

Studies exist that both support and contradict the theorized use of external variables. A study on voting in American elections (Ajzen & Fishbein, 1980) found an R^2 of .83 for the impact of attitudes and subjective norms on intention. In Leech's (1988) study on intention to save for retirement, the predictive validity of the model was increased by additional variables. No conclusive research has been found

to support the inclusion or exclusion of external variables. The inclusion of external variables in predicting intention-behavior has been left up to the researcher, based on the behavior in question. Some research on environmental behavior (examples discussed below) suggests that additional variables increased the predictive ability of the FBI Model.

The FBI Model in An Environmental Application

Olsen (1981) hypothesized that there are possible antecedents to the formation of attitudes and subjective norms when considering the behavior of conserving energy. He developed an energy conservation model to test the relationship. As shown in Figure 2.1, Olsen suggested that beliefs, exposure to information, the holding of a personal conservation ethic, and interpersonal pressures and situational contingencies as possible antecedents (see Figure 2.1). Olsen also suggested that knowledge of conservation information is an important variable in determining the conservation behavior.

McGuinness, Jones, and Cole (1977) investigated factors related to recycling behavior. In addition to measuring the variables in the FBI Model, the study included measures of knowledge, perceived instrumentality, expectancy of successfully completing the behavior, and intended behavior regarding ecology in general and recycling in particular.

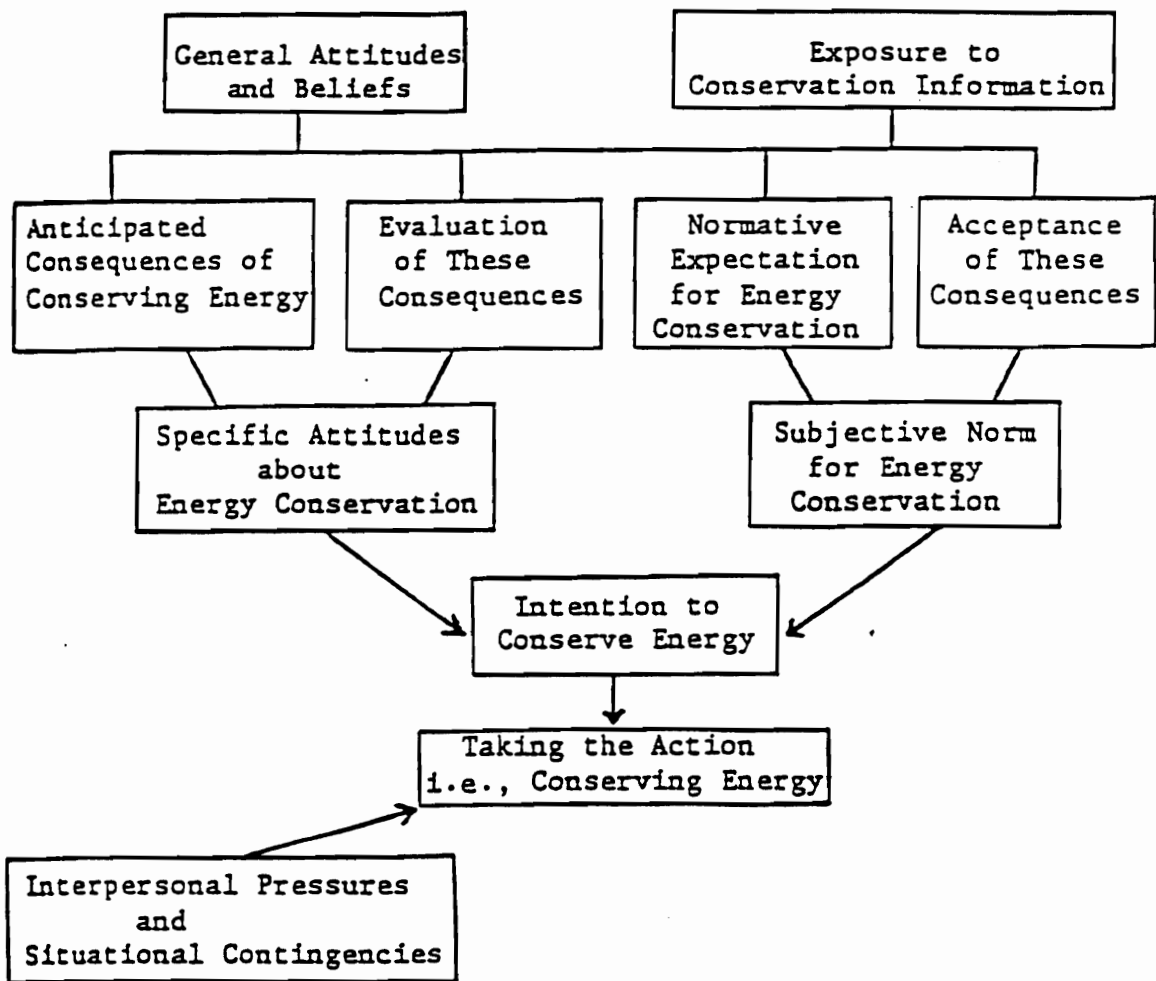


Figure 2.1: Olsen's Energy Conservation Behavior Model

Source: Hines, Jody (1984) "An Analysis and Synthesis of Research on Responsible Environmental Behavior", Ph.D dissertation, Southern Illinois University at Carbondale.

Specific recycling attitudes were not significantly better predictors than general ecological attitudes. Attitudinal measures were significantly related to recycling behavior. A stepwise regression analysis showed that the additional variables were important in determining recycling behavior.

Macey and Brown (1983) tested repetitive behavior to conserve residential energy. Repetitive behavior was a function of past experience, attitudes, and subjective norms. The model used to test the data was an extension of the FBIModel and was hypothesized to have increased predictive ability over Fishbein's model. The proposed model was found to have better predictive ability than the FBI Model.

Seligman, Kriss, Darley, Fazio, Becker, and Pryor (1979) examined the relationship between homeowners' attitudes toward energy use and their actual consumption. They concluded that the following factors were important in predicting energy consumption: personal comfort and family health, economic factors, and specific belief in one's personal role in saving energy. General attitudes toward energy problems did not affect consumption.

Tracy and Oskamp (1983) tested the relationship between attitudes and environmentally responsible behavior. The study revealed no significant relationship between attitudes and environmentally responsible behavior. Tracy and Oskamp (1983) found that respondents who expressed a high concern for energy

conservation also reported a low participation in energy-efficient behaviors. Consumers' attitude does not appear to be the sole determinant of their decision to engage in environmentally responsible behaviors.

Hines' Model

Although the predictive ability of the FBI Model has been demonstrated across different studies, the research concerning environmental behavior suggests that additional variables are needed. Hines developed a model utilizing knowledge, abilities, attitudes, personal responsibility and locus of control to predict environmental behavior. Newhouse's (1990) review of environmental research through 1990 supports the variables incorporated in Hines' Model. The studies concerning the prediction of environmental behavior and the research pertinent to the adapted version of the Hines' model will be reviewed in this section.

Precursor Models

As shown in Figure 2.2, Honnold and Nelson (1979) proposed a model to determine resource conservation behavior placing need identification at the center of the Conservation Orientation Model (See Figure 2.2). The individual effects of need identification were hypothesized to operate through perceived problem immediacy, perceived solubility of the

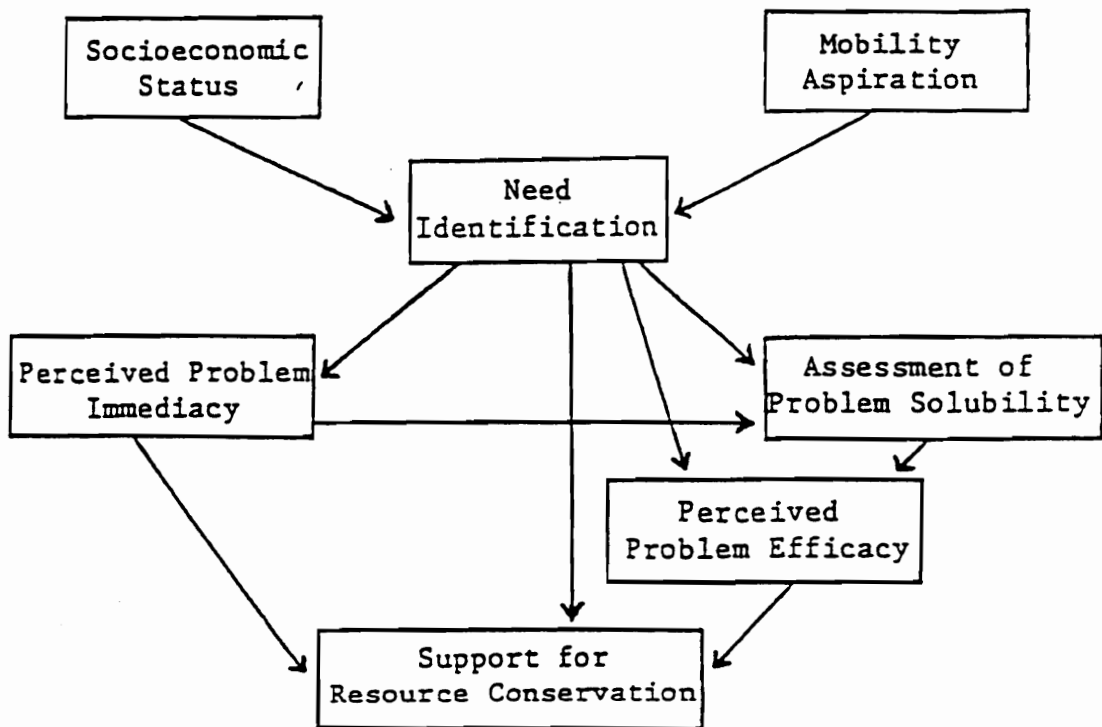


Figure 2.2: Honnold and Nelson's Conservation Orientation Model

Source: Hines, Jody (1984) "An Analysis and Synthesis of Research on Responsible Environmental Behavior", Ph.D dissertation, Southern Illinois University at Carbondale.

problem, and perceived personal efficacy. Mobility aspiration and socioeconomic status were hypothesized to affect conservation behavior indirectly through need identification.

A preliminary test of the model revealed that the six predictor variables accounted for 25% of the variance in resource conservation. Perceived problem immediacy had only a weak direct effect and a negative indirect effect through problem solubility on conservation. Honnold and Nelson identified this negative relationship as a fundamental barrier to adopting conservation behavior because the more immediate the problem the less the consumer perceived it to be solvable.

As shown in Figure 2.3, Sia, Hungerford and Tomera (1985) developed an Environmental Literacy Model to predict responsible environmental behavior. (See Figure 2.3.) The model identified predictor variables in three broad categories: attitudinal, personality, and cognitive. Sia, Hungerford and Tomera chose the variables included in the model as a result of previous research by authors such as Peterson, (1981), Tucker, (1978), Borden and Schettino, (1979), and Heberlein, (1973). The previous research revealed the variables most strongly associated with environmental behavior. The following variables were included in the model: ecological concepts, environmental sensitivity, locus of control, knowledge of issues, beliefs, values, attitudes, and environmental action strategies. (See Figure 2.3.) The

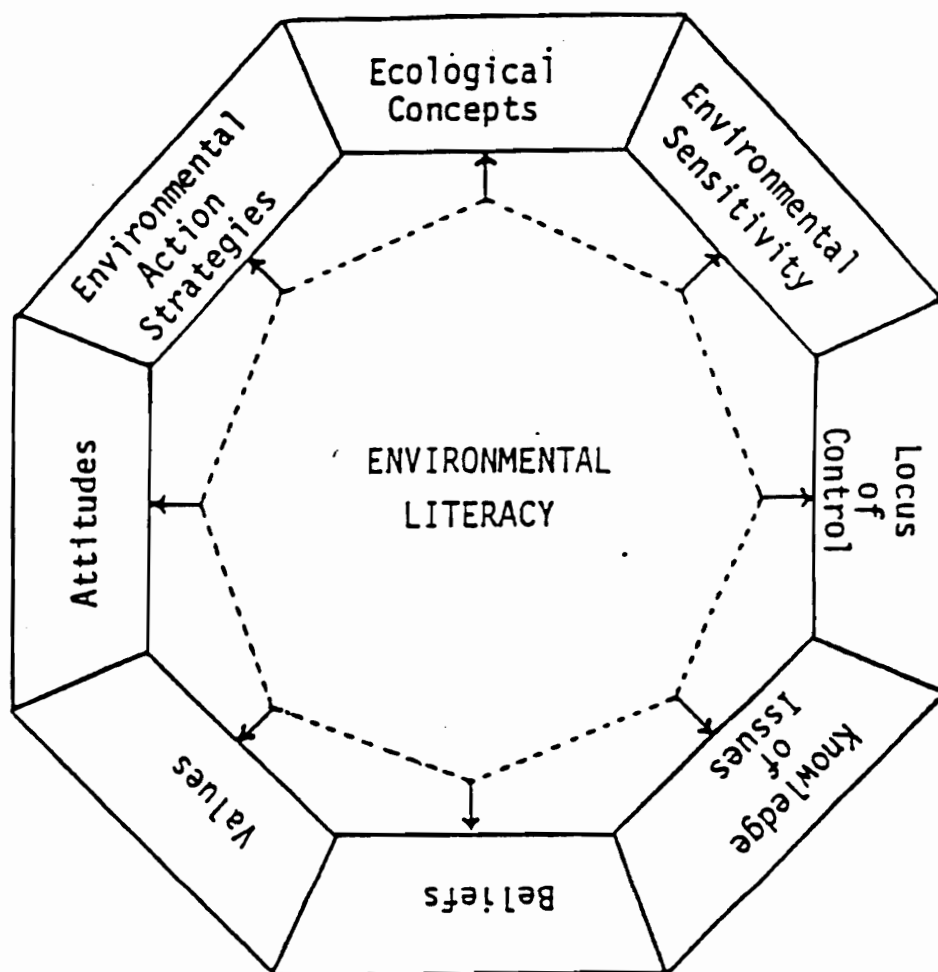


Figure 2.3: Hungerford and Tomera's Environmental Literacy Model

Source: Hines, Jody (1984) "An Analysis and Synthesis of Research on Responsible Environmental Behavior", Ph.D dissertation, Southern Illinois University at Carbondale.

environmental literacy model was developed based on empirical investigations, but has not been empirically tested in its entirety. The model suggests that interactions exist among the variables, but the extent and nature of the interactions are unclear.

Balderjohn (1988) developed a causal model of ecologically concerned consumers. Demographic, socioeconomic, cultural, personality and attitudinal variables were used to predict ecologically responsible consumption. Consumption as the dependent variable included: home insulation, energy curtailment, ecologically responsible buying and using of products, environmental concern, and ecologically responsible use of cars. Ecologically responsible buying is of particular interest in the current study. Ecologically responsible buying refers to a consumer's decision to purchase environmentally responsible products. Ecologically responsible buying and use of products was operationalized by three indicators: "buying less packaged products," "use returnable," and "use fewer detergents." Based on empirical results, Balderjohn (1988) hypothesized that "the ecologically concerned consumer is an internally controlled person who believes in people's power of changing perceived adverse social conditions" (p.52).

Balderjohn (1988) found that attitude toward ecologically conscious living correlated and ideology control

had a positive impact on ecologically responsible buying and using of products. The effect, according to the model is .13 and .25, respectively. According to the model, ideology of control is correlated to attitude toward ecologically conscious living (.16). Ideology of control represents the perceived power of changing adverse social conditions. Balderjohn operationalized ideology based on the research on perceived consumer effectiveness (Kinnear et al., 1974; and Henion & Wilson, 1976). Demographic, socioeconomic, and cultural variables were found to be important as segmenting variables but not as predictor variables.

Hines' Meta-Analysis

Hines' (1984) dissertation contained a meta-analysis comprised of 128 studies (journals, dissertations, thesis, unpublished manuscripts and books) to determine the most influential variables in predicting environmental behavior. Meta-analysis refers to a statistical method designed to integrate the empirical findings of research addressing the same relationship (Hines et al., 1987). As specified according to the meta-analysis, Hines converted the findings from the 128 studies into common statistics, point-biserial correlation coefficients. The weighted mean and variance for each statistic is calculated and corrected for errors (sampling and differences in instrument reliability) and the

Table 2.1

Summary of Meta-Analysis Findings

Variable	<u>a</u> Average Correlation	<u>b</u> Standard Deviation	<u>c</u> Number of Studies	<u>d</u> Decision
Verbal Commitment	.491	.130	6	Yes
Locus of Control	.379	.133	6	Yes
Efficacy Perception	.355	.115	8	Yes
Attitude	.347	.224	51	Yes
Personal Responsibility	.328	.121	6	Yes
Knowledge	.299	.195	17	Yes
Educational Level	.185	.122	11	?*
Income	.162	.084	10	?*
Economic Orientation	.160	.118	6	?*
Age	-.151	.200	10	No
Gender	.075	.084	4	No

* Questionable

adapted from Hines (1984, p.193)

a-the variable's correlation with responsible
environmental behavior

b-corrected standard deviations of each of the findings

c-number of findings on which the correlations are based

d-indicates if the research findings support the
existence of a relationship in the specified direction

mean correlations and standard deviations are interpreted. The variables determined from the meta-analysis, along with the statistical findings, are displayed in Table 2.1. The variables are listed from high to low according to their correlation to the intended behavior. The standard deviations are listed to show the variability of the relationship. Along with the number of studies the correlations were based on. Finally the a decision is shown to demonstrate if the research findings support the existence of a relationship in the specified direction. Verbal commitment was found to have the highest correlation and gender the least.

Knowledge

The studies in the meta-analysis that investigated the knowledge-behavior relationship were descriptive in nature. A total of 15 studies with 19 outcomes on the knowledge behavior relationship were found. The correlation coefficient for all 19 outcomes was .299 with only 10.52% of the variance attributed to error. The large variance led to the search for moderator variables. The studies were broken down into subsets that consisted of specific knowledge and specific behaviors, general knowledge and specific behaviors, specific knowledge and general behaviors, and general knowledge and general behaviors. Large differences in the correlations among the subsets indicated that specificity was acting as a

moderator variable in the knowledge-behavior relationship. The studies that used a combination of general and specific knowledge-behavior measures achieved higher correlations. Also the studies of the knowledge-behavior correlation revealed a positive relationship between knowledge and environmental behavior.

Efficacy/Locus of Control

The meta-analysis on efficacy perception consisted of eight studies. The studies revealed a correlation coefficient of .355 with 27.5% of the observed variance attributable to error. A positive relationship between efficacy perception and behavior was indicated by a correlation coefficient three times the size of the corrected standard deviation. Hines (1984) tested the efficacy variable for moderator variables and found that self-reported behaviors had a higher correlation than reports of actual behavior. No other moderator variables were sought due to the large degree of homogeneity in the study characteristics. For example, the studies all tested general environmental behaviors not specific behaviors. The similar characteristics of the studies did not provide any distinct differences for use in determining if any other moderator effects could be present.

The studies on locus of control consisted of six findings with a correlation coefficient of .379 and 18.8% of the

observed variance attributable to error. The correlation coefficient was 2.8 times the size of the corrected standard deviation indicating that a relationship between locus of control and responsible environmental behavior exists in the predicted direction (high internal locus of control individuals are more environmentally responsible). The data set was too small to test for moderator variables.

Attitude

Attitudinal variables were found in 38 studies with 51 outcomes. Attitudinal variables had a correlation coefficient of .347 with 7.8% of the variance attributable to error. According to Fishbein's theory of reasoned action, specificity is a moderator variable in the attitude-behavior relationship (Ajzen & Fishbein, 1977). Hines (1984) broke the findings into subsets to test the moderator relationship suggested by Fishbein. The findings indicated that specificity was not acting as a moderator variable in the attitude-behavior relationship.

Conclusions of Meta-Analysis

According to the findings in the meta-analysis, a number of variables were involved in predicting environmental behavior. In the model, Hines considered the variables locus of control and efficacy as measuring the same construct. This

construct was referred to as locus of control in Hines' Model. The studies in the meta-analysis assessed single variables in association with responsible environmental behavior, therefore making it difficult to determine interactions among the variables in the model. However, some studies did reveal correlations among the variables. The correlations among the variables and the synthesized data were used to develop Hines' Model of Responsible Environmental Behavior. (See Figure 1.2.) Hines' found that intention to behave or commitment was most strongly associated with responsible environmental behavior. This is consistent with the FBI Model. According to Hines' model, intention is an artifact of a number of other variables (knowledge, skills, and personality factors) operating in combination with one another.

Hines' Model Developed from the Meta-Analysis

The model includes two measures of knowledge: knowledge of environmental problems and knowledge of how to take action. Knowledge of environmental problems appears to be required for the behavior to occur but does not automatically lead to action.

Attitudes influence behavior through intentions and have been found to interact with other variables to influence the relationship between attitude and behavior. McGuinness et al. (1977) found a correlation of .58 between attitude and

efficacy perception.

The model indicates that locus of control is related to environmental behavior. Locus of control predicts that individuals who perceive that they have the ability to effect change will be more likely to engage in responsible environmental behavior. A correlation of .36 was found between locus of control and knowledge (Sia, 1984).

Efficacy perception refers to the extent people feel that their efforts will help alleviate an environmental problem. A person with a strong sense of efficacy is more likely to engage in environmentally responsible behavior. McGuinness et al. (1977) found a correlation of .78 between efficacy and intention, .58 between attitude and efficacy, and .59 between knowledge and efficacy. Efficacy perception appears to be related to other variables in the model.

Hines' model is based on the variables found in the meta-analysis that are most closely related to environmental behavior. According to the model, an individual who is knowledgeable about an environmental problem and has the ability and desire to act on that problem, will most likely engage in environmentally responsible behavior.

The adapted version of Hines' Model that will be tested in the current study includes the following variables: knowledge of environmental problems, perceived self-efficacy, and attitudes toward environmental strategies. Studies

measuring knowledge and perceived self-efficacy will also be discussed.

Knowledge. Webster (1975) developed a social involvement model to predict the socially conscious consumer. In order to use the model, the consumer must be informed. An informed consumer will be aware of the problem and the opportunity to buy products or services which are responsive to the problem. Education was used to measure this aspect of the model. The education variable did not have a significant impact in predicting the socially conscious consumer. Education level does not appear to be a good indicator of environmental knowledge.

Maloney and Ward (1973) developed an ecology scale comprised of four subscales. The scale was developed primarily as a research device. Maloney and Ward (1973) stated that the purpose of the scale was "to determine what the population knows regarding ecology, the environment, and pollution: how they feel about it; what commitments they are willing to make; and what commitments they do make" (p.584).

The four subscales are: verbal commitment (VC), actual commitment (AC), affect (A) and knowledge (K).

Knowledge measured specific factual knowledge of ecological issues using a 24 item scale. The study revealed that K was not correlated to the other 3 subscales. At the time of the study, the K scale showed that the average person

knew very little about the environment. Maloney and Ward believed that the respondents' lack of knowledge made it difficult to develop a knowledge scale with many high probability items. Maloney and Ward concluded that the difficulty in scale development and lack of knowledge could explain the low correlation between knowledge and the other subscales.

Maloney, Ward and Braught (1975) modified the ecology scale developed in 1973. The scale was refined and shortened in an attempt to make it more practical and efficient. In this study, knowledge (K) was able to distinguish between three contrasting groups of respondents. The groups that K differentiated were: college, non-college, and the Sierra Club.

Dispoto (1977) set out to further validate Maloney, Ward and Braught's revised ecological scale. The study tested three of the four subscales (knowledge, affect and actual behavior). The sample in this study consisted of students from an introductory psychology class, an environmental health class, and a campus environmental class.

According to the general Spearman-Brown formula, the knowledge scale revealed a reliability of .84. A correlation of .41 was found between knowledge and actual behavior. Also, knowledge was found to be more predictive of actual behavior than affect.

Sia, Hungerford, and Tomera (1985) examined the contribution of eight variables to environmental behavior. Multilinear regression analysis was used to analyze the variables. The eight variables were: level of environmental sensitivity, perceived knowledge of environmental action strategies, perceived skill in using environmental action strategies, psychological sex role classification, individual locus of control, group locus of control, attitude toward pollution and belief in technology. Belief in technology was the only variable that was not significant. Further analysis, using stepwise regression revealed that level of environmental sensitivity, perceived knowledge of environmental action strategies, and perceived skill in using environmental action strategies were the best predictors of environmental behavior.

Knowledge was defined as an individual's perceived knowledge of environmental action strategies. Sia et al. (1985) tested for intercorrelations among the variables. Knowledge was significantly correlated to all the variables in the study with the exception of belief in technology.

Arcury, Johnson, and Scollay (1986) tested the relationship of Dunlap and Van Lieres' New Environmental Paradigm (NEP) to knowledge of environmentally relevant issues. The NEP is a social theory with human-environment relationships at the core of the theory. The New Environmental Paradigm (NEP) is three dimensional. The three

dimensions refer to : balance of nature, limits to growth, and man over nature. Knowledge was measured based on the respondents' estimates of their knowledge. The knowledge measure consisted of nine items pertaining to water issues relevant to the Kentucky population (research funded by the Division of Water, Kentucky National Resources and Environmental Protection Cabinet). A four point scale ranging from "know nothing" to "know a lot" was used to assess knowledge. Revealing internal homogeneity, the knowledge scale obtained an alpha of .85. Path analysis was conducted with knowledge as the dependent variable. The independent variables included: NEP, community size, age, sex, education, and income.

The results of the path analysis identified that the NEP score, income, education and sex had an independent direct effect on knowledge of environmentally related issues. The NEP was positively correlated to the overall knowledge score and to each item. Arcury et al. (1986) concluded:

Basic world views or values about how humanity fits within the physical world has a direct relationship to level of environmental knowledge. This further suggests world view influences what and how much is learned and understood about the environment (p.39).

In conclusion, the study demonstrated that knowledge is associated with a respondent's environmental views.

Hungerford and Volk (1990) developed a behavioral flow chart of Hines' Model. Refer to Figure 1.3. In-depth knowledge of environmental issues has been categorized as an ownership variable. Hungerford and Volk described the relationship of knowledge to responsible environmental behavior in the following manner:

It appears that, before individuals can engage in responsible citizenship behavior, they must understand the nature of the issue and its ecological and human implications. When individuals have an in-depth understanding of issues, they appear more inclined to take on citizenship responsibility toward those issues (p.12).

According to Hungerford and Volk's (1990) conclusions, knowledge and understanding of environmental issues must exist before an individual will engage in responsible environmental behavior.

Schahn and Holzer (1990) analyzed the relationship between environmental knowledge, attitudes, and behavior. Knowledge was measured at two levels: abstract knowledge (AK) and concrete knowledge (CK). Abstract knowledge referred to factual knowledge and used Maloney and Ward's (1975) knowledge

scale. Concrete knowledge measured the knowledge applied in environmental protection and knowledge of action strategies. Schahn and Holzer (1990) hypothesized that only concrete knowledge would have a moderator effect on the relationship between attitudes and self-reported behavior. Neither of the knowledge measures were significantly correlated to the self-reported behavior measure.

Schahn and Holzer (1990) tested to see if concrete knowledge had a moderator effect on the relationship between attitudes and self-reported behaviors. In the regression analysis, behavior acted as the dependent variable with attitudes and knowledge as the independent variables. A significant relationship was found between knowledge and attitude on one hand and behavior on the other. This finding indicates that the relationship between attitude and behavior is dependent on knowledge. Schahn and Holzer (1990) concluded that more research is needed to confirm the results of the influence of knowledge.

Arcury (1990) studied the relationship between knowledge and environmental attitude. Knowledge was measured using three scales: general environmental knowledge, energy knowledge, and state environmental knowledge. General environmental knowledge and energy knowledge are taken from a survey conducted by the Council on Environmental Quality. State environmental knowledge was developed for the survey's

sponsor (Kentucky Department of Environmental Protection) and referred to environmental issues specifically related to Kentucky. Inter-correlations were found between the three knowledge measures.

The Arcury (1990) study found a direct relationship between environmental attitude and knowledge. While all three measures were significant, general environmental knowledge and energy knowledge had a stronger association with attitude than state environmental knowledge. However, none of the relationships illustrated a strong association. Arcury (1990) suspected that the generally low level of environmental knowledge among respondents contributed to the weak association.

In terms of environmental knowledge scales, Arcury (1990) identified three questions that need to be addressed.

- 1) At what level of detail should these measures be directed?
- 2.) Should several knowledge scales be developed with some attempting to measure very general awareness of the environment?
- 3) To what degree should current events be included in measures of public environmental knowledge, and what is the effect of changing the items in these measures to reflect current events on developing a longitudinal understanding of the changes in public awareness of the environment? (p.303)

Krause (1993) designed a questionnaire to look at levels of environmental consciousness. The knowledge scale consisted

of 10 questions designed to determine a respondent's level of understanding about environmental issues. The questions were developed from information obtained in newspapers, magazines, and popular books.

In study, using the knowledge measure, Krause (1993) discovered that respondents categorized as environmentalist were not significantly different from non-environmentalist. Respondents' knowledge about the environment appeared to have little to do with an individuals' tendency to label themselves environmentalists. Krause (1993) suggested that caution be used in "the role of education in inducing higher levels of public support for environmental activities" (p.138).

Perceived self-efficacy Self-efficacy determines the initial decision to perform a behavior, the effort expended, and persistence in the face of adversity (Bandura, 1977; Sherer, Maddux, Mercandante, Prentice-Dunn, Jacobs & Rogers, 1982; Pond & Hay, 1989). Self-efficacy has been measured in studies in a number of academic fields. Self-efficacy has been used by researchers as a variable in studies on an environmental context. Studies in the various academic fields and in an environmental context will be discussed.

In past research, self-efficacy has been measured in regards to a specific task and as a general personality trait. Self efficacy in relation to a specific task has been defined

as: the belief in one's ability to perform a task successfully (McDonald & Seigall, 1992); and an individual's perception of his or her effectiveness in a given situation (Hines, Hungerford, & Tomera, 1987). As a broader, more general concept, self-efficacy is defined as the judgement of one's ability to respond to new and prospective situations (Pond & Hay, 1989) and as a self-judgement of general competency (Sherer et al., 1982).

Kinnear, Taylor and Ahmed (1974) developed a measure that incorporated behavioral and attitudinal measures relating to socially conscious purchasing patterns. Perceived consumer effectiveness measured the extent to which a respondent believes that an individual consumer can be effective in pollution abatement. Kinnear, Taylor and Ahmed (1974) operationalized perceived consumer effectiveness in a single statement, "It is futile for the individual consumer to try to do anything about pollution" (p.21). The response was measured on a five point agree/disagree Likert scale. A regression analysis was performed to determine the selected predictor variables for ecological concern. Perceived consumer effectiveness as a predictor variable was significant at the .01 level. The authors did not discuss or provide any information to determine the construct validity of the measure.

Henion and Wilson (1975) tested the relationship between

perceived consumer effectiveness (PCE) and internal locus of control. Rotter (1966) defined internal locus of control as "one who perceives a reward he receives as being a direct result of his reinforcements." The sample consisted of 201 respondents in the following categories: college, non-college, and Sierra Club members. PCE was operationalized in the same manner as Kinnear et al. (1974).

PCE was positively correlated to internal locus of control. Henion and Wilson (1975) concluded:

Our understanding of the attitude of perceived consumer effectiveness has been considerably deepened by the present finding that the greater the ecological concern a person has, the more likely he is to have an internal control of his reinforcements instead of an external control of them. (p.141)

The article did not give any indications of the construct validity of PCE. The authors were contacted via telephone about the validity of the PCE measure and were unable to recall if it was validated.

Webster (1975) used the social involvement model to predict the characteristics of the socially conscious consumer. He hypothesized that socially conscious consumers must perceive that they have the power as individual citizens to have a favorable influence on the problem situation.

Webster measured this aspect of the model with the variable perceived consumer effectiveness (PCE). PCE was measured by adding a statement to the one used by Kinnear et al. (1974). Webster's (1975) additional statement was "When I buy products, I try to consider how my use of them will affect the environment and other consumers" (p.190). As a predictor variable for the socially conscious consumer, PCE was found significant. Again, the author gave no indications of the construct validity of the measure.

Seligman, Kriss, Darley, Fazio Becker and Pryor (1979) conducted a study to determine the relationship between a homeowner's attitudes toward energy use and actual summer time energy consumption. The survey items were factor analyzed and revealed four factors. One of the factors referred to an individual's role in contributing to and alleviating the energy crisis. This factor was found to act as a significant predictor of consumption.

Becker, Seligman, Fazio, and Darley (1981) continued the aforementioned research by looking at the relationship between homeowners' attitudes and their winter gas consumption. A sample of 55 couples was asked to respond to a 52 item questionnaire. Most of the questions (46) inquired about respondents' opinions and attitudes concerning energy related matters. Factor analysis was used to analyze the 46 items. Seven factors were found and accounted for 28.1

percent of the variance in winter gas consumption. One of the seven factors referred to the individual's role in conserving energy. The items that constituted the individual role factor referred to four specific strategies involving an individual's perceived contribution to the energy crisis or alleviation of the energy problem. Unfortunately, the authors did not report the percentage explained by the individual factors.

Honnold and Nelson (1979) developed a theoretical model of support for resource conservation and tested the model by collecting data on a sample of 485 undergraduates. The variables in the model included: socioeconomic status and aspiration, need identification, perceived problem immediacy, assessment of problem solubility, and perceived . Path analysis was used to analyze the model. The entire model explained 25 percent of the variance in conservation orientation.

Need identification, assessment of problem solubility, and perceived problem immediacy acted as predictor variables for perceived (EFF). EFF was found to have a direct effect on predicting conservation orientation. Honnold and Nelson (1979) measured efficacy using the following statements:

I am confident that my cooperation in efforts to conserve resources on a voluntary individual basis will be useful in the long run.

Whether or not I personally conserve resources really doesn't matter; it will not be of any importance for society.

Even if I conserve resources, most people probably will not; and my efforts will therefore be useless.(p.234)

Responses were measured using a 5 point Likert scale with strongly agree as 5 and strongly disagree as 1. Internal homogeneity as revealed by the coefficient alpha was .70.

Lent, Brown and Larkin (1986) developed a self efficacy scale to measure a subject's ability to perform specific accomplishments critical to academic success for engineering and science majors. Internal homogeneity , as revealed by coefficient alpha, was .89. They found that self-efficacy was related to academic performance behavior.

McDonald and Siegall (1992) measured the impact of self-efficacy on the performance and attitudes of telecommunications field service technicians. The technicians' job had undergone major technical changes. Self-efficacy was a specific measure of technological self-efficacy (TSE). The Cronbach alpha revealed the internal homogeneity of the scale as .62. The TSE scale was developed based on the Lent et al. (1986) scale. TSE was measured using an agree/disagree Likert scale in response to five statements that referred specifically to the technical task being measured.

Kantola, Syme and Nesdale (1983) tested the impact of four water conservation films on residents of metropolitan Perth, Australia. The films varied according to message

severity and efficacy of conserving. A questionnaire was used to test the impact of the film on 6 different areas. One of the areas was the appraised severity and efficacy. Efficacy was measured on a 7 point scale ranging from "extremely effective" (7) to "not at all effective" (1). Kantola, Syme and Nesdale (1983) used a single statement to operationalize efficacy, "To what extent do you think that you as an individual can be effective in helping to solve Perth's water supply problem?" (p.172).

The respondents who viewed the high efficacy film versions believed they would be more effective in solving the water problem than the respondents watching the low efficacy version.

Sherer, et al. (1982) developed a general self-efficacy scale and a social self efficacy scale. The scales were tested for internal reliability and construct validity. A Cronbach alpha reliability coefficient of .86 was obtained for the general self-efficacy scale and .71 for the social self efficacy scale. The predicted correlations between the self-efficacy scales and other similar scales (internal-external locus of control, personal control, social desirability, ego strength, interpersonal competency, and self esteem) provided evidence of construct validity.

Ecological Environment in The Hospitality Industry

This section will look at the environmental trends in the hospitality industry, and consumers' attitudes toward the environment, and provide examples of environmental strategies implemented in hotels.

Trends

The trends database, available at Virginia Tech's Hospitality Research Center, consists of approximately 30 hospitality journals from 1986 to June of 1992. The journals consist of both academic and trade journals which allow for a comprehensive analysis of the state of the art research and practical application in the hospitality industry. The database allows one to review the literature to determine general trends occurring over time. The database was used to determine the environmental issues in the hotel industry from 1990-1992.

During the 1990's the majority of articles concerned with the environment referred to waste management. Hotel operators engaged in activities, mainly recycling, that helped them better manage their waste. Toward the end of the 1990's some operators were beginning to address the issue of reducing and reusing materials in conjunction with recycling. Thirty three percent of the total articles about the ecological environment concerned recycling issues (Gustin, 1990). A few operators, but not enough to identify it as a trend, were

getting involved in energy and water saving efforts.

In 1991, the thrust of environmental efforts were still on recycling. The appearance of the water and energy conservation efforts increased in 1991. The majority of the environmental strategies implemented by hotels were not visible to the consumer. The restaurant industry, on the other hand, was very concerned about the packaging of their products as a result of consumer concern. It appears that the hotel industry has made minimal efforts toward the environment when compared to the restaurant industry. The consumer demands placed on the restaurant industry contributed to the industry changing at a faster pace than the hotel industry. Analysis of articles from January 1992 through June 1992 showed that operators concern and efforts about environmental issues have continued to increase. These issues include indoor air quality, energy conservation, use of recycled materials, reusable materials, and environmental propaganda.

Hotel operators' concern about the environment has steadily increased into concrete efforts from 1990 to 1992. These efforts are not visible to the consumer (Lanza,1992). According to the trends data base, trade journals, and industry publications, few hotels have developed comprehensive environmental plans.

Attitudes Toward the Environment

Dunlap and Mertig (1992) analyzed trends in public opinion toward environmental issues by tracing a number of longitudinal studies from 1965 to 1990. Public opinion polls from 1970 to 1990 strongly suggest that the environmental movement has maintained the public's attention and endorsement. According to Downs' (1972) issue-attention cycle, all social problems go through a five stage cycle: pre-problem, alarmed discovery and euphoric enthusiasm, realization of the cost of significant progress, decline in the intense public interest, and post problem. However, Dunlap and Mertig (1992) showed that the environmental movement is an exception to the issue-attention cycle. In the 1960's the environmental movement was in the pre-problem stage and by the 1970s it had moved to alarmed discovery and euphoric enthusiasm. From 1980 to 1990 the public's interest and concern continued to increase. Table 2.2 shows the results of some of the national opinion surveys conducted in 1990. The first column shows who conducted the national survey, the second column is the statement responded to, and the third column is the percentage of respondents who supported the statement. As shown in the table, consumers expressed a strong concern toward the environment.

In 1990 estimations were that there were approximately 15 million environmentally concerned households and these households were projected to increase to 52 million by 1995

Table 2.2

1990 National Opinion Surveys

National Opinion Survey Sponsors	Question on Survey	Percentage Response to the choice in paranthesis ()
Roper	Environmental protection laws and regulations have gone: a) not far enough b) too far	54% (a)
NORC _a	U.S. spending on improving and protecting the environment: a) too little b) too much	71% (a)
Cambridge	Sacrifice economic growth or or sacrifice environmental quality: a) sacrifice economic growth b) sacrifice environmental quality	64% (a)
NYT/CBS _b	Environmental improvements must be made regardless of the cost: a) agree b) disagree	74% (a)
Cambridge	Amount of environmental protection by government: a) too little b) too much	62% (a)

^a National Opinion Research Center

^b New York Times/ Columbia Broadcasting Systems (1990)

Adapted from American Environmentalism (Dunlap & Mertig, 1992)

(Klein, 1990). According to a Gallup poll, 75% of Americans consider themselves to be environmentalists and only 36% believe that businesses are doing what is necessary to act environmentally responsible (Bobrow & Fritz, 1991).

Consumers are demanding environmentally responsible products and services (Kay & Saunders, 1992). Heike Milhench, conference coordinator for the Arlington based Eastern Research Group (ERG), said that environmental efficiency is part of the criteria ERG used to select a conference sight (Lanza, 1992). There is a wave of green consumerism as guests are beginning to ask "Is this an environmentally responsible hotel?" (Sims, 1992, p.22).

On the other hand, Kent Larson, Chief Engineer at the Marriott hotel in Copley Place, believes that guests are less environmentally conscious when staying in a hotel; therefore, there are strict limitations on implementing environmental actions.

In an exploratory study regarding environmentally oriented lodging services, Horn, Summa and Kaufman (1993) examined how consumers' attitudes affect their intention to purchase. The sample consisted of 30 personal interviews (structured) conducted in April 1993 at the Donaldson Brown Continuing Education Center at Virginia Tech.

In the interview, respondents' attitudes toward environmental strategies were measured as either positive,

negative, or neutral. Respondents were also asked how these strategies would affect their decision to stay in a hotel offering these environmental services. The majority of the respondents had positive attitudes toward the following strategies: recycling bins in rooms (96%), change of towels only if requested (53%), change of sheets only if requested, green rooms (70%), and tinted windows (62%). The percentage in parentheses refers to the number of respondents with a positive attitude. Respondents were also asked which type of service they would prefer. The following responses were stated: manual faucets instead of automatic faucets (68%), individually packaged soap instead of soap dispensers (57%), and individually packaged shampoo bottles instead of shampoo dispensers (69%). Consumers' response to a 10 degree temperature change in the corridors was: would notice a decrease in temperature during the winter (58%) with 38% of those respondents who would notice a decrease stating it would be uncomfortable; and would notice an increase during the summer (70%) with 47% of those respondents who would notice an increase stating discomfort. When asked how the strategies would affect their decision to stay in a hotel offering these strategies, the majority of the respondents said it does not matter. It appears that consumers' attitude toward environmental strategies is not the sole determinant of their decision to stay in a hotel.

The respondents made some general statements about environmental services. One individual said that the laws would be changing by 1995 so that some of these changes would be mandated by law. Some were skeptical about the reliability of the technology (i.e., automatic faucets or light sensors). Others did not mind the strategies as long as the consumers knew of the services in advance and were given the choice to participate. Another respondent would not seek out environmental services, but would be impressed if hotels offered them.

Examples of Environmental Strategies in Hotels

Today, a few hotels have successfully implemented environmental strategies. Some of these hotels are discussed below.

The Days Inn in Baltimore, MD, is applying a unique version of recycling by donating bedspreads, sheets, soap, and food to the homeless instead of throwing them away (Shanklin et al., 1991). Ramada International Hotel and Resorts is not only taking a proactive environmental stance by engaging in environmental activities on the property but they are also helping to educate consumers with in-room environmental publications. The Hyatt Regency in Kauai, HI, is also educating consumers by putting educational videos on the environment in the guest's room.

The Ramada Renaissance in Long Beach, CA, implemented a comprehensive energy program which resulted in a \$3,500 savings per month. The Days Inn Minneapolis Airport replaced incandescent light bulbs with compact fluorescents with a savings of \$38 per fixture per year.

The Boston Park Plaza eliminated styrofoam, plastic tableware, and aerosols. They also installed double glazed windows, faucet aerators, efficient showerheads, and dispensers for amenities. The Boston Park Plaza uses dioxin free recycled stationery and business forms. Eco-plaques are placed in guest rooms to promote the hotel's environmental strategies and to elicit customer participation (i.e. turn unused lights off) in saving the earth.

Summary

Consumers' increasing concern for the environment is putting pressure on businesses to act environmentally responsibly. Business will have to respond to these concerns by implementing environmental strategies while at the same time assuring that the end product does not suffer. In other words, business must be both concerned with how to implement these strategies and be able to offer a quality product.

Hotels have been identified as organizations that are not environmentally responsible (Rowe, 1992; Maney, 1992). Since consumers are putting pressure on businesses to act

environmentally responsibly and hotels are not considered environmentally responsible, hotels will need to implement environmental strategies.

The present study investigated a consumer's intention to purchase a night's stay in a hotel when considering environmental strategies. Intention to stay was predicted using an adapted Hines' Model of Responsible Environmental Behavior.

As hypothesized by the FBI Model and Hines' Model, a consumer's intention to engage in environmental behavior in a hotel is linked to the actual behavior. In the current study, the adapted Hines' model is used to predict intention to purchase because the research suggests that, when predicting environmental behavior additional variables to the FBI Model are necessary (Olsen, 1981; Honnold and Nelson, 1979; Hines, Hungerford and Tomera, 1987; Horn, Summa and Kaufman, 1993; Newhouse, 1990). The following variables were used in the adapted Hines' model to predict intention to purchase: general environmental knowledge, perceived self-efficacy toward environmental strategies, and attitude toward environmental strategies.

Attitude and perceived self-efficacy have been demonstrated to be important variables in predicting environmental behavior (Hines, 1984). Although the predictive ability of knowledge is unclear, researchers have agreed that

environmental knowledge is necessary in order for an individual to engage in responsible environmental behavior (Webster, 1975; Dispoto, 1977; Arcury, Johnson & Scollay, 1986; Hungerford & Volk, 1990). Newhouse (1990) concluded that knowledge of a problem is required in order for the appropriate action to take place.

Attitude, perceived self-efficacy, and knowledge variables were tested to determine their contribution in predicting intention to purchase when considering environmental behavior. The adapted Hines' Model of Responsible Environmental Behavior was tested to determine its usefulness in predicting environmental behavior.

CHAPTER III

METHODOLOGY

This chapter will delineate the process and method developed to test the hypotheses in the current study. The first section will describe the theoretical model for predicting human behavior that will be applied to the current research. The development of the major constructs in the models will be discussed in the second section. The research hypotheses will be presented in the third section. The fourth section will include the questionnaire design, sample selection, and survey administration. The final section will discuss the data analysis.

Theoretical Model

In the current study, an adapted version of Hines' Model of Responsible Environmental Behavior was utilized to predict a consumer's intention to purchase a night's stay in a hotel when considering environmental strategies. Through a meta-analysis of environmental behavior, Hines' Model of Responsible Environmental Behavior suggests that knowledge, personal self-efficacy, and attitudes are important variables in predicting a person's intention to perform an act which is, in turn, linked to behavior. Hines' Model has not been empirically tested. The current study empirically tested a

portion of Hines' conceptual Model of Responsible Environmentally Behavior to determine if it is useful in predicting environmental behavior.

The interaction of the variables in Hines' model was unclear. Previous research has identified correlations among the variables in the model. The intercorrelations found in these studies were used to develop the proposed model, as shown in Figure 3.1. McGuinness et al. (1977) found a correlation of .58 ($p < .01$) between attitude and perceived self-efficacy and a correlation of .59 ($p < .01$) between knowledge and perceived self-efficacy. Sia, Hungerford, and Tomera (1985) found a correlation of .27 ($p < .05$) between perceived knowledge of environmental action strategies and attitude toward pollution. Arcury, (1990) found a correlation of .19 ($p < .001$) between general knowledge and attitude. He also found a correlation of .1626 ($p < .001$) between energy knowledge and environmental attitude.

The development and validation of the variables in the model will be discussed.

Development of the Major Constructs

The major constructs in the model were attitudes, perceived self-efficacy, and knowledge. The development and

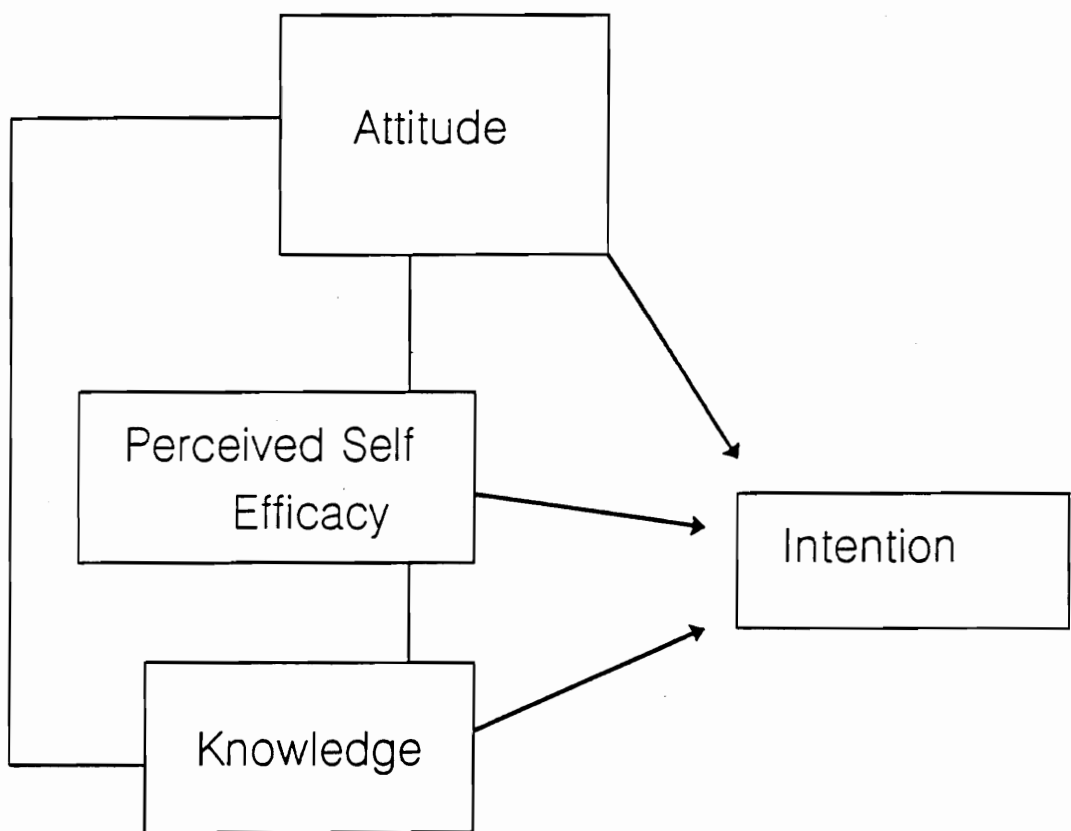


Figure 3.1: Adapted Hines' Model of Responsible Environmental Behavior

validation of these variables will be discussed. The basic procedures reviewed by Peter (1981) for construct validity were followed in this study. Nunnally (1978) suggested that when testing for internal consistency, a coefficient alpha of .6 or higher is favorable for basic research. Internal consistency measures are determined for the attitude and perceived self-efficacy scales. Since knowledge was developed as an index, the item-to-total correlations were used to determine the reliability of the knowledge index (Rich, 1993).

Attitude

Typically, the following scales have been used to measure attitude: Likert scale, Thurston scale, Guttman scale, and the semantic differential scale. The Likert scale is the measurement technique that was utilized in this study.

Both the Likert and Thurstone scale can achieve reliability coefficients in the .80s, but the Likert scale can achieve reliability with fewer items than the Thurstone scale (Mueller, 1986). The Likert scale was easier to develop than the Thurstone scale. The Guttman scale defines constructs too narrowly and is somewhat technical in nature. The semantic differential scale fails to isolate the evaluative dimension and is transparent in its purpose. Likert scales are a predominant measurement scale in the environmental literature (Dunlap & Van Liere, 1978; Van Liere & Dunlap, 1981; Noe &

Snow, 1990;and Horvart & Voelker, 1976).

Since attitude scales have been validated in previous research, the scales used in the current study were modeled on Ryan's (1990) attitude scales. The pilot study conducted by Horn, Summa, and Kaufman (1993) was also used to assist in the development of the environmentally specific component of the attitude scale. Because an attitude scale developed specifically for the behavior in this study was not available, it was necessary to test for internal reliability.

In order to ensure a correlation between attitude and behavior, Newhouse (1990) suggested that attitude be measured carefully. Schwartz's study (cited in Newhouse, 1990) and a study by Seligman, et al., (1979) found that specific attitudes drawn from stable general attitudes are a better predictor of a person's actions than general attitudes. The attitude and behavior measures must correspond to each other. There is generally a higher consistency between attitude and behavior when attitude is measured by multiple questions.

The attitude scale measured a consumer's positive or negative feelings toward specific environmental strategies in a hotel. The consumer responded to the attitude scale using a five point Likert scale ranging from strongly agree (1) to strongly disagree (5).

The attitude scale (based on Ryan,1990 and Horn, Summa and Kaufman,1993) was administered to a convenience sample of

25 undergraduate students at Virginia Polytechnic Institute and State University to test for internal consistency. A coefficient alpha of .56 revealed that the attitude scale was not internally consistent. The item-to-total correlations revealed that questions 5,6,7, and 8 were not correlated. (See Appendix A.) When these questions were eliminated a coefficient alpha of .73 revealed internal consistency. Unfortunately, these questions tapped critical measures and would alter the results of the study if eliminated.

The scale was reconstructed by wording the uncorrelated questions more clearly. A second convenience sample of 60 undergraduate students at Virginia Polytechnic and State University was taken to determine internal consistency. A coefficient alpha of .69 revealed the internal consistency of the attitude scale. See Table 3.1 for the attitude scale.

Perceived Self-Efficacy

Perceived self-efficacy (PSE) was measured in regards to a specific task (Mcdonald & Siegall, 1992; Hines, Hungerford & Tomera, 1987; Honnold & Nelson, 1979; Webster, 1975; and Kinnear et al., 1974). PSE measures an individual's perception of his or her ability to bring about change by engaging in environmental strategies while staying in a hotel. The environmental self efficacy scale was constructed using the scales that exist in the environmental literature as a

Table 3.1

Attitude Scale

-
- 1) Hotels should have recycling bins available for guests to use.
 - ^a2) Hotels should not switch from disposable shampoo bottles to shampoo dispensers in the shower.
 - 3) Hotels should switch from bars of soap to soap dispensers in guest rooms.
 - 4) Hotels should use energy efficient lights.
 - 5) In the winter, the temperature of the corridors in a hotel should be cooler than the guest rooms.
 - 6) In the summer, the temperature of the corridors in a hotel should be warmer than the guest rooms.
 - 7) When guests are not in their hotel rooms lights should be turned off.
 - 8) For a guest staying more than one night the sheets should not be changed daily unless specifically requested.
 - 9) For a guest staying more than one night the towels should not be changed daily unless specifically requested.
 - 10) Styrofoam should not be used as serving containers in hotels.
 - ^a11) Hotels should not put automatically operated faucets in guest rooms.
 - ^a12) Hotels should not put low flow shower heads in guest rooms.
 - 13) Hotels should print promotional brochures on recycled paper.
 - 14) Hotels should use recycled paper for in-room displays.
-

^a Items that are reversed scored

Respondents were asked to agree or disagree to the above statements using a 5 point Likert Scale: 1-STRONGLY AGREE
2-AGREE 3-NEUTRAL 4-DISAGREE 5-STRONGLY DISAGREE

guideline. Following Campbell's and Fiske's method (cited in Peter, 1981), the convergent validity and discriminant validity of the perceived self efficacy scale were determined.

Internal Consistency

The first attempt at developing the PSE scale revealed that the items were internally consistent but lacked convergent or discriminant validity. The scale was administered using a convenience sample of 25 undergraduate and graduate students at Virginia Polytechnic Institute and State University. The first two questions on the scale were based on questions developed by Kinnear, Taylor and Ahmed (1974) and Webster (1975). The remainder of the scale was developed in a manner consistent with the technique utilized by Lent et al. (1986) and McDonald & Siegall (1992). The environmental specificity used in Becker et al.'s (1981) research was used as a guideline in developing the environmentally specific component of the PSE scale. See Appendix B for the PSE scale.

The PSE scale was tested using SPSS (Statistical Package for the Social Sciences). The first step was to look at the PSE item-to-total score correlations. (See Appendix C.) This analysis showed that items one and two were not significantly correlated to the total scale score. Question three was

correlated at the .05 level and the remaining questions were significantly correlated at the .01 level.

Each item on the PSE scale was tested for significant correlations with each other. (See Appendix D.) This correlation matrix showed that items one and two were not correlated with each other or any of the other variables. Item three was significantly correlated at the .01 level only to item seven. The PSE scale was constructed as a single dimensional scale, but the low correlation of item three and lack of correlation for items one and two with themselves and other items leads to concern about the dimensionality of the scale. A principle component factor analysis with an orthogonal extraction method was used on the questions in the PSE scale. This analysis resulted in two factors. Questions one and two formed one factor and the remaining questions constituted the second factor. The coefficient alpha for the items in factor one (questions one and two) was .43. The low coefficient could be attributed to the small number of items. Items one and two were removed from the scale. The items in factor two (questions three through eight) were used as the PSE scale. A coefficient alpha of .78 was obtained for the PSE scale using the items in factor two (questions three to eight). Since item three was only correlated to one item, this item was removed and a coefficient alpha of .82 was obtained.

Convergent and Discriminant Validity

To test for convergent validity, the PSE scores were correlated to an internal locus of control scale and a general self-efficacy scale. These scales were chosen because they appeared to be measuring constructs similar to self-efficacy and were validated scales. The internal locus of control scale and the general efficacy scale both tapped personality measurements expected to be related to the PSE scale.

Sherer et al. (1982) developed a general self-efficacy scale with a Cronbach alpha of .86. The general efficacy scale was significantly correlated to several other personality measures and has been tested in other studies. Pond & Hay (1989) constructed a general self-efficacy scale similar to Sherer et al. (1982) and with a coefficient alpha of .81.

The internal locus of control scale was developed by Levenson (1973). The scale measured a respondent's general internal locus of control instead of a specific task. This scale has been used to measure environmentally responsible behavior (Trigg, Perlman, Perry, & Janisse, 1976; and Henion & Wilson, 1975).

The PSE scale failed to correlate with either the general efficacy scale or the internal locus of control scale. Therefore, the PSE scale was not measuring the intended construct. Since the scale was not measuring the intended

construct, in conducting the discriminant analysis was not necessary.

The PSE Scale

A second PSE scale was developed and tested for reliability and convergent and discriminant validity. This scale was developed based on Honnold and Nelson's (1979) efficacy scale, which measured a consumer's efficacy perception toward resources conservation. The scale asked a series of three questions to tap a consumers efficacy toward resource conservation. A Cronbach alpha of .78 revealed internal consistency for Honnold and Nelson's efficacy scale. Although the scale revealed internal consistency, the convergent and discriminant validity were not determined and, therefore, the scale may not have measured the intended construct.

The PSE scale in this study measured a consumer's efficacy perception toward resource conservation, ozone depletion, and solid waste issues in a hotel. A series of three questions was developed to tap into each behavior. See Table 3.2 for the specific scale. The scale was administered to travelers at the Washington National Airport, family members and friends. Approximately 100 respondents were obtained.

A coefficient alpha of .88 revealed the internal

Table 3.2

Perceived Self Efficacy Scale

1) I am confident that my cooperation in efforts to conserve resources in a hotel will be useful in the long run.

^a2) Whether or not I personally conserve resources while staying in a hotel really doesn't matter; it will not be of any importance for society.

^b3) Even if I conserve resources while staying in a hotel, most people probably will not, and my efforts will therefore be useless.

4) I am confident that my cooperation in efforts to reduce the solid waste problem while staying in a hotel will be useful in the long run.

^a5) Whether or not I personally help reduce the solid waste problem while staying in a hotel really doesn't matter; it will not be of any importance for society.

^b6) Even if I help reduce the solid waste problem while staying in a hotel, most people probably will not, and my efforts will therefore be useless.

7) While staying in a hotel, I am confident that my cooperation in efforts to help stop the destruction of the ozone layer will be useful in the long run.

^a8) Whether or not I personally help stop the destruction of the ozone layer while staying in a hotel really doesn't matter; it will not be of any importance for society.

^b9) While staying in a hotel, even if I help stop the destruction of the ozone layer most people probably will not, and my efforts will therefore be useless.

^a Questions deleted from scale.

^b Items that are reversed scored

Respondents were asked to agree or disagree to the above statements using a 5 point Likert Scale:

1-STRONGLY AGREE 2-AGREE 3-NEUTRAL 4-DISAGREE

5-STRONGLY DISAGREE

reliability of the PSE scale. The middle question in each series appeared to measure the same thing as the last question in the series. These questions were eliminated without affecting the coefficient alpha. The PSE scale was significant at the .05 level with the general efficacy scale and locus of control. The significant correlation revealed convergent validity.

The scales used to test discriminant validity significantly converged with the PSE scale. The test failed to determine discriminant validity. The scales measured problem immediacy, a portion of the new environmental paradigm, and resource conservation. Due to the nature of environmental issues it is difficult to find environmental scales that are not related (Rich, 1993). Also, since there was a lack of validated environmental scales to choose from for the discriminant analysis the researcher accepted this PSE scale without determining if discriminant validity existed. If discriminant validity existed, the scales may have been measuring something else in addition to the intended construct.

Knowledge

The measurement of knowledge consisted of nine multiple choice questions to determine a consumer's knowledge on issues concerning resource conservation, solid waste, and ozone

depletion. The scale was developed in a manner consistent with Maloney, Ward, and Braught's (1975) knowledge index. The questions were developed from information obtained in magazines and popular books. The measurement of knowledge was not scaled in the conventional sense because environmental issues consist of independent dimensions (Tracy & Oskamp, 1983). A knowledge index was created instead of a knowledge scale. (See Appendix E.) Intercorrelations were used to determine the consistency of the scale. The item-to-total correlations for the knowledge index revealed that all of the questions except number 6 correlated significantly at the .01 level with the total score. Several respondents made comments (written and verbal) referring to the difficulty in understanding what question number eight was asking. Question number 6 was revised and question number 8 eliminated. Additional questions were added in order to assure that environmental issues were thoroughly covered. The new knowledge scale was administered along with the attitude scale. See Table 3.3 for the new knowledge scale. The item to total correlations revealed that questions 3-13 were significant ($p < .01$). Questions one and two were also significant ($p < .05$). In order to keep the knowledge scale consistent with the attitude and efficacy measure, the question concerning phosphates will be eliminated.

Table 3.3

Knowledge Scale

-
1. One ton of recycled paper saves: 1) 5 trees 2) 17 trees 3) 25 trees 4) 50 trees.
 2. Disposable plastic products are: 1) polluting water supplies 2) filling up the landfill 3) Both 1 & 2 4) none of the above.
 3. Which of the following materials takes the longest to decompose? 1) tin 2) steel 3) aluminum 4) iron.
 4. The ozone layer protects the earth from: 1) ultraviolet radiation 2) methane 3) sulfur dioxide 4) nitrous oxide.
 5. Ozone depletion is caused by: 1) chlorofluorocarbons 2) phosphates 3) silver nitrates 4) carbon dioxide.
 6. Which of the following materials contain ozone depleting gases? 1) aluminum 2) glass 3) styrofoam 4) cardboard.
 7. How many gallons of water per minute does the average running faucet use? 1) less than a gallon 2) 1-2 gallons 3) 3-5 gallons 4) 6-8 gallons.
 8. Which of the following resources is **NOT** considered a depletable resource: 1) sun 2) oil 3) coal 4) water
 9. Electric Utilities, which are responsible for emitting a large percent of sulfur dioxide, are a primary component of the following environmental problem: 1) the greenhouse effect 2) acid rain 3) ozone depletion 4) none of the above.
 10. Fresh water is what percentage of the earth's water? 1) 3 percent 2) 12 percent 3) 25 percent 4) 40 percent
 11. Ecology is best described as the study of: 1) the relationship between man and the environment 2) the relationship between organisms and the environment 3) recycling 4) the environment
 - *12. What is the harmful effect of phosphates on marine life? 1) causes cancer 2) renders fish sterile 3) makes water cloudy 4) feeds algae which suffocates fish
 13. Products that consist of material that was recycled after being used outside the manufacturing plant are: 1) 100% recycled 2) post consumer recycled waste 3) biodegradable 4) biorecyclable
-

* This question was eliminated.

Respondents were asked to choose the correct response to the above questions.

Intention

Intention is the degree to which a person has formulated conscious plans to perform some specified future behavior (Warshaw and Davis, 1985). Behavioral intention should be measured using a variety of separate behaviors (Weigel and Newman, 1976; Ajzen and Fishbein, 1977; and McGuinness, 1973). The results of the scale should be used to develop an overall behavioral index. This study measured a consumer's intention to purchase a night's stay in a hotel, when considering environmental strategies. The consumers responded to a 5 point Likert scale ranging from extremely likely (1) to extremely unlikely (5). See Appendix F. A coefficient alpha of .51 did not reveal internal consistency for the intention scale. The item to total correlations showed that questions 8, 10, and 12-17 were not correlated. When these questions were dropped, a coefficient alpha of .77 revealed internal consistency. The items that were dropped were important to the research and therefore, the scale needed to be reconstructed. The uncorrelated questions were revised and administered to a convenience sample of undergraduates at Virginia Polytechnic Institute and State University. A coefficient alpha of .68 revealed the internal consistency of the intention scale. (See Table 3.4)

Table 3.4

Intention Scale

-
- 1) Recycling bins available for guest to use.
 - 2) Shampoo dispensers in the shower.
 - 3) Soap dispensers in guest rooms.
 - 4) Energy efficient lights.
 - 5) Cooler corridor temperatures during the winter.
 - 6) Warmer corridor temperatures during the summer.
 - 7) Turning off lights not being used in guest rooms
 - 8) When staying more than one night, sheets are changed only if requested.
 - 9) When staying more than one night, towels are changed only if requested.
 - 10) Does not use styrofoam serving containers.
 - 11) Automatically operated faucets in guest rooms.
 - 12) Low flow shower heads in guest rooms.
 - 13) Promotional brochures are printed on recycled paper.
 - 14) Recycled paper is used for in room displays.
 - 15) How likely would you be to stay in a hotel implementing environmental strategies?

Guest were asked to indicate how likely or unlikely they would be to stay at a hotel when it offers the following services (questions 1-14).

Likert Scale:

1-EXTREMELY LIKELY
2-LIKELY
3-DOES NOT MATTER
4-UNLIKELY
5-EXTREMELY UNLIKELY

Hypotheses

The purpose of this study was to predict a consumer's intention to purchase a night's stay in a hotel when considering environmental strategies implemented by that hotel. Hines' Model of Responsible Environmental Behavior was used to predict intention to purchase. Specifically, five research hypotheses were used to test relationships in the model.

H_1 : There is a positive relationship between consumers' attitudes toward environmental strategies used in a hotel and their intention to purchase a night's stay in that particular hotel.

H_2 : There is a positive relationship between consumers' general knowledge about the environment and their intention to purchase a night's stay in a particular hotel.

H_3 : There is a positive relationship between consumer perceived self-efficacy toward engaging in environmental strategies in a hotel and their intention to purchase a night's stay in that particular hotel.

H_4 : There is a positive relationship between (combination of the variables representing attitude, knowledge, and

perceived self-efficacy) and consumers' intention to purchase a night's stay in a particular hotel.

The relationship of intention to purchase a night's stay in a hotel to each of the variables attitude, knowledge, and perceived self-efficacy were tested separately in hypotheses one through three. Hypothesis four tested the relationship of the adapted Hines' Model of Responsible Environmental Behavior which utilizes all three variables simultaneously and intention to purchase a night's stay in a hotel.

H₅: The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship to a consumers' intention to purchase a night's stay at a particular hotel than each of the models that incorporate only one of the three variables (attitude, perceived self-efficacy or knowledge).

The fifth hypothesis was tested by three sub-hypothesis. Each sub-hypothesis compares the adapted Hines' Model of Responsible Environmental Behavior to one of the variables composing the model (attitude, perceived self-efficacy or knowledge).

H_{5a}: The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship

to consumer intention to purchase a night's stay at a particular hotel than the model incorporating only attitude.

H_{5b} : The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship to consumer intention to purchase a night's stay at a particular hotel than the model incorporating only knowledge.

H_{5c} : The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship to consumer intention to purchase a night's stay at a particular hotel than the model incorporating only perceived self-efficacy.

The Questionnaire Design, Sample and Survey Administration

This section will explain the survey design, sample and data collection.

The Questionnaire Design

The survey contained 56 closed ended questions. The questionnaire was divided into four parts. The first part tested consumers' general environmental knowledge regarding issues related to the strategies implemented by a hotel. The

second part measured consumer attitudes toward specific environmental strategies in a hotel and the respondents' perceived self efficacy toward alleviating environmental problems by participating in environmental strategies in a hotel. Respondents were asked to indicate the agreement or disagreement with a series of statements concerning environmental strategies in a hotel. A five point Likert scale was used with "1" representing strongly agree and "5" representing strongly disagree. The third section measured a consumer's intention to purchase a night's stay in a hotel when considering a number of separate environmental strategies in a hotel. Respondents were asked how likely or unlikely a series of environmental strategies would affect their intention to purchase. A five point Likert scale was used with "1" representing extremely likely and "5" representing extremely unlikely. For the second and third part of the survey, participants were asked to respond to the questions while visualizing the lodging accommodation they stay at most often. Finally, demographic information about the respondent was gathered to describe the sample and assist in future analysis of the data that is beyond the scope of this dissertation. (See Appendix G.)

The survey was printed on the front and back of a data coding form obtained from Test Scoring-Analysis Service at Virginia Tech. (See Appendix H.) The data coding form allows

respondents to answer the questions in a form that can be directly scanned for computer processing.

Sample Selection and Survey Administration

The subjects for this study consisted of business and pleasure travelers who stay in hotels. The survey was administered to a random sample of travelers at major airport hubs: Hartsfield Atlanta International Airport in Georgia, and Washington National in Washington, DC and Dulles International in Manassas, Virginia. The respondents were screened to include only those who stay in hotels while traveling.

Belk (1975) suggested that situational variables can enhance the ability to understand consumer research. Belk (1975) described situational variables according to five groups: physical surroundings, social surroundings, temporal perspective and task definition. Task definition referred to a situation in which a consumer would select, shop for or obtain information about a general or specific purchase. McCleary et al. (1993) tested the effects of situational variables (specifically Belk's "task definition") on a sample of the business travel market to determine if the importance of hotel product attributes were different by travel situation. According to the sample used in this study, the results did not strongly support Belk's (1975) suggestion that "explicit recognition of situational variables can

substantially enhance the ability to explain and understand consumer behavioral acts" (p. 157). Although Belk (1975), suggested the use of situational variables in behavioral research, McCleary et al. (in press) did not find hotel product attributes to be different according to the business traveler's situation. Therefore, business and pleasure travelers were not analyzed separately in this study.

Data Analysis

Since the literature suggests that all three of the variables (knowledge, attitude, and perceived self efficacy) interact, a multiple regression analysis would not be an appropriate procedure to predict intention. Although the model does not illustrate the interaction among the variables, Hines suggested that when testing the model, interactions should be considered. The data were tested to determine the correlations between the variables, intention, attitude, perceived self-efficacy, and knowledge. The variables were correlated, therefore multiple regression analysis was not an appropriate procedure to analyze the data. Since correlations were found, as anticipated according to the literature review, canonical correlation analysis was the appropriate procedure.

Canonical correlation analysis placed the fewest restrictions on the types of data that could be used. For example, when using multiple regression your data is

restricted to 1 metric dependent variable and multiple metric independent variables. Also, the independent variables can not be correlated or interact. Canonical correlation analysis is a procedure that simultaneously correlates multiple dependent and independent variables, without regards to interaction or correlations among the variables. A linear combination of each set of variables is developed so that the correlation between the two sets is maximized. A set of weights is developed for the independent and dependent variables. The canonical correlation equation is described as (Hair et al., 1987):

$$\begin{array}{lcl} Y_1 + Y_2 + Y_3 \dots Y_n & = & X_1 + X_2 + X_3 \dots X_n \\ \text{(metric or nonmetric)} & & \text{(metric or nonmetric)} \end{array}$$

The objectives of canonical correlation analysis are any or all of the following: 1. Determining the magnitude of the relationship between the two sets of variables 2. Maximizing the linear combination between the predictor and criterion variables by deriving a set of weights for each 3. Deriving additional linear functions that maximize the remaining correlation 4. Explaining the nature of the relationship between the two sets of variables by measuring the relative contribution of each variable to the canonical functions.

The relationship between intention to purchase a night's

stay at a particular hotel (dependent-criterion variable) and attitude, perceived self-efficacy, and knowledge (independent-predictor variable) were determined using canonical correlation analysis. More specifically, if the multivariate test was found statistically significant, a positive (in the same direction) relationship existed between intention and each of the predictor variables, individually and simultaneously, as specified in the hypotheses. The model with the canonical correlation was used to analyze H5, the model with the strongest relationship to intention to purchase.

CHAPTER IV

RESEARCH FINDINGS

This chapter presents the results of the study described in the previous chapter. The first part of the chapter describes the data collection procedures and the sample. The second part of the chapter addresses the data analysis in relation to the five research hypotheses. The final part of the chapter presents the results of the study.

Survey Response

Four hundred and eighty nine surveys were distributed to patrons in the airports in Atlanta, Georgia (241), Washington, D.C. (165), and Manassas, Virginia (83). Assistants were trained to collect the data at each of the airports by giving them general guidelines concerning the proper way to approach the respondents as well as a briefing on the purpose and nature of the research. After the surveys were completed, the answers to part one of the survey, the knowledge index, were handed out on a card thanking them for participating in the research. (See Appendix I.) A total of 445 surveys were returned for an approximate response rate of 91%. Forty-eight of the 445 surveys were incomplete, leaving an 81.2% usable response rate.

In Atlanta, the data were collected at the Hartsfield

International Airport on Sunday January 2, 1994. Four trained assistants randomly distributed 241 surveys to patrons in the Atlanta airport. A total of 229 surveys were returned, representing a 95.1% response rate. Eleven of the 229 surveys were incomplete, representing an 87.5% usable response rate.

In Manassas, VA, data were collected at Dulles International airport. Four trained assistants were used to collect the data at Dulles on Friday January 7, 1994. Due to the time of day and week the airport was not busy and only 83 surveys were distributed. A total of 75 surveys were returned with 90.4% response rate. Since 19 of the 75 returned surveys were incomplete, only a 67% usable response rate was obtained at Dulles. The lay out of the airport at Dulles and the higher concentration of international travelers inhibited the response rate. The data collection was moved the following day to Washington National.

In Washington, DC, data were collected at Washington National over a two day period, January 8 and 9, 1994. Two trained assistants were used to collect 165 surveys. A total of 141 surveys were returned with an 85.5% response rate. Eleven of those 141 surveys were incomplete non-usable surveys, resulting in a 78.7 % usable response rate.

Data Analysis

This section will discuss the procedure used to analyze

the data, describe the sample, and the results of the analysis in relation to each of the hypotheses. Descriptive statistics, canonical correlation analysis and simple correlations were used to analyze the data.

Homogeneity of Response Patterns

Since the data were collected from three different airports, crosstabs and frequency distributions were analyzed to test for homogeneity of responses across the three samples. The frequencies revealed that each of the variables when compared across the three airports (Atlanta, Dulles and National) had similar response distributions. The shapes of the distributions showed that no inherent differences existed in the data. Crosstabs were run to quantitatively test for differences in the data. According to the chi-square tests of independence (Pearson, and Likelihood Ratio) there were no differences between the three airports for the distribution of responses for 51 of the 56 variables. The results of the chi-square tests of independence for the demographic variables are displayed in Appendix J. The analysis of the data using crosstabs and frequencies supported the assumption that no inherent difference existed between the samples from the three airports. Therefore the data were combined for further analysis.

Sample Description

A judgement sample was obtained from major hub airports to obtain respondents who stay in hotels while traveling. Simmons Market Research Bureau profiled the typical domestic airline traveler based on research collected during 1992. The Simmons' profile was compared to the profile of respondents from this study to determine if this sample was representative of the typical airline traveler. The sample in this study, with the exception of education, was representative of the typical airline traveler portrayed by the Simmons Research Bureau in 1992.

According to the research collected by Simmons Bureau, the typical airline traveler in 1992 was approximately half females (52.2%) and half male (47.8%), which was similar to the sample in this study consisting of 47.9 % females and 52.1% males. Fifty eight percent of the respondents representing the typical airline traveler were between the ages of 18 to 44 and 63.3% of the respondents in this study were between the ages of 20 to 40. Twenty one percent of the typical airline traveler did not complete high school, and 20% graduated from college. The educational level of the sample in this study was much higher with only 2.5% not graduating from high school and 58% holding a bachelors degree or higher. According to the Simmons Research Bureau, 52% of the typical airline traveler's total household income fell between \$20,000

and \$59,999. For most of the respondents from this study, the total household income fell between \$20,000 and \$60,000 (46.1%).

Additional information relating to travel characteristics was collected on the sample for this study. The type of lodging accommodation stayed in most often was mid-priced (e.g. Holiday Inn), followed by upscale (e.g. Hilton), representing 37.6% and 25.5%, respectively. When considering the type of lodging accommodation stayed at most often, 47.8% of the respondents traveled for all or mostly pleasure, 30.3% of the respondents traveled for all or mostly business, and 21.9% of the respondents traveled for half business and half pleasure. (See Table 4.1.)

The consumers were asked if they considered themselves environmentally minded consumers and environmentally minded travelers by responding either yes or no to the question. An overwhelming majority of the respondents, 73.7%, considered themselves to be environmentally minded consumers. Although not as many respondents considered themselves an environmentally minded traveler, it was still a majority (54.3%).

Table 4.1

Descriptive Summary ProfileDESCRIPTIVE PROFILE OF RESPONDENTS

<u>Gender</u>		<u>Purpose of Trip</u>	
Male	52.1%	All Business	7.9%
Female	47.9%	Mostly Business	22.4%
		All Pleasure	23.4%
		Mostly Pleasure	24.4%
		Half Business & Half Pleasure	21.9%

Education Level

Less than high school	2.5%
High school grad	9.4%
Some College	25.4%
Technical/Trade degree	5.1%
Bachelor's degree	33.2%
Graduate degree	24.4%

Age

< 20	11.2%
20-30	41.7%
31-40	21.6%
41-50	16.3%
51-60	9.2%
> 60	-

Consumers Environmental Perception

Considered themselves environmentally minded consumers:	
Yes	73.7%
No	26.3%

Income

Less than \$20,000	13.5%
\$20,000-\$40,000	25.3%
\$40,001-\$60,000	20.8%
\$60,001-\$80,000	12.8%
\$80,001-\$100,000	9.9%
over \$100,000	17.7%

Considered themselves environmentally minded travelers:	
Yes	54.3%
No	45.7%

Type of Lodging Accommodation

Budget (e.g. Motel 6)	7.6%
Economy (e.g. Red Roof Inn)	11.1%
Luxury/Budget (e.g. Hampton Inn)	10.9%
Mid-Priced (e.g. Holiday Inn)	37.6%
Upscale (e.g. Hilton)	25.5%
Luxury (e.g. Ritz Carlton)	4.3%
Bed & Breakfast	2.5%
Family-owned Independent Motels	.5%

The overall results of the knowledge index revealed the respondents answered an average of 58% of the questions correctly. An overwhelming majority of the respondents have a positive attitude toward the environmental strategies on the survey instrument. Not changing towels daily, installing automatic faucets, and installing low flow showers were the only three strategies not favored by a majority of the respondents. Not changing towels daily for an extended stay unless requested was the only environmental strategy that consumers had a negative attitude toward. The frequencies and mean responses to the Attitude and Knowledge questions are displayed in Table 4.2.

An overwhelming majority of the respondents believed that while staying in a hotel their efforts to conserve resources, reduce the solid waste problem and stop the destruction of the ozone layer will help alleviate environmental problems. When respondents were asked to indicate how the environmental strategies would effect their likelihood of staying in a hotel offering these strategies, the majority of the respondents were likely to stay at a hotel offering most of the environmental strategies. Not changing towels daily, installing automatic faucets, and installing low flow showers were the only three strategies for which there was not a majority of the respondents likely to stay in a hotel offering

Table 4.2

Survey Response ProfileFREQUENCIES AND MEAN RESPONSES

Attitude Variables	1.	2.	3.	4.	5.	Means
Recycling bin	52.8	33.5	9.6	2.8	1.3	.66
Shampoo dispensers	-	56.1	18.4	12.1	13.4	.66
Soap dispensers	24.7	26.8	21.2	16.2	11.1	1.62
Efficient lights	61.7	29.7	5.5	1.8	1.3	.51
Cooler temperature corridors	34.0	34.0	17.8	11.7	2.5	1.15
Warmer temperature corridors	26.6	31.1	21.5	14.7	6.1	1.43
Lights off	55.6	31.6	4.0	5.6	3.3	.69
Not changing sheets	27.8	39.6	9.8	1.4	11.4	1.39
Not changing towels	15.4	24.6	8.9	27.3	23.8	2.19
No Polystyrene Foam	43.3	31.6	20.0	3.0	2.0	.89
Automatic faucets	-	27.5	33.1	22.2	17.2	2.29
Low flow showers	-	44.8	21.9	20.9	12.3	2.00
Recycled paper brochures	50.8	30.3	13.1	3.8	2.0	.76
Recycled paper in room displays	51.8	34.3	10.4	2.0	1.5	.67
Perceived Self-Efficacy Variables	1.	2.	3.	4.	5.	Means
Conserving resources is useful	33.4	42.3	19.5	2.8	2.0	.98
Conserving resources is not useful	-	62.1	22.6	10.4	4.8	1.58
Reducing the solid waste problem is useful	28.6	43.9	18.9	7.1	1.5	1.09
Reducing the solid waste problem is not useful	-	63.7	21.1	9.9	5.3	1.57
Helping stop the destruction of the ozone is helpful	26.7	40.8	24.1	6.4	2.1	1.16
Helping stop the destruction of the ozone is not helpful	-	62.4	25.1	8.4	4.1	1.54

1-STRONGLY AGREE 2-AGREE 3-NEUTRAL 4-DISAGREE 5-STRONGLY DISAGREE

Statements were recoded so that "1" and "2" represent a positive attitude and strong perceived self-efficacy while "4" and "5" represent a negative attitude and perceived self efficacy.

(table continues)

Table 4.2

Survey Response Profile

FREQUENCIES AND MEAN RESPONSES

Intention Variables	1*	2*	3*	4*	5*	Means
Recycling bins	33.2	34.3	27.4	3.3	1.8	1.06
Shampoo dispensers	22.0	30.8	33.1	9.6	4.5	1.44
Soap dispensers	19.4	32.9	33.2	10.7	3.8	1.46
Efficient lights	31.1	38.3	24.7	4.1	1.8	1.07
Cooler temperature corridors	23.6	31.3	35.1	8.5	1.5	1.33
Warmer temperature corridors	19.8	30.8	34.4	12.2	2.8	1.47
Lights off	30.8	34.9	26.0	7.1	1.3	1.13
Not changing sheets	23.4	35.5	17.8	16.0	7.4	1.48
Not changing towels	18.2	26.5	18.4	24.0	12.9	1.86
No polystyrene foam	29.0	31.6	31.6	5.6	2.3	1.21
Automatic faucets	16.5	24.4	39.4	14.5	5.1	1.67
Low flow showers	17.7	30.6	27.8	15.4	8.4	1.66
Recycled paper brochures	29.9	35.6	28.8	5.6	1.0	1.14
Recycled paper in room displays	30.3	34.9	29.0	5.1	.8	1.11
Environmental strategies	30.53	40.4	26.4	1.8	1.0	1.03
Knowledge Variables	% Correct	% Incorrect				
K1-Recycling paper	25.1	74.9				
K2-Disposable plastic	64.1	35.9				
K3-decomposition	50.9	49.1				
K4-Ozone layer	93.4	6.6				
K5-Ozone depleting gases	82.0	18.0				
K6-Ozone depleting materials	90.6	9.4				
K7-Water usage	47.4	52.6				
K8-Non-renewable resources	50.5	49.5				
K9-Acid rain	62.7	37.3				
K10-Fresh water	38.5	61.5				
K11-Ecology	44.1	55.9				
K12-Post consumer recycled	47.7	52.3				

^a Represents the response category associated with the number below

1-EXTREMELY LIKELY 2-LIKELY 3-DOES NOT MATTER
4-UNLIKELY 5-EXTREMELY UNLIKELY

these strategies. See the summary of the perceived self-efficacy and intention to act questions in Table 3.2. When respondents were asked their overall likelihood to stay in a hotel offering environmental strategies (question #53 on the survey), 71% said they would stay at that hotel.

Correlation Analysis

This section will look at the correlations of each of the independent variables (knowledge, attitude, and perceived self-efficacy) with the dependent variable (intention).

The attitude/intention correlation matrix revealed that most of the attitude variables were significantly correlated to the intention variables at $p < .01$. The variable concerning a consumer's attitude toward automatically operated faucets was significantly correlated to only the intention variable concerning automatically operated faucets and low flow shower heads. The attitude variable concerning low flow shower heads was not significantly correlated to intention variables concerning automatically operated faucets and soap dispensers in guest rooms. The attitude/intention correlation matrix can be seen in Table 4.3.

The correlation between knowledge and intention revealed that only two of the variables were significant at $p = .01$: knowledge question number three with changing towels only if requested and knowledge question number 12 with changing

Table 4.3

Correlation Matrix Between Attitude and Intention

Variable

	I1	I2	I4	I5	I6	I7	I8
A1	.42*	.29*	.23*	.28*	.34*	.25*	.30*
A2	.14*	.36*	.30*	.15*	.16*	.13*	.15*
A3	.15*	.31*	.45*	.19*	.26*	.20*	.19*
A4	.26*	.22*	.22*	.40*	.31*	.30*	.28*
A5	.26*	.22*	.25*	.36*	.48*	.43*	.30*
A6	.20*	.18*	.16*	.27*	.37*	.49*	.22*
A7	.21*	.18*	.20*	.27*	.27*	.27*	.49*
A8	.22*	.12**	.12**	.24*	.25*	.21*	.21*
A9	.16*	.14*	.18*	.15*	.20*	.18*	.20*
A10	.30*	.25*	.26*	.29*	.29*	.29*	.27*
A11	-.05	-.01	-.04	-.00	-.02	-.01	-.01
A12	.22*	.14*	.08	.21*	.23*	.17*	.15*
A13	.30*	.21*	.23*	.29*	.26*	.23*	.26*
A14	.29*	.24*	.25*	.34*	.26*	.25*	.30*
	I8	I9	I10	I11	I12	I13	I14
A1	.26*	.23*	.28*	.14*	.26*	.30*	.31*
A2	.11*	.17*	.24*	.18*	.12*	.20*	.17*
A3	.17*	.15*	.32*	.19*	.24*	.23*	.24*
A4	.17*	.11*	.26*	.10*	.27*	.30*	.24*
A5	.26*	.22*	.25*	.36*	.48*	.43*	.30*
A6	.23*	.16*	.20*	.17*	.26*	.18*	.18*
A7	.19*	.19*	.24*	.17*	.26*	.18*	.18*
A8	.54*	.35*	.23*	.18*	.32*	.27*	.20*
A9	.35*	.51*	.30*	.23*	.34*	.18*	.15*
A10	.25*	.25*	.44*	.23*	.33*	.31*	.29*
A11	-.04	-.02	-.05	.29*	.10*	.01*	.01*
A12	.18*	.20*	.16*	.07*	.34*	.15*	.19*
A13	.22*	.20*	.41*	.20*	.25*	.39*	.36*
A14	.33*	.26*	.35*	.19*	.24*	.37*	.33*

* $p < .01$

** $p < .05$

Attitude/Intention Variables

A1/I1-Recycling Bins	A9/I9-Not Changing Towels
A2/I2-Shampoo Dispensers	A10/I10-No Polystyrene Foam
A3/I3-Soap Dispensers	A11/I11-Automatic Faucets
A4/I4-Efficient Lights	A12/I12-Low Flow Showers
A5/I5-Cooler Temperature	A13/I13-Recycled Paper
Corridors	Brochures
A6/I6-Warmer Temperature	A14/I14-Recycled Paper in Room
Corridors	Displays
A7/I7-Lights Off	

sheets only if requested. Refer to Table 4.9 to see the questions. Only nine significant correlations were found at $p=.05$. The correlations can be seen in Table 4.4.

The correlation between perceived self-efficacy and intention revealed that most of the correlations were significant at $p=.01$. Only four of the correlations were not significant. Three of those four correlations were with the intention variable concerning automatically operated faucets. The correlations between intention and perceived self-efficacy are displayed in Table 4.5.

Canonical Correlation Analysis

Canonical Correlation analysis derives a linear combination of variables from each of the two sets of variables (independent and dependent) so that the correlation between the two linear combinations is maximized (Hair et al., 1987). A number of pairs of linear combinations (functions) can be derived. The maximum number of functions (canonical variates) that can be extracted is equal to the number of variables in the smallest variable set. For example, if there are five independent and three dependent variables, there would be three functions. The process for extracting the functions is similar to the procedure used in factor analysis. The first pair of canonical variates (function) has the highest intercorrelation possible between the two sets of

Table 4.4

Correlation Matrix Between Knowledge and Intention

	I1	I2	I3	I4	I5	I6	I7
K1	-.030	.014	.015	.001	-.021	-.005	-.053
K2	.073	.104*	.027	.079	.056	.023	.049
K3	-.096	-.067	-.040	-.034	-.035	-.022	-.008
K4	-.027	-.050	-.049	-.009	-.006	-.037	.017
K5	-.038	-.026	-.003	-.006	-.002	-.067	-.054
K6	.071	.005	-.024	-.024	.025	.051	.093
K7	-.019	.018	-.004	.047	.042	.090	.068
K8	-.052	-.008	-.022	-.052	-.074	-.057	-.033
K9	-.015	.044	.042	.042	.016	.036	-.011
K10	.008	.020	.005	.029	.002	-.019	.036
K11	.084	.051	.097	.018	.068	.044	-.020
K12	.057	.032	.000	.029	.056	-.015	-.134
	I8	I9	I10	I11	I12	I13	I14
K1	-.053	-.048	.009	.048	.053	.027	.044
K2	.1074*	.095	.094	.032	.028	.119	.098
K3	-.064	-.166**	-.048	-.112*	.013	-.081	-.080
K4	-.054	-.105*	.012	-.031	.025	.063	-.020
K5	-.035	-.014	.088	.023	.101	.048	.011
K6	.101*	.071	.091	.000	.077	.120	.067
K7	.016	.027	.039	-.027	-.001	-.008	-.041
K8	.027	-.029	-.048	-.075	.015	-.022	-.033
K9	.006	-.006	-.005	.006	.003	.043	-.008
K10	.110*	.063	.059	-.021	.071	-.001	.015
K11	.053	.065	-.096	.052	.041	.056	.019
K12	.134**	.066	.102*	-.016	.051	.028	-.001

* $p < .05$

** $p < .01$

Intention Variables

I1-Recycling Bins

I2-Shampoo Dispensers

I3-Soap Dispensers

I4-Efficient Lights

I5-Cooler Temperature

Corridors

I6-Warmer Temperature

Corridors

I7-Lights Off

See Table 9 for the Knowledge Variables

I9-Not Changing Towels

I10-No Polystyrene Foam

I11-Automatic Faucets

I12-Low Flow Showers

I13-Recycled Paper

Brochures

I14-Recycled Paper in Room

Displays

Table 4.5

Correlation Matrix Between Perceived Self-Efficacy and Intention

	I1	I2	I3	I4	I5	I6	I7
P1	.33	.34	.29	.41	.31	.34	.17
P2	.16	.11**	.06*	.20	.13*	.14	.17
P3	.23	.29	.26	.29	.25	.31	.30
P4	.15	.11*	.11*	.26	.15	.15	.14
P5	.24	.28	.25	.27	.27	.25	.35
P6	.16	.13	.14	.28	.17	.16	.17
	I8	I9	I10	I11	I12	I13	I14
P1	.38	.30	.32	.21	.32	.35	.30
P2	.17	.10	.12**	.07*	.10**	.13**	.16
P3	.26	.22	.25	.20	.28	.27	.23
P4	.14	.08*	.17	.02*	.10**	.20	.12**
P5	.34	.26	.28	.18	.29	.28	.28
P6	.17	.04**	.21	.02**	.21	.20	.15

* variables not found significant beyond $p < .05$

** $p < .05$

Intention Variables

I1-Recycling Bins	I9-Not Changing Towels
I2-Shampoo Dispensers	I10-No Polystyrene Foam
I3-Soap Dispensers	I11-Automatic Faucets
I4-Efficient Lights	I12-Low Flow Showers
I5-Cooler Temperature	I13-Recycled Paper Brochures
Corridors	I14-Recycled Paper in Room
I6-Warmer Temperature	Corridors
Displays	
I7-Lights Off	

Refer to Table 12 for the Perceived Self Efficacy Scale.

variables and represents the most variance accounted for. The second function accounts for the maximum relationship between the two sets of variables not accounted for by the first function, etc. Canonical correlation analysis derives four types of output that can be used to interpret the functions: 1. The level of statistical significance 2. The magnitude of the canonical correlation 3. The magnitude of the canonical loadings and 4. The redundancy measure of shared variance.

The canonical correlation coefficients and level of statistical significance are used to demonstrate the strength of the relationship between the pairs of variates (dependent and independent). To be considered significant, the level of significance is typically expected to be at least $p=.05$ (Hair et al., 1987). Squared canonical correlation coefficients represent the variance shared by the linear composite of the two sets of variates (dependent and independent).

Each canonical function consists of a pair of variates, one for the independent variables and one for the dependent variables. The canonical loadings are used to interpret the variates and indicate the importance of the original variables in deriving the canonical variates. Canonical loadings are similar to factor loadings and should be interpreted following the criteria for factor loadings. Generally a factor loading greater than $\pm .30$ is considered significant (Hair et al., 1987). The larger the coefficient, the greater the

contribution to the canonical variate.

The squared canonical correlations represent the variance shared by the linear composite of the two sets of variates, not the variance extracted from the sets of variables. Therefore, a relatively strong correlation may be found when the linear composites may not extract significant portions of variance from their respective sets of variables. In other words, the squared canonical correlations can be misleadingly high. Thus, further analysis is required to be confident in the results. The redundancy measure of shared variance is used to overcome the bias and uncertainty found in the results of the squared canonical correlations. The redundancy index determines the ability of a set of independent variables to explain variations in the dependent variables. In other words, the redundancy index indicates the percentage of variance in the dependent variables that has been explained by the canonical variate of the independent variable set. The minimum acceptable redundancy index must be determined in light of the theoretical and practical significance to the research problem being investigated (Hair et al., 1987). The purpose of this research is to determine if each of the independent variables, individually and as a set, have a positive relationship on the dependent variable (intention). Therefore, when analyzing the results, only those functions that have a redundancy index greater than 4% were interpreted.

The analysis was divided into five sections. Each section represented one of the five hypotheses and used canonical procedures to analyze the five hypotheses. The MANOVA procedure in SPSS Reference Guide (SPSS, 1990) was used to conduct the canonical analysis.

Hypothesis 1

H_1 : There is a positive relationship between consumers' attitudes toward environmental strategies used in a hotel and their intention to purchase a night's stay in that particular hotel.

The attitude scale measured a consumer's positive or negative feelings toward specific environmental strategies in a hotel. Intention was the degree to which a person had formulated conscious plans to perform some specified future behavior (Warshaw and Davis, 1985). The variables that measured a consumers' attitude and intention are shown in Table 4.6.

The multivariate tests of significance (Pillais' criterion, Hotelling's trace, and Wilks' Lambda) revealed that the relationship between the independent composite variates and the dependent composite variates was significant at

Table 4.6

Attitude and Intention Variables

Attitude Scale

-
1. Hotels should have recycling bins available for guests to use.
 2. Hotels should not switch from disposable shampoo bottles to shampoo dispensers in the shower.
 3. Hotels should switch from bars of soap to soap dispensers in guest rooms.
 4. Hotels should use energy efficient lights.
 5. In the winter, the temperature of the corridors in a hotel should be cooler than the guest rooms.
 6. In the summer, the temperature of the corridors in a hotel should be warmer than the guest rooms.
 7. When guests are not in their hotel rooms lights should be turned off.
 8. For a guest staying more than one night the sheets should not be changed daily unless specifically requested.
 9. For a guest staying more than one night the towels should not be changed daily unless specifically requested.
 10. Styrofoam should not be used as serving containers in hotels.
 11. Hotels should not put automatically operated faucets in guest rooms.
 12. Hotels should not put low flow shower heads in guest rooms.
 13. Hotels should print promotional brochures on recycled paper.
 14. Hotels should use recycled paper for in-room displays.
-

Statements were recoded so that "1" and "2" represent a positive attitude while "4" and "5" represent a negative attitude.

Intention Scale

-
1. Recycling bins available for guest to use.
 2. Shampoo dispensers in the shower.
 3. Soap dispensers in guest rooms.
 4. Energy efficient lights.
 5. Cooler corridor temperatures during the winter.
 6. Warmer corridor temperatures during the summer.
 7. Turning off lights not being used in guest rooms
 8. When staying more than one night, sheets are changed only if requested.
 9. When staying more than one night, towels are changed only if requested.
 10. Does not use styrofoam serving containers.
 11. Automatically operated faucets in guest rooms.
 12. Low flow shower heads in guest rooms.
 13. Promotional brochures are printed on recycled paper.
 14. Recycled paper is used for in room displays.
 15. How likely would you be to stay in a hotel implementing environmental strategies?
-

$p = .000$. According to the test of significance, H_1 was accepted. There was a positive relationship between consumers' attitude toward environmental strategies used in a hotel and their intention to purchase a night's stay in the particular hotel. The functions were interpreted to give insight into the relationship between the attitude and intention variates. Since only those functions with a redundancy index greater than 4% were interpreted, only one function was interpreted. The canonical correlation of .751 showed a strong relationship between the pairs of variates. The squared canonical correlation or the amount of shared variance between the canonical variates was 56.3%. The eigenvalue, which also showed the amount of shared variance between the canonical variates, was 1.29. The redundancy index, the amount of variance in the intention to purchase variate explained by attitude variate was 21.28%. See Table 4.7 for summary data of the canonical analysis.

According to the canonical loadings for function 1 of the canonical correlation analysis, all of the intention variables (dependent) were correlated with their canonical variates (greater than the absolute value of + or - .3). The environmental strategies that contributed the most to function 1 were: Installing low flow shower, Not changing sheets daily for an extended stay unless requested and Cooler temperature in the corridors during the winter. The canonical loadings

Table 4.7

Results of Canonical Correlation Analysis

Dependent: Intention Independent: Attitude	
Function Number	1
Canonical Correlation	.751
Canonical R ²	.563
Eigenvalue	1.29
Redundancy Intention to Purchase (Dependent)%	21.28%

for these strategies were $-.758$, $-.784$ and $-.693$, respectively. (See Table 4.8.) The standardized canonical coefficients which are equivalent to the beta weights for the regression coefficient, were also listed in Table 4.8. All the attitude variables with the exception of two (switching from disposable shampoo bottles to shampoo dispensers in the shower and automatic faucets in guest rooms) were significantly correlated with its canonical variates (independent). Consumers' attitudes toward environmental strategies that contributed the most to function 1 were: Not changing sheets daily for an extended stay unless requested, Cooler temperature in the corridors during the winter and Not changing towels daily for an extended stay unless requested. (See Table 4.8.) The canonical R square for this function was 56.3%. The high correlations and redundancy index of 21.28% showed that a strong positive relationship existed between consumers' attitudes toward environmental strategies in a hotel and their intention to purchase a night's stay in that hotel. The strategies that were significantly correlated included: Recycling Bins, Soap Dispensers, Efficient Lights, Cooler Corridor Temperatures, Warmer Corridor Temperatures, Turning Lights Off, Not Changing Sheets Daily, Not Changing Towels Daily, No Polystyrene Foam, Low Flow Showers, Recycled Paper Brochures, and Recycled Paper in Room Displays.

Table 4.8

The Relationship Between the Attitude and Intention Variates: Canonical Loadings and Standard Canonical Coefficients For Function 1

Canonical Loadings and Standard Canonical Coefficients Between the Independent (Attitude) Variables and Their Canonical Variates

Variables	Canonical Loadings	Standard Canonical Coefficients
Recycling bins	-.527*	-.161
Shampoo dispensers	.159	.082
Soap dispensers	-.352*	-.074
Efficient lights	-.455*	-.0061
Cooler temperature corridors	-.633*	-.242
Warmer temperature corridor	-.482*	-.040
Lights off	-.450*	-.025
Not changing sheets	-.705*	-.325
Not changing towels	-.627*	-.258
No polystyrene foam	-.595*	-.228
Automatic faucets	-.140	-.119
Low flow showers	-.470*	-.222
Recycled paper brochures	-.500*	-.088
Recycled paper in room displays	-.512*	.001

* Correlations greater than the absolute value of + or - .3.

Canonical Loadings and Standard Canonical Coefficients Between the Dependent (Intention) Variables and Their Canonical Variates

Variables	Canonical Loadings	Standard Canonical Coefficients
Recycling bins	-.574*	-.115
Shampoo dispensers	-.421*	.349
Soap dispensers	-.431*	.024
Efficient lights	-.589*	.085
Cooler temperature corridors	-.693*	-.220
Warmer temperature corridors	-.605*	-.046
Lights off	-.585*	-.085
Not changing sheets	-.758*	-.370
Not changing towels	-.663*	.005
No polystyrene foam	-.675*	-.192
Automatic faucets	-.465*	-.031
Low flow showers	-.784*	-.427
Recycled paper brochures	-.574*	.193
Recycled paper in room displays	-.587*	-.125
Environmental strategies	-.678*	-.285

* Correlations greater than the absolute value of + or - .3.

Hypothesis 2

H₂: There is a positive relationship between consumers' general knowledge about the environment and their intention to purchase a night's stay in a particular hotel.

The knowledge index scale consisted of 9 multiple choice questions. These questions determined a consumer's knowledge on issues concerning resource conservation, solid waste, and ozone depletion. The variables that measured a consumers' knowledge are reiterated in Table 4.9. The variables were recoded so there would be only a correct or incorrect response, with "1" representing the correct answer and "2" the incorrect answer. For example, the correct answer to question one is 17 trees (response number 2), therefore respondents choosing 17 trees, the correct answer, would be assigned a "1" and survey participants choosing response numbers "1, 3 or 4" would be assigned a "2" for an incorrect answer.

The multivariate tests of significance (Pillais' criterion, Hotelling's trace, and Wilks' Lambda) revealed that the relationship between the independent composite variates (knowledge) and the dependent composite variates (intention) was significant at $p=.026$, $p=.022$, and $p=.024$, respectively. According to the test of significance, **H₂** was accepted. There

Table 4.9

Knowledge Scale

-
1. One ton of recycled paper saves: 1) 5 trees 2) 17 trees 3) 25 trees 4) 50 trees. (K1)
 2. Disposable plastic products are: 1) polluting water supplies 2) filling up the landfill 3) Both 1 & 2 4) none of the above. (K2)
 3. Which of the following materials takes the longest to decompose? 1) tin 2) steel 3) aluminum 4) iron. (K3)
 4. The ozone layer protects the earth from: 1) ultraviolet radiation 2) methane 3) sulfur dioxide 4) nitrous oxide. (K4)
 5. Ozone depletion is caused by: 1) chlorofluorocarbons 2) phosphates 3) silver nitrates 4) carbon dioxide. (K5)
 6. Which of the following materials contain ozone depleting gases? 1) aluminum 2) glass 3) styrofoam 4) cardboard. (K6)
 7. How many gallons of water per minute does the average running faucet use? 1) less than a gallon 2) 1-2 gallons 3) 3-5 gallons 4) 6-8 gallons. (K7)
 8. Which of the following resources is NOT considered a depletable resource: 1) sun 2) oil 3) coal 4) water (K8)
 9. Electric Utilities, which are responsible for emitting a large percent of sulfur dioxide, are a primary component of the following environmental problem: 1) the greenhouse effect 2) acid rain 3) ozone depletion 4) none of the above. (K9)
 10. Fresh water is what percentage of the earth's water? 1) 3 percent 2) 12 percent 3) 25 percent 4) 40 percent (K10)
 11. Ecology is best described as the study of: 1) the relationship between man and the environment 2) the relationship between organisms and the environment 3) recycling 4) the environment (K12)
 12. Products that consist of material that was recycled after being used outside the manufacturing plant are: 1) 100% recycled 2) post consumer recycled waste 3) biodegradable 4) biorecyclable (K12)

Respondents were asked to choose the correct response to the above questions.

was a positive relationship between consumers' general knowledge about the environment and their intention to purchase a night's stay in the particular hotel. However, none of the functions revealed a redundancy index higher than 4%, with the first function representing a redundancy index of only 1.43%. (See Table 4.10.) Since only those functions with a redundancy index greater than four were interpreted, no functions were interpreted. Since the multivariate tests revealed that the independent composite variables on the dependent composite variables were significant, the canonical correlations and standard regression coefficients are displayed in Table 4.11.

According to Hungerford and Volk (1990), before a consumer will have any intention to act (as shown in the behavioral model) a base of knowledge must exist. This suggests that a consumer's knowledge base concerning the environment is a critical component to determine if individuals have the appropriate decision making tools to make an environmentally responsible purchase decision. Although the predictive ability of knowledge is unclear, researchers have agreed that environmental knowledge is necessary in order for an individual to engage in responsible environmental behavior (Webster, 1975; Dispoto, 1977; Arcury, Johnson & Scollay, 1986; Hungerford & Volk, 1990).

Although the results show that the correlations between

Table 4.10

Results of Canonical Correlation Analysis

Dependent: Intention Independent: Knowledge

Function Number	1
Canonical Correlation	.402
Canonical R ²	.161
Eigenvalue	.193
Redundancy Intention to Purchase (Dependent)%	1.43%

Table 4.11

Knowledge/Intention Correlations and Standard Canonical Coefficients For Function 1**Correlations and Standard Canonical Coefficients Between the Independent (Knowledge) Variables and Their Canonical Variates**

Variables Canonical	Canonical Loadings	Standard Coefficients
1. One ton of recycled paper saves 17 trees.	.081	.221
2. Disposable plastic products are polluting water supplies and filling up the landfill.	-.269	-.319
3. Aluminum takes over 500 years to decompose.	.132	.136
4. The ozone layer protects the earth from ultraviolet radiation.	.284	.412
5. Ozone depletion is caused by chlorofluorocarbons.	.090	.385
6. The gases (chlorofluorocarbons) injected in styrofoam "eat" ozone molecules	-.504*	-.554
7. The average running faucet uses 3-5 gallons of water per minute does.	-.300*	-.332
8. The sun is one of the few renewable resources.	-.318*	-.395
9. Electric Utilities, which are responsible for emitting a larger percent of sulfur dioxide, are a primary component of acid rain	-.097	-.044
10. Only 3 % of the earth's water is fresh water.	-.257	-.239
11. Ecology is best described as the study of the relationship between organisms and the environment.	-.122	.045
12. Products that consist of material that was recycled after being used outside the manufacturing plant are post consumer recycled waste.	-.432*	-.372

* Correlations greater than the absolute value of + or - .3.

Canonical Loadings and Standard Canonical Coefficients Between the Dependent (Intention) Variables and Their Canonical Variates

Variables	Canonical Loadings	Standard Canonical Coefficients
Recycling bins	-.242	-.160
Shampoo dispensers	-.178	-.318
Soap dispensers	-.011	.420
Efficient Lights	-.152	.408
Cooler temperature corridors	-.132	.751
Warmer temperature corridors	-.307*	-.643
Lights off	-.296	-.226
Not changing sheets	-.685*	-.767
Not changing towels	-.440*	-.079
No polystyrene foam	-.351*	-.444
Automatic faucets	.122	.477
Low flow showers	-.191	.083
Recycled paper brochures	-.243	-.165
Recycled paper in room displays	-.125	.347
Environmental strategies	-.326*	-.158

* Correlations greater than the absolute value of + or - .3.

knowledge and intention are significant, revealing a positive relationship between knowledge and intention, the strength of the relationship was minimal, with a redundancy index of only 1.43% and a squared canonical correlation of only 16.1%. Therefore the predictive ability of the knowledge index variable is minimal and needs to be re-evaluated.

Hypothesis 3

H₃: There is a positive relationship between consumer perceived self-efficacy toward engaging in environmental strategies in a hotel and their intention to purchase a night's stay in that particular hotel.

Perceived self-efficacy measures an individual's perception of his or her ability to bring about change by engaging in environmental strategies while staying in a hotel. The variables that measure a consumers' perceived self-efficacy are shown in Table 4.12.

The multivariate tests of significance (Pillais' criterion, Hotelling's trace, Wilks' Lambda, and Roy's greatest root) revealed that the relationship between the independent composite variates and the dependent composite variates is significant at $p = .000$. According to the test of significance,

Table 4.12

Perceived Self Efficacy Scale

1. I am confident that my cooperation in efforts to conserve resources in a hotel will be useful in the long run. (P1)

^a2. Even if I conserve resources while staying in a hotel, most people probably will not, and my efforts will therefore be useless. (P2)

3. I am confident that my cooperation in efforts to reduce the solid waste problem while staying in a hotel will be useful in the long run. (P3)

^a4. Even if I help reduce the solid waste problem while staying in a hotel, most people probably will not, and my efforts will therefore be useless. (P4)

5. While staying in a hotel, I am confident that my cooperation in efforts to help stop the destruction of the ozone layer will be useful in the long run. (P5)

^a6. While staying in a hotel, even if I help stop the destruction of the ozone layer most people probably will not, and my efforts will therefore be useless. (P6)

^a Statements were recoded so that "1" and "2" represent a strong sense of perceived self-efficacy while "4" and "5" represent a weak sense of perceived self efficacy.

Respondents were asked to agree or disagree to the above statements using a 5 point Likert Scale:

1-STRONGLY AGREE 2-AGREE 3-NEUTRAL 4-DISAGREE
5-STRONGLY DISAGREE

H₃ was accepted. There was a positive relationship between consumers' perceived self-efficacy toward engaging in environmental strategies in a hotel and their intention to purchase a night's stay in the particular hotel. The functions were interpreted to give insight into the relationship between the perceived self efficacy variate and the intention variate. Since only those functions with a redundancy index greater than four were interpreted, only one function was interpreted. The canonical correlation showed a strong relationship between the pairs of variates. The canonical correlation coefficient was .623 for function 1. The squared canonical correlation coefficient or the amount of shared variance between the canonical variates was 38.8%. The eigenvalue was .633. See Table 4.13 for summary data of the canonical analysis.

Only one function has a redundancy index greater than 4% and was therefore interpreted. According to the redundancy index when utilizing this function, approximately 11.91% of the variance in intention to purchase was explained by perceived self-efficacy.

According to the results from function 1 of the canonical correlation analysis, all of the intention variables (dependent) were highly correlated with their canonical variates. The environmental strategies that contributed the most to function 1 were: The response to the overall

Table 4.13

Results of Canonical Correlation Analysis

(Dependent: Intention, Independent: Perceived Self-Efficacy)

Function Number	1
Canonical Correlation	.623
Canonical R ²	.388
Eigenvalue	.633
Redundancy Intention to Purchase (Dependent) %	11.91%

implementation of environmental strategies, use of efficient lighting, and not changing sheets daily for an extended stay unless requested. The canonical loadings for these strategies were .893, .671 and .622, respectively. (See Table 4.14.) All the perceived self-efficacy variables were highly correlated with their canonical variates (independent). The consumers' perceived self-efficacy variables that contributed most to function 1 were: conserving resources is useful, reducing the solid waste problem is useful, and helping stop the destruction of the ozone is helpful (with canonical loadings of .864, .701, and .678, respectively). (See Table 4.14.)

The analysis revealed a significant correlation between perceived self-efficacy and intention. Although only one function had a redundancy index greater than 4, a substantial percentage of intention is explained by perceived self-efficacy.

Hypothesis 4

H₄: There is a positive relationship between the combination of the variables, attitude, knowledge, and perceived self-efficacy and consumers' intention to purchase a night's stay in a particular hotel.

Attitude, perceived self-efficacy, and knowledge were the variables used in the adapted Hines' Model of Responsible

Table 4.14

Perceived Self-Efficacy/Intention Correlations and Standard

Canonical Coefficients for Function 1

Canonical Loadings and Standardized Canonical Coefficients Between the Independent (Perceived Self Efficacy) Variables and Their Canonical Variates

Variables	Canonical	Canonical	Standard
Canonical		Loadings	Coefficients
-----Conserving			
Resources is useful	.864*	.721	
Conserving resources is not useful		.369*	-.285
Reducing the solid waste problem is useful		.701*	.011
Reducing the solid waste problem is not useful		.505*	.016
Helping stop the destruction of the ozone is helpful		.678*	.131
Helping stop the destruction of the ozone is not helpful		.655*	.601

* Correlations greater than the absolute value of + or - .3.

Canonical Loadings and Standard Canonical Coefficients Between the Dependent (Intention) Variables and Their Canonical Variates

Variables	Canonical	Standard Canonical
	Loadings	Coefficients
Recycling bins	.468*	-.160
Shampoo dispensers	.527*	-.318
Soap dispensers	.445*	.420
Efficient lights	.671*	.408
Cooler temperature corridors	.495*	.751
Warmer temperature corridors	.495*	-.643
Lights off	.549*	-.226
Not changing sheets	.622*	-.767
Not changing towels	.429*	-.079
No polystyrene foam	.569*	-.444
Automatic faucets	.255	.477
Low flow showers	.552*	.083
Recycled paper brochures	.619*	-.165
Recycled paper in room displays	.472*	.347
Environmental strategies	-.893*	-.158

* Correlations greater than the absolute value of + or - .3.

Environmental Behavior to predict a consumers' intention to purchase a night's stay at a particular hotel. The Hines Model of Responsible Environmental Behavior is a conceptual model developed to predict a consumer's intention toward environmental behavior (Hines, Hungerford, & Tomera, 1987). Refer to Tables 4.6, 4.9, and 4.12 to review the variables in these scales.

The multivariate tests of significance (Pillais' criterion, Hotelling's trace, and Wilks' Lambda) revealed that the relationship between independent composite variates and the dependent composite variates was significant at $p = .000$. According to the test of significance, H_4 was accepted. There was a positive relationship between a consumers' intention to purchase a night's stay at a particular hotel and the adapted Hines' Model of Responsible Environmental Behavior. The functions were interpreted to give insight into the relationship between the independent variates (knowledge, attitude, and perceived self-efficacy) and the intention variate. Since only those functions with a redundancy index greater than four were interpreted, only one function was interpreted. The canonical correlations show a strong relationship between the pairs of variates. The canonical correlation coefficient for function 1 was .791. The squared canonical correlation was 62.5%. The eigenvalue was 1.67. According to the redundancy index, approximately 22.39% of the

variance in intention to purchase was explained by a linear composite of the independent variables. See Table 4.15 for summary data of the canonical analysis.

The results from function 1 of the canonical correlation analysis showed that all of the intention variables (dependent) were highly correlated with their canonical variates. The environmental strategies that contributed the most to function 1 were: not changing sheets daily for an extended stay unless requested, an overall concern toward environmental strategies in a hotel, and installing low flow shower. The canonical loadings for these strategies were .772, .757 and .725, respectively. (See Table 4.16.) Most of the attitude and perceived self-efficacy variables were highly correlated with their canonical variates (independent). None of the knowledge variables were strongly correlated (higher than + or - .30) with their canonical variates. The attitude variables that contributed the most to function 1 were: not changing sheets daily for an extended stay unless requested, and not using Polystyrene Foam containers. The perceived self-efficacy variables that contributed the most to function 1 were: conserving resources is useful and helping stop the destruction of the ozone layer is useful. (See Table 4.17.)

The results suggest that the adapted Hines' Model of

Table 4.15

Results of Canonical Correlation Analysis

(Dependent: Intention, Independent: Attitude, Knowledge, and Perceived Self Efficacy)

Function Number	1
Canonical Correlation	.795
Canonical R ²	.632
Eigenvalue	1.72
Redundancy Intention to Purchase (Dependent) %	22.21%

Table 4.16**Dependent Variables**

Canonical Loadings and Standard Canonical Coefficients Between the Independent (Intention) Variables and Their Canonical Variates

Variables	Canonical Loadings	Standard Canonical Coefficients
Recycling bins	-.547*	-.091
Shampoo dispensers	-.420*	-.275
Soap dispensers	-.394*	.039
Efficient lights	-.559*	.146
Cooler temperature corridors	-.628*	.065
Warmer temperature corridors	-.560*	-.055
Lights off	-.549*	-.092
Not changing sheets	-.772*	-.474
Not changing towels	-.605*	-.140
No polystyrene foam	-.682*	-.269
Automatic faucets	.377*	.041
Low flow showers	-.725*	-.374
Recycled paper brochures	-.593*	-.035
Recycled paper in room displays	-.544*	.036
Environmental strategies	-.757*	-.422

* Correlations greater than the absolute value of + or - .3.

Table 4.17

Independent Variables**Attitude/Intention Canonical Loadings and Standard Canonical Coefficients****Correlations and Standard Canonical Coefficients Between the Independent (Attitude) Variables and Their Canonical Variates**

Variables Canonical	Canonical Loadings	Standard Coefficients
Recycling bins	-.471*	-.104
Shampoo dispensers	-.193	.060
Soap dispensers	-.305*	-.089
Efficient lights	-.428*	-.080
Cooler temperature corridors	-.534*	-.017
Warmer temperature corridors	-.415*	-.014
Lights off	-.352*	-.362
Not changing sheets	-.681*	-.175
Not changing towels	-.523*	-.187
No polystyrene foam	-.599*	-.104
Automatic faucets	-.164	-.210
Low flow showers	-.478*	-.023
Recycled paper brochures	-.455*	-.069
Recycled paper in room displays	-.538*	.073

* Correlations greater than the absolute value of + or -.3.

Perceived Self-Efficacy/Intention Correlations and Standard Canonical Coefficients**Correlations and Standard Canonical Coefficients Between the Independent (Perceived Self Efficacy) Variables and Their Canonical Variates**

Variables	Canonical Loadings	Standard Canonical Coefficients
Conserving resources is useful	-.581*	-.215
Conserving resources is not useful	-.310*	-.137
Reducing the solid waste problem is useful	-.475*	.211
Reducing the solid waste problem is not Useful	-.339*	.061
Helping stop the destruction of the ozone is helpful	-.531*	-.065
Helping stop the destruction of the ozone is Not helpful	-.468*	-.347

* Correlations greater than the absolute value of + or -.3.

Correlations and Standard Canonical Coefficients Between the Independent (Knowledge) Variables and Their Canonical Variates

Variables	Canonical Loadings	Standard Canonical Coefficients
1. One ton of recycled paper saves 17 trees.	.081	.221
2. Disposable plastic products are polluting water supplies and filling up the landfill.	-.269	-.319
3. Aluminum takes over 500 years to decompose.	.132	.136
4. The ozone layer protects the earth from ultraviolet radiation.	.284	.412
5. Ozone depletion is caused by chlorofluorocarbons.	.090	.385
6. The gases (chlorofluorocarbons) injected in styrofoam "eat" ozone molecules	-.504*	-.554
7. The average running faucet uses 3-5 gallons of water per minute does.	-.300*	-.332
8. The sun is one of the few renewable resources.	-.318*	-.395
9. Electric Utilities, which are responsible for emitting a larger percent of sulfur dioxide, are a primary component of acid rain	-.097	-.044
10. Only 3 % of the earth's water is fresh water.	-.257	-.239
11. Ecology is best described as the study of the relationship between organisms and the environment.	-.122	.045
12. Products that consist of material that was recycled after being used outside the manufacturing plant are post consumer recycled waste.	-.432*	-.372

* Correlations greater than the absolute value of + or -.3.

Responsible Environmental Behavior is significantly correlated to intention. Although all the variables were significant, the contributions of the knowledge variables to their canonical variate were all less than the absolute value of + or - .30.

Hypothesis 5

H₅: The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship to a consumers' intention to purchase a night's stay at a particular hotel than each of the models that incorporate only one of the three variables (attitude, perceived self-efficacy or knowledge).

H_{5a}: The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship to consumer intention to purchase a night's stay at a particular hotel than the model incorporating only attitude.

H_{5b}: The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship to consumer intention to purchase a night's stay at a particular hotel than the model incorporating only knowledge.

H_{5c}: The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship to consumer intention to purchase a night's stay at a particular hotel than the model incorporating only perceived self-efficacy.

The relationship of the variables was determined by comparing the canonical correlation coefficient (R) determined from the canonical analysis. The canonical analysis designed to test the relationship between the adapted Hines' Model of Responsible Environmental Behavior and intention revealed the highest canonical correlation coefficient ($R=.795$). Utilizing all three variables; attitude, knowledge and perceived self-efficacy, a stronger relationship to intention was achieved. Hypothesis 5, supported by each of the sub hypotheses, was accepted. The adapted Hines' Model of Responsible Environmental Behavior had a stronger relationship to a consumers' intention to purchase a night's stay at a particular hotel than each of the models that incorporate only one of the three variables (attitude, perceived self-efficacy or knowledge). See Table 4.18 for a comparison of each of the models.

Summary

The canonical analysis revealed that each of the

Table 4.18**Comparison of Canonical Results for the Four Models**

(Dependent: Intention, Independent: Attitude, Knowledge, and Perceived Self Efficacy)

Independent Variables	Canonical R	R ²	Eigenvalue	Redundancy Index
Attitude	.751	.563	1.29	21.28
Knowledge	.402	.161	.193	1.43
Perceived Self-Efficacy	.623	.388	.633	11.91
Adapted Hines' Model	.795	.632	1.72	22.21

independent variables had a positive relationship to intention to purchase. Although all the variables had a positive relationship, the redundancy index revealed that some variables contributed more than others in predicting intention.

When evaluating the impact of attitude, knowledge and perceived self-efficacy individually on intention to purchase a night's stay, it was found that a consumer's attitude toward environmental strategies in a hotel explained the largest portion of variations (21.38%). Next was perceived self-efficacy, explaining 11.64%. A consumers' knowledge about environmental issues only explained 1.43% of the variation in intention to purchase a night's stay in a hotel.

The adapted Hines' Model of Responsible Environmental Behavior had a positive relationship to intention and contributed (21.87%) more to the prediction of intention than each variable individually. Although the predictive ability of knowledge was minimal, researchers have agreed that environmental knowledge is necessary in order for an individual to engage in responsible environmental behavior (Webster, 1975; Dispoto, 1977; Arcury, Johnson & Scollay, 1986; Hungerford & Volk, 1990). Newhouse (1990) concluded that knowledge of a problem is required in order for the appropriate action to take place. Therefore, knowledge about environmental issues may be an important precursor to measure

when predicting consumers' behavior but does not contribute as much in the actual prediction.

CHAPTER V

DISCUSSION AND CONCLUSIONS

The purpose of this dissertation was to evaluate the impact of environmental strategies employed by a company on an individual's decision to purchase a company's product. Specifically, the present study evaluated a consumer's intention to stay in a hotel based on the environmental strategies used by that hotel. As indicated in the review of literature, correlational studies examining consumer behavior in relation to environmental issues were bivariate in nature. Therefore, it is difficult to determine the relationship of the multiple variables in Hines' Model. The studies testing environmental behavior using the Fishbein Behavioral Intentions model showed that additional variables were needed (Olsen, 1981; McGuinness, et al., 1977; Macey & Brown, 1983; Seligman et al., 1979; and Tracy & Oskamp, 1983). Hines developed a conceptual environmental consumer behavior model based on a meta-analysis of literature on environmentally responsible behavior. Hines Model of Responsible Environmental Behavior utilized knowledge, abilities, attitudes, personal responsibility and locus of control to predict environmental behavior. Newhouse's (1990) review of environmental research through 1990 supported Hines' Model.

The goal of this study was to empirically test an adapted version of Hines' Model of Responsible Environmental Behavior. This adapted version utilized knowledge, attitudes and perceived self-efficacy to predict consumers' intention to purchase a night's stay in a hotel. The model was useful in predicting consumers' intention to purchase a night's stay in a particular hotel.

Discussion

A primary objective of this study was to develop a reliable and construct-valid model to examine consumer behavior in relation to environmental issues. The basic procedures reviewed by Peter (1981) for construct validity and Nunally (1978) for internal consistency were followed to develop the attitude and perceived self-efficacy scales. Due to the nature of the knowledge index scale, item to total correlations were used to develop the knowledge scale. The construct validity for each scale was developed over approximately a six month period. The reliability of the model will be tested in the future as the model is applied to various research studies.

The Hypotheses:

Based upon prior research and existing theory, five hypotheses were developed to guide the research objectives of

this study. The results of the study in relation to each of the five hypotheses were explained in chapter four. The implications of each hypothesis will be discussed as well as an integrative discussion of the overall results.

H₁: There is a positive relationship between consumers' attitudes toward environmental strategies used in a hotel and their intention to purchase a night's stay in that particular hotel.

Hypothesis one was supported. Consumers' attitude toward environmental strategies in a hotel was positively related to their intention to purchase a night's stay in that particular hotel. Fourteen environmental strategies determined a consumer's attitudes and intentions. When considering consumers' attitude toward each strategy, it appeared that all the strategies except shampoo dispensers and automatic faucets were useful in determining a consumers intention to purchase. The overall results suggested that a consumer with a positive attitude toward environmental strategies in a hotel was willing to purchase a night's stay in hotels offering these strategies.

H₂: There is a positive relationship between consumers' general knowledge about the environment and

their intention to purchase a night's stay in a particular hotel.

Hypothesis two was supported. A consumer with general knowledge about environmental issues had a positive relationship with their intention to purchase. Although a positive relationship between knowledge and intention was found, the amount of explanation was minimal. Only four of the knowledge index questions were highly correlated to the knowledge variates. And only five of the intention variables were highly correlated to the intention variate. With an average score of 58%, the frequencies suggested the consumer had a limited knowledge of environmental issues. As discovered in the literature review, the contributions of knowledge to predicting intention was still unclear. There are three possible explanations of the knowledge/intention relationship: 1) the consumer had limited knowledge about general environmental issues effecting the knowledge/intention relationship 2) knowledge is needed as a prerequisite to the model but not as an actual predictor variable or 3) the knowledge index scale may not have accurately reflected the general populations understanding of environmental issues. The fact that a positive relationship was found suggested that general environmental knowledge is important in determining intention to purchase.

Also, the consumer's overwhelming positive attitude toward environmental strategies suggested that the consumer is cognizant of environmental issues and therefore a scale aimed at the consumer awareness of environmental issues rather than at factual knowledge may be more appropriate. It appeared that some form of awareness of environmental issues must exist for a consumer to be able to make a sound decision regarding intention to purchase a night's stay in a hotel. When reading about environmental issues, consumers may not retain specific facts but will increase their general understanding of the different environmental issues.

H₃: There is a positive relationship between consumer perceived self-efficacy toward engaging in environmental strategies in a hotel and their intention to purchase a night's stay in that particular hotel.

Hypothesis three was supported. Consumers with a strong sense of perceived self-efficacy toward environmental issues intended to purchase a night's stay in a hotel. In other words, consumers who believed that their efforts toward preserving the environment would make a difference would purchase a night's stay in hotel that initiates environmental strategies. All three of the environmental issues (conserving resources, solid waste and ozone

depletion) tapped by the perceived self-efficacy scale were useful in determining a consumer's intention to purchase.

H₄: There is a positive relationship between the combination of the variables, attitude, knowledge, and perceived self-efficacy and consumers' intention to purchase a night's stay in a particular hotel.

Hypothesis four was accepted. The adapted Hines' Model of Responsible Environmental Behavior had a positive relationship to consumer intention to purchase a night's stay in a hotel. A consumer with a positive attitude, a strong sense of perceived self-efficacy and general knowledge about the environment intended to purchase a night's stay in a hotel.

H₅: The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship to consumer intention to purchase a night's stay at a particular hotel than each of the models that incorporate only one of the three variables (attitude, perceived self-efficacy or knowledge).

H_{5a}: The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship

to consumer intention to purchase a night's stay at a particular hotel than the model incorporating only attitude.

H_{5b}: The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship to consumer intention to purchase a night's stay at a particular hotel than the model incorporating only knowledge.

H_{5c}: The adapted Hines' Model of Responsible Environmental Behavior has a stronger relationship to consumer intention to purchase a night's stay at a particular hotel than the model incorporating only perceived self-efficacy.

Hypothesis five was accepted, supported by each of the accepted sub-hypotheses. The adapted Hines' Model of Responsible Environmental Behavior explains the largest amount of variance in intention to purchase a night's stay in a hotel when compared with the other three models. Interestingly, the increased amount of variance explained by the Hines' model was minimal when compared to the amount explained by the model with attitude alone.

As determined throughout the literature review, Hines'

meta-analysis and Fishbein's research, attitude was a significant contributor to determining intention but was not the sole determinant. Perceived self-efficacy contributions may have acted with a moderating effect in the model and the relationship of knowledge, although significant, was still unclear. It appears that knowledge may be more important as a precursor variable to the model and perceived self-efficacy may have interacted with attitude to determine intention.

When considering the specific environmental strategies of a hotel, the same five variables were important for the intention variates in the model utilizing perceived self-efficacy and the model utilizing knowledge. The five strategies that were important were: warmer temperatures in the corridors, not changing sheets daily, not changing towels daily, no polystyrene foam, and the overall environmental strategies question. When using the adapted Hines' Model of Responsible Environmental Behavior, all of the environmental strategies were important. In general it appeared that consumers had a positive attitude toward environmental strategies in a hotel. Not changing towels daily for an extended stay unless requested was the only environmental strategy toward which consumers had a negative attitude. An overwhelming majority of the respondents believed that while staying in a hotel, their efforts to

conserve resources, reduce the solid waste problem and stop the destruction of the ozone layer would help alleviate environmental problems.

Implications

The results of this research have several implications for environmental research in the hospitality industry. First, there are not any generic set of environmental strategies being implemented across environmentally conscious hotels. It appears that consumers accept most of the environmental strategies suggested in this study. The only strategy about which consumers were not positive was not changing towels daily for an extended stay unless requested. The frequencies showed that the consumers were concerned about environmental issues and these concerns are reflected in their purchase decision.

Recommendations for the Hotel Industry

The results from the survey support the notion that businesses today are operating in an environmentally conscious society with 73% of the respondents considering themselves to be environmentally minded consumers. Hotel operators are no exception with 54% of the respondents considering themselves environmentally minded travelers. In general the consumers had a positive attitude toward

environmental strategies. Seventy one percent of the respondents said that they would be likely to stay at a hotel implementing environmental strategies. The research findings suggest that a hotel implementing environmental strategies can increase business for that hotel.

The majority of the consumers had positive attitude and were likely to stay at a hotel implementing the following strategies: recycling bins available for guest to use, switching from disposable shampoo bottles to shampoo dispensers in the shower, switching from bars of soap to soap dispensers in guest rooms, installing energy efficient lights, having a cooler temperature in the hotel corridors during the winter, having a warmer temperature in the hotel corridors during the summer, encouraging guest to turn off lights not being used in the guest rooms, not changing sheets daily unless specifically requested for a guest staying more than one night, not changing towels daily unless specifically requested for a guest staying more than one night, not using polystyrene foam as serving containers, and using recycled paper for printing brochures and in room displays.

A hotel with customers similar to the profile of respondents from this sample (See table 4.1) can implement the suggested strategies and reap the benefits of good public relations, save money and increase business.

Limitations

This study was subject to the limitations of time and cost normally associated with a doctoral dissertation which allowed for only a portion of the Hines' model to be tested. The topic of this research is in the infancy stage and therefore little prior research in hospitality could be used as a foundation for this study. Therefore the background information was borrowed from other disciplines and adapted to fit the hospitality industry. As a result, the scales were developed and validated for the first time in this research. Due to the time constraints, the reliability of the scales and model could not be established in a way that is possible only over several applications and various research situations.

Another limitation of the study is found in the sample. A judgement sample was used, therefore the results of the study can not be generalized to the total population. The sample for this dissertation, which represented the typical airline traveler, was biased. Several groups of consumers who stay in hotels are unrepresented. For example, consumers who travel by alternate transportation (bus, train, car etc.) or consumers in the 60+ group were not represented in this study.

The ambiguity associated with the knowledge variable

may have affected the results of the relationship found between knowledge and intention. The knowledge index tapping at the consumers specific factual knowledge was not a strong predictor variable in the adapted Hines' Model of Responsible Environmental Behavior. The results from this study showed that the consumers did not answer more than 58% of the knowledge questions correct. Yet they were aware enough of environmental issues to have a positive attitude toward the strategies and intended to stay in hotel offering these strategies. Therefore a scale evaluating consumer awareness may have been a more appropriate variable in the model. For example:

Recycling your soda can instead of throwing it away can be associated with which of the following environmental issues? 1) ozone depletion 2) solid waste reduction 3) resource conservation 4) both 2 & 3

Finally, in order to develop a survey that could realistically be completed at the airport, the number of environmental strategies tested in this study were limited. The efforts to determine the most appropriate strategies were limited to a review of the literature since few hotels have implemented comprehensive environmental programs.

Future Research

The findings and limitations of this study point out several areas germane to future endeavors of environmental

research for the hospitality industry.

First, the ambiguity of the knowledge intention relationship and the role of knowledge in the model needs to be clarified. It appears that knowledge of specific issues is not a strong predictor variable. Therefore it is suggested to develop an awareness variable to replace the knowledge variable in the model.

Second, the study should be applied to different travel situations (bus, car, trains etc.) to determine if transportation mode effects consumer intention to purchase a night's stay in a hotel. In other words, are those patrons that travel by airplane more environmentally conscious than those traveling by bus?

Third, the specific strategies tested in future studies should continually be modified to fit the reality of what is or should be occurring in the industry. The trend in environmental consciousness calls for constant updating as the actual occurrences in the industry change daily.

Fourth, the model tested in this study did not allow consumers to make a decision based on different purchase situations. It would be useful to determine how the different situations would affect a consumer's purchase decision. Given other purchase decision variables, what role of importance do environmental issues play? Or given the same type of hotel (location, price, etc.) would a

consumer choose the hotel offering environmental strategies over the hotel not offering the environmental strategies?

Fifth, according the canonical R-squared, the adapted Hines' Model of Responsible Environmental Behavior explained 61% of the variance in intention to purchase. Therefore, it appears that additional variables are needed to explain intention to purchase. In future studies, it is suggested that additional variables from the Hines' Model of Responsible Environmental Behavior be incorporated into the model.

Finally, given the suggested changes to the model in this study, it should be applied to other studies. The outcome of the studies will contribute to establishing the reliability of the scales and the model.

Conclusions

This study was approached with a desire to move forward the body of knowledge concerning environmental research as it pertains to the hospitality industry. The endeavor was undertaken with the belief that concern and awareness about the environment is not a passing fad but a fundamental shift in society. In order for any business to survive, it must keep up with changes and meet the demands of consumers. The research efforts in this study were aimed at establishing the validity and reliability of a consumer behavior model

specifically related to environmental behavior. The model tested in this study has laid the foundation for developing a sound environmentally responsible consumer behavior model.

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APPENDICES

Appendix A

First Attempts at Developing an Attitude Scale

Respondents were asked to indicate the degree to which they agree or disagree with the following statements.

1-STRONGLY AGREE

2-AGREE

3-NEUTRAL

4-DISAGREE

5-STRONGLY DISAGREE

- 1) Hotels should have recycling bins available for guest to use.
- 2) Hotels should not switch from disposable shampoo bottles to shampoo dispensers in the shower.
- 3) Hotels should switch from bars of soap to soap dispensers in guest rooms.
- 4) Hotels should use energy efficient lights.
- 5) The temperature to heat the corridors of a hotel should be lowered in the winter.
- 6) The temperature to cool the corridors of a hotel should be higher in the summer.
- 7) When staying in a hotel lights not being used in guest rooms should be turned off.
- 8) Hotels should not change sheets daily unless specifically requested.
- 9) Hotels should not change towels daily unless specifically requested.
- 10) Hotels' food and beverage departments should not use styrofoam as serving containers.
- 11) Hotels should not put automatically operated faucets in guest rooms.
- 12) Hotels should not put low flow shower heads in guest rooms.
- 13) When laundering, hotels should use low phosphate detergents.
- 14) Hotels should print promotional brochures on recycled paper.
- 15) Hotels should use recycled paper for in room displays.
- 16) Room Service should offer vegetarian options.
- 17) Hotel restaurant should offer vegetarian options.

Appendix B

First Attempts at Developing PSE scale

Respondents were asked to indicate the degree to which they agree or disagree with the following statements.

- 1-STRONGLY DISAGREE
- 2-DISAGREE
- 3-NEUTRAL
- 4-AGREE
- 5-STRONGLY AGREE

- 1) It is futile for the individual hotel consumer to try to do anything about the environment.
- 2) When I purchase products or services in a hotel, I try to consider how my use of them will effect the environment.
- 3) By using low-flow water devices in hotel rooms, I will not be contributing to world water conservation.
- 4) By not having sheets changed daily during the same stay in a hotel, I will be conserving the world's water resources.
- 5) By using towels more than one day during a hotel stay, I will contribute to world water conservation.
- 6) Using recycling bins during my stay at a hotel will not impact the nation's solid waste problem.
- 7) By using shampoo dispensers in a hotel room instead of travel size containers, I will not help reduce the nation's solid waste problem.
- 8) Ordering organic menu items from the hotel's restaurant will reduce the use of pesticides that harm the environment.

Appendix C

Item-to-Total Scale Correlations for the First PSE Scale

The item to total score refers to how well each question in the PSE scale correlates to the overall PSE scale.

Questions (items) _a	Correlations
one	.2345
two	.3024
three	.4821*
four	.6593**
five	.7777**
six	.7237**
seven	.6682**
eight	.6701**

* $p < .05$

** $p < .01$

_a refer to Appendix B for the actual questions.

Appendix D

Correlation Among PSE Scale Items (questions)

The matrix illustrates the correlation among the items (questions) that constitute the PSE scale (refer to Appendix B for the questions).

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8
Item 1		.29	-.02	-.04	.25	-.24	-.23	.01
Item 2			-.03	-.15	.09	.29	-.01	-.09
Item 3				.07	.03	.36	.55**	.16
Item 4					.67**	.44*	.39*	.57**
Item 5						.59**	.37	.54**
Item 6							.60**	.35
Item 7								.40*

* significant at the .05 level

** significant at the .01 level

Appendix E

First Attempts at Developing the Knowledge Index

Respondents were asked to choose the correct response to the following questions.

1. One ton of recycled paper saves: 1) 5 trees 2) 17 trees 3) 25 trees 4) 50 trees.
2. Disposable plastic products are: 1) polluting water supplies 2) filling up the landfill 3) Both 1 & 2 4) none of the above.
3. Which of the following materials takes the longest to decompose? 1) tin 2) steel 3) aluminum 4) iron.
4. The ozone layer protects the earth from: 1) ultraviolet radiation 2) methane 3) sulfur dioxide 4) nitrous oxide.
5. Ozone depletion is caused by: 1) chlorofluorocarbons 2) phosphates 3) silver nitrates 4) carbon dioxide.
6. Ozone depleting gases are found in: 1) aluminum 2) glass 3) styrofoam 4) cardboard.
7. The average running faucet uses how many gallons of water per minute: 1) less than a gallon 2) 1-2 gallons 3) 3-5 gallons 4) 6-8 gallons.
8. How many degrees would you have to raise the temperature of your air conditioner to save 190,000 barrels of oil everyday? 1) 6 degrees 2) 8 degrees 3) 10 degrees 4) 12 degrees.
9. Electric Utilities are responsible for emitting a large percent of sulfur oxide, which is a primary component of which of the following environmental problems: 1) the greenhouse effect 2) acid rain 3) global warming 4) none of the above.

Appendix F

First Attempts at Developing an Intention Scale

Respondents were asked to indicate how likely or unlikely you will be to stay at a hotel that offers the following services.

- 1-EXTREMELY LIKELY
- 2-LIKELY
- 3-DOES NOT MATTER
- 4-UNLIKELY
- 5-EXTREMELY UNLIKELY

1. Recycling bins available for guest to use.
2. Shampoo dispensers in the shower.
3. Soap dispensers in guest rooms.
4. Energy efficient lights.
5. Lower corridor temperatures during the winter.
6. Higher corridor temperatures during the summer.
7. Turning off lights not being used in guest rooms
8. Change sheets only if requested.
9. Change towels only if requested.
10. Eliminate the use of styrofoam as serving containers.
11. Automatically operated faucets in guest rooms.
12. Low flow shower heads in guest rooms.
13. Use low phosphate detergents.
14. Print promotional brochures on recycled paper.
15. Use of recycled paper for in room displays.
16. Room Service offers vegetarian options.
17. Restaurant offer vegetarian options.

Appendix G

Survey

ENVIRONMENTAL LODGING SURVEY

Please choose the correct response to the following questions by filling in the appropriate number.

1. One ton of recycled paper saves: 1) 5 trees 2) 17 trees 3) 25 trees 4) 50 trees.
2. Disposable plastic products are: 1) polluting water supplies 2) filling up the landfill 3) Both 1 & 2 4) none of the above.
3. Which of the following materials takes the longest to decompose? 1) tin 2) steel 3) aluminum 4) iron.
4. The ozone layer protects the earth from: 1) ultraviolet radiation 2) methane 3) sulfur dioxide 4) nitrous oxide.
5. Ozone depletion is caused by: 1) chlorofluorocarbons 2) phosphates 3) silver nitrates 4) carbon dioxide.
6. Which of the following materials contain ozone depleting gases? 1) aluminum 2) glass 3) styrofoam 4) cardboard.
7. How many gallons of water per minute does the average running faucet use? 1) less than a gallon 2) 1-2 gallons 3) 3-5 gallons 4) 6-8 gallons.
8. Which of the following resources is NOT considered a depletable resource: 1) sun 2) oil 3) coal 4) water
9. Electric Utilities, which are responsible for emitting a large percent of sulfur dioxide, are a primary component of the following environmental problem: 1) the greenhouse effect 2) acid rain 3) ozone depletion 4) none of the above.
10. Fresh water is what percentage of the earth's water? 1) 3 percent 2) 12 percent 3) 25 percent 4) 40 percent
11. Ecology is best described as the study of: 1) the relationship between man and the environment 2) the relationship between organisms and the environment 3) recycling 4) the environment
12. Products that consist of material that was recycled after being used outside the manufacturing plant are: 1) 100% recycled 2) post consumer recycled waste 3) biodegradable 4) biorecyclable

Please continue on next page

WHEN RESPONDING TO PART II AND PART III PLEASE VISUALIZE THE LODGING ACCOMMODATION YOU STAY AT MOST OFTEN.

PART II: ATTITUDE/EFFICACY

Please indicate the degree to which you agree or disagree with the following statements by filling in the appropriate number.

- 1-STRONGLY AGREE
- 2-AGREE
- 3-NEUTRAL
- 4-DISAGREE
- 5-STRONGLY DISAGREE

- 13. Hotels should have recycling bins available for guest to use.
- 14. Hotels should not switch from disposable shampoo bottles to shampoo dispensers in the shower.
- 15. Hotels should switch from bars of soap to soap dispensers in guest rooms.
- 16. Hotels should use energy efficient lights.
- 17. In the winter, the temperature of the corridors in a hotel should be cooler than the guest rooms.
- 18. In the summer, the temperature of the corridors in a hotel should be warmer than the guest rooms.
- 19. When guests are not in their hotel rooms lights should be turned off in their room.
- 20. For a guest staying more than one night the sheets should not be changed daily unless specifically requested.
- 21. For a guest staying more than one night the towels should not be changed daily unless specifically requested.
- 22. Polystyrene foam should not be used as serving containers in hotels.
- 23. Hotels should not put automatically operated faucets in guest rooms.
- 24. Hotels should not put low flow shower heads in guest rooms.
- 25. Hotels should print promotional brochures on recycled paper.
- 26. Hotels should use recycled paper for in room displays.
- 27. I am confident that my cooperation in efforts to conserve resources in a hotel will be useful in the long run.
- 28. Even if I conserve resources while staying in a hotel, most people probably will not; and my efforts will therefore be useless.

Please continue on next page

- 1-STRONGLY AGREE
- 2-AGREE
- 3-NEUTRAL
- 4-DISAGREE
- 5-STRONGLY DISAGREE

29. I am confident that my cooperation in efforts to reduce the solid waste problem while staying in a hotel will be useful in the long run.

30. Even if I help reduce the solid waste problem while staying in a hotel, most people probably will not; and my efforts will therefore be useless.

31. While staying in a hotel, I am confident that my cooperation in efforts to help stop the destruction of the ozone layer will be useful in the long run.

32. While staying in a hotel, even if I help stop the destruction of the ozone layer most people probably will not; and my efforts will therefore be useless.

PART III: INTENTION

Please indicate how likely or unlikely you would be to stay at a hotel when it offers the following services. Fill in the appropriate number.

- 1-EXTREMELY LIKELY
- 2-LIKELY
- 3-DOES NOT MATTER
- 4-UNLIKELY
- 5-EXTREMELY UNLIKELY

33. Recycling bins available for guest to use.

34. Shampoo dispensers in the shower.

35. Soap dispensers in guest rooms.

36. Energy efficient lights.

37. Cooler corridor temperatures during the winter.

38. Warmer corridor temperatures during the summer.

39. Turning off lights not being used in occupied guest rooms.

40. When staying more than one night, sheets are changed only if requested.

41. When staying more than one night, towels are changed only if requested.

42. Does not use styrofoam serving containers.

Please continue on next page

- 43. Automatically operated faucets in guest rooms.
- 44. Low flow shower heads in the guest rooms.
- 45. Promotional brochures are printed on recycled paper.
- 46. Recycled paper is used for in room displays.

PART IV: DEMOGRAPHICS

- 47. Please identify the type of lodging accommodation you stay in most often (select only one)
 - 1) Budget (Motel 6)
 - 2) Economy (Red Roof Inn)
 - 3) Luxury/Budget (Hampton Inn)
 - 4) Mid-Priced (Holiday Inn)
 - 5) Upscale (Hilton)
 - 6) Luxury (Ritz Carlton)
 - 7) Bed & Breakfast
 - 8) Family-owned Independent
- 48. What would be the purpose of the trip that would be associated with the lodging accommodation selected in the above question (47).
 - 1. All Business 2. Mostly Business 3. All Pleasure
 - 4. Mostly Pleasure 5. Half Business & Half Pleasure
- 49. Please specify your age.
 - 1) under 20 2) 20 to 30 3) 31 to 40 4) 41 to 50
 - 5) 51 to 60 5) over 60
- 50. Are you 1. Male 2. Female
- 51. Please indicate the highest level of education or training you have completed.
 - 1. Less than High School Grad 2. High School Grad
 - 3. Some College 4. Technical/Trade Degree
 - 5. Bachelor's Degree 6. Graduate Degree

Please continue on next page

Appendix H

Survey Form used in the Airports

VIRGINIA TECH		
ENVIRONMENTAL LODGING SURVEY		
Please choose the correct response to the following questions by filling in the appropriate number.		
1. Recycling one ton of paper saves:	1) 5 trees 2) 17 trees 3) 25 trees 4) 50 trees.	1
2. Disposable plastic products are:	1) polluting water supplies 2) filling up the landfill 3) both 1 & 2 4) none of the above.	2
3. Which of the following materials takes the longest to decompose?	1) tin 2) steel 3) aluminum 4) iron.	3
4. The ozone layer protects the earth from:	1) ultraviolet radiation 2) methane 3) sulfur dioxide 4) nitrous oxide.	4
5. Which of the following gases contribute to the depletion of the ozone layer?	1) chlorofluorocarbons 2) phosphates 3) silver nitrates 4) carbon dioxide.	5
6. Which of the following materials contain ozone depleting gases?	1) aluminum 2) glass 3) polystyrene foam 4) cardboard.	6
7. How many gallons of water per minute does the average running faucet use?	1) less than a gallon 2) 1-2 gallons 3) 3-5 gallons 4) 6-8 gallons.	7
8. Which of the following resources is NOT considered a non-renewable resource?	1) sun 2) oil 3) coal 4) water	8
9. Electric Utilities, which are responsible for emitting a large percent of sulfur dioxide, are a primary component of the following environmental problem:	1) the greenhouse effect 2) acid rain 3) ozone depletion 4) none of the above.	9
10. Fresh water is what percentage of the earth's water?	1) 3 percent 2) 12 percent 3) 25 percent 4) 40 percent	10
11. Ecology is best described as the study of:	1) the relationship between man and the environment 2) the relationship between organisms and the environment 3) recycling 4) the environment	11
12. Products that consist of material that was recycled after being used outside the manufacturing plant are:	1) 100% recycled 2) post consumer recycled waste 3) biodegradable 4) biorecyclable	12
WHEN RESPONDING TO PART II AND PART III PLEASE VISUALIZE THE LODGING ACCOMMODATION YOU STAY AT MOST OFTEN.		
PART II: ATTITUDE/EFFICACY		
Please indicate the degree to which you agree or disagree with the following statements by filling in the appropriate number.		
1-STRONGLY AGREE 2-AGREE 3-NEUTRAL 4-DISAGREE 5-STRONGLY DISAGREE		
13. Hotels should have recycling bins available for guest to use.		13
14. Hotels should not switch from disposable shampoo bottles to shampoo dispensers in the shower.		14
15. Hotels should switch from bars of soap to soap dispensers in guest rooms.		15
16. Hotels should use energy efficient lights.		16
17. In the winter, the temperature of the corridors in a hotel should be cooler than the guest rooms.		17
18. In the summer, the temperature of the corridors in a hotel should be warmer than the guest rooms.		18
19. When guests are not in their hotel rooms lights should be turned off in their rooms.		19
20. For a guest staying more than one night the sheets should not be changed daily unless specifically requested.		20
21. For a guest staying more than one night the towels should not be changed daily unless specifically requested.		21
22. Polystyrene foam should not be used as serving containers in hotels.		22
23. Hotels should not put automatically operated faucets in guest rooms.		23
24. Hotels should not put low flow shower heads in guest rooms.		24
25. Hotels should print promotional brochures on recycled paper.		25
26. Hotels should use recycled paper for in room displays.		26
27. I am confident that my cooperation in efforts to conserve resources in a hotel will be useful in the long run.		27
28. Even if I conserve resources while staying in a hotel, most people probably will not; and my efforts will therefore be useless.		28
29. I am confident that my cooperation in efforts to reduce the solid waste problem while staying in a hotel will be useful in the long run.		29
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Appendix H (con't)

Survey Form used in the Airports

30. Even if I help reduce the solid waste problem while staying in a hotel, most people probably will not, and my efforts will therefore be useless. 31. While staying in a hotel, I am confident that my cooperation in efforts to help stop the destruction of the ozone layer will be useful in the long run. 32. While staying in a hotel, even if I help stop the destruction of the ozone layer most people probably will not, and my efforts will therefore be useless. PART III: INTENTION Please indicate how likely or unlikely you would be to stay at a hotel when it offers the following services. Visualize the lodging accommodation you stay at most often. Fill in the appropriate number. 1-EXTREMELY LIKELY 3-DOES NOT MATTER 4-UNLIKELY 5-EXTREMELY UNLIKELY 33. Recycling bins available for guest to use. 34. Shampoo dispensers in the shower. 35. Soap dispensers in guest rooms. 36. Energy efficient lights. 37. Cooler corridor temperatures during the winter. 38. Warmer corridor temperatures during the summer. 39. Turning off lights not being used in occupied guest rooms. 40. When staying more than one night, sheets are changed only if requested. 41. When staying more than one night, towels are changed only if requested. 42. Does not use polystyrene foam serving containers. 43. Automatically operated faucets in guest rooms. 44. Low flow shower heads in the guest rooms. 45. Promotional brochures are printed on recycled paper. 46. Recycled paper is used for in room displays. PART IV: DEMOGRAPHICS Please choose the correct response to the following questions by filling in the appropriate number. 47. Please identify the type of lodging accommodation you stay in most often. Select only one. (Examples of each are in parenthesis after each type). 1) Budget (Motel 6) 2) Economy (Red Roof Inn) 3) Luxury/Budget (Hampton Inn) 4) Mid-Priced (Holiday Inn) 5) Upscale (Hilton) 6) Luxury (Ritz Carlton) 7) Bed & Breakfast 8) Family-owned Independent 48. What would be the purpose of the trip that would be associated with the lodging accommodation selected in the above question (47). 1. All Business 2. Mostly Business 3. All Pleasure 4. Mostly Pleasure 5. Half Business & Half Pleasure 49. Please specify your age. 1) under 20 2) 20 to 30 3) 31 to 40 4) 41 to 50 5) 51 to 60 6) over 60 50. Are you 1. Male 2. Female 51. Please indicate the highest level of education or training you have completed. 1. Less than High School Grad 2. High School Grad 3. Some College 4. Technical/Trade Degree 5. Bachelor's Degree 6. Graduate Degree 52. Approximately, what was your <u>total</u> household income last year? 1. less than \$20,000 2. \$20,001-\$40,000 3. \$40,001-\$60,000 4. \$60,001-\$80,000 5. \$80,001-\$100,000 6. over \$100,000 53. How likely would you be to stay in a hotel implementing environmental strategies? 1) Extremely likely 2) Likely 3) Does not matter 4) Unlikely 5) Extremely unlikely 54. How would you expect the price of a room to change in hotel implementing environmental strategies 1) decrease by \$10 2) decrease by \$5 3) no change 4) increase by \$5 5) increase by \$10 55. Do you consider yourself an environmentally minded consumer? 1) yes 2) no 56. Do you consider yourself an environmentally minded traveler? 1) yes 2) no	<table border="0" style="width: 100%;"> <tr><td>30</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>31</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>32</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>33</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>34</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>35</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>36</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>37</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>38</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>39</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>40</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>41</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>42</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>43</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>44</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>45</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>46</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>47</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>48</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>49</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>50</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>51</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>52</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>53</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>54</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>55</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>56</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>57</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>58</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>59</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> <tr><td>60</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr> </table>	30	1	2	3	4	5	6	7	8	9	10	31	1	2	3	4	5	6	7	8	9	10	32	1	2	3	4	5	6	7	8	9	10	33	1	2	3	4	5	6	7	8	9	10	34	1	2	3	4	5	6	7	8	9	10	35	1	2	3	4	5	6	7	8	9	10	36	1	2	3	4	5	6	7	8	9	10	37	1	2	3	4	5	6	7	8	9	10	38	1	2	3	4	5	6	7	8	9	10	39	1	2	3	4	5	6	7	8	9	10	40	1	2	3	4	5	6	7	8	9	10	41	1	2	3	4	5	6	7	8	9	10	42	1	2	3	4	5	6	7	8	9	10	43	1	2	3	4	5	6	7	8	9	10	44	1	2	3	4	5	6	7	8	9	10	45	1	2	3	4	5	6	7	8	9	10	46	1	2	3	4	5	6	7	8	9	10	47	1	2	3	4	5	6	7	8	9	10	48	1	2	3	4	5	6	7	8	9	10	49	1	2	3	4	5	6	7	8	9	10	50	1	2	3	4	5	6	7	8	9	10	51	1	2	3	4	5	6	7	8	9	10	52	1	2	3	4	5	6	7	8	9	10	53	1	2	3	4	5	6	7	8	9	10	54	1	2	3	4	5	6	7	8	9	10	55	1	2	3	4	5	6	7	8	9	10	56	1	2	3	4	5	6	7	8	9	10	57	1	2	3	4	5	6	7	8	9	10	58	1	2	3	4	5	6	7	8	9	10	59	1	2	3	4	5	6	7	8	9	10	60	1	2	3	4	5	6	7	8	9	10
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Appendix I

Thank You Card and Knowledge Index Answers

Side 1

Thank You for helping complete my dissertation in Hotel, Restaurant, and Institutional Management by participating in this research project. I plan to complete my doctorate at Virginia Polytechnic and State University in May 1994. Your time and support is greatly appreciated! On the back are environmental facts that provide the answer to the questions on the survey.

Side 2

Environmental Facts

1. One ton of recycled paper saves 17 trees.
2. Disposable plastic products are polluting water supplies and filling up the landfill.
3. Aluminum takes over 500 years to decompose.
4. The ozone layer protects the earth from ultraviolet radiation.
5. Ozone depletion is caused by chlorofluorocarbons.
6. The gases (chlorofluorocarbons) injected in styrofoam "eat" ozone molecules.
7. The average running faucet uses 3-5 gallons of water per minute does.
8. The sun is one of the few renewable resources.
9. Electric Utilities, which are responsible for emitting a large percent of sulfur dioxide, are a primary component of acid rain.
10. Only 3 % of the earth's water is fresh water.
11. Ecology is best described as the study of the relationship between organisms and the environment.
12. Products that consist of material that was recycled after being used outside the manufacturing plant are post consumer recycled waste.

Appendix J

Crosstabs for the Three Airports: Demographic Variables

CHI-SQUARE TEST OF INDEPENDENCE

Variables	Pearson	Likelihood ratio
Lodging accommodation	.74	.73
Purpose of trip	.25	.26
Age	.35	.32
Gender	.94	.94
Education level	.02*	.06*
Income level	.24	.25
Environmentally minded consumer	.23	.24
Environmentally minded traveler	.35	.35

* $p < .05$

Mary Elizabeth Gustin

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Blacksburg, VA, 24060
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EDUCATION

Ph.D., Hotel, Restaurant, and Institutional Management, (May 1994), Virginia Polytechnic Institute and State University, Blacksburg, VA

Master of Business Administration, December 1992, Virginia Polytechnic Institute and State University, Blacksburg, VA

Bachelors of Science, Restaurant and Hospitality Management, May 1989, University of Alabama, Tuscaloosa, AL

RELATED EXPERIENCE

Teaching

Teaching Assistantship, Department of HRIM, VPI & SU Blacksburg, VA, Spring 1994, Introduction to Hotel, Restaurant and Institutional Management

- Planned and organized up course introducing the various components of the hospitality industry
- Taught practical skills for lodging, foodservice and tourism managers

Teaching Assistantship, Department of HRIM, VPI & SU Blacksburg, VA, Fall 1993, Hospitality Marketing Management

- Planned and taught practical marketing skills
- Created projects and assignments to develop marketing skills

Teaching Assistantship, College of Human Resources, VPI & SU Blacksburg, VA, Fall 1992-Spring 1993, Professional Orientation and Perspectives

- Assisted in teaching
- Responsible for internal recruiting -worked with faculty members, department heads, and deans to set up departmental recruiting program
- Graded tests, assignments, and papers
- Advised students

Guest Lecture Concord College, Athens, W.VA, Fall 1993
Travel Industry Management, "The Impact of Environmental Strategies on Hotels."

Hotel/Restaurant Management Experience

Consultant, Applebee's of North Alabama, Birmingham, AL, December 1993

- Developed business plan to open 6 to 10 Applebee's restaurants in the New York/ Pennsylvania area.

Assistant Property Manager, College Park Apartments, Blacksburg, VA, January 1990-August 1992.

- Developed marketing strategies for the property to include advertising, promotional events, public relations and marketing research
- Responsible for hiring, scheduling, training, and motivating office staff
- Handled all computer networking-beginning and end of the month procedures and accounting work
- Leased and collected rent

Front Desk Assistant, Sheraton Capstone Inn, Tuscaloosa, AL, October 1987-February 1989

- Handled guest communications
- Computerized Check-in/Check-out operations
- Operated the switchboard

Waitress, Applebee's, Birmingham, AL, Summer 1989

- Developed operating procedures for the wait staff
- Checked out all wait staff at the end of shift

Caterer, Kathy G's, Birmingham, AL, 1981-1985

- Responsible for catering dinners
- Planned, prepared, and served food for various events
- Set up, decorated, and garnished catered events

PRESENTATIONS/PUBLICATIONS

Gustin, Mary E., Tammie J. Kaufman, Gyril Horn, and Pamela A. Weaver, Ph.D., "An Exploratory Study Regarding Environmetally Oriented Lodging Services", Presentation for Council on Hotel, Restaurant, and Institutional Education, Palm Springs, CA, July 29, 1994.

Gustin, Mary E. and Pamela A. Weaver, Ph.D., "The Mature Market: Underlying Dimensions and Group Differences of a Potential Market for the Hotel Industry", FIU Hospitality Review, Volume 11, Number 2, Fall 1993.

Weaver, Pamela A., Ph.D. and Mary E. Gustin, "The Mature Market as the Pleasure Traveler", Gerontology Research Review, Fall 1993.

Gustin, Mary E., and Francis Kwansa, "Risk Analysis for a Private Firm: A Case Study", Presentation for Council on Hotel, Restaurant, and Institutional Education, Chicago, IL, August 4, 1993.

Gustin, Mary E., "An Overview of the Current State of Research on Energy Management in the Hospitality Industry", Presentation for Council on Hotel, Restaurant, and Institutional Education, Chicago, IL, August 5, 1993.

Gustin, Mary E. and Pamela Weaver, Ph.D. "The Mature Travel Market: Underlying Factors That Determine Hotel Choice", 1992 Annual CHRIE Conference Proceedings, July 29-August 1, 1992.

Badinelli, Kim, Nigel Davis and Libby Gustin, "Senior Traveler Study-America's Mature Market Not Content to While Away Their Days", Hotel Motel Management, Volume 206, Number 14, 1991.

Parsa, H.G., Mary E. Gustin and Mahmood A. Khan, "Potential Conflict Points in Franchisor-Franchisee Relations: An Exploratory Study of Fast Food Franchise Systems", Hospitality Research Journal, Volume 14, Number 2, 1990.

HONORS and AWARDS

2nd Place in the Graduate Research Symposium, 1994
Eta Sigma Delta, 1991
Kappa Omicron Nu, 1990
Outstanding Senior in Restaurant and Hospitality Mgt., 1989
Who's Who Among American Colleges and Universities, 1989
Certification, Serving Alcohol with Care, 1989
Certification, Basic Sanitation, 1988
Mable E. Adams Scholarship, 1988
IFMA Educational Foundation Scholarship, 1988
Phi Upsilon Omicron Honor Society, 1988
Gold Plate Scholarship, 1987
Gamma Beta Phi Honorary, 1986
Phi Eta Sigma Honorary, 1986
Dean's List 1985, 1987
Norman Topshe Scholarship, 1985
Eddie Waunita Hanna Scholarship, 1985
Alpha Lambda Delta Honorary, 1985

ACTIVITIES:

Ecocycle, 1993
Representative, Student Environmental Action Coalition, 1993
Catechumen Sponsor, Newman Community, 1991
Vice President, Graduate Hospitality and Tourism
Association, 1990
Student Home Economic Association, 1987-1989
Second-Vice President, Zeta Tau Alpha, 1987-1988
Pledge Trainer, Zeta Tau Alpha, 1987-1988
Hospitality and Restaurant Association, 1987-1988
Alabama Triangle Service Association, 1986-1987
Assistant Director, Variety Programs, 1986
Fraternity Educator, Zeta Tau Alpha, 1986
Selections Chairman, Phi Eta Sigma, 1986
Blood Donor, 1991-1994

Mary E. Gustin