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UNDERSTANDING TRAVELERS' INFORMATION SOURCES AND TECHNOLOGY USES ACROSS VACATION STAGES

By

Junghye Angela Kah

A DISSERTATION

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ABSTRACT

UNDERSTANDING TRAVELERS' INFORMATION SOURCES AND TECHNOLOGY USES ACROSS VACATION STAGES

By

Junghye Angela Kah

The purpose of this dissertation is threefold, all aimed at the prospective development of a more comprehensive behavioral model of information source and technology use by travelers based on uncertainty and risk theories. The first objective was to examine the relationship between levels of tolerance for travel uncertainty and uses of information sources in traditional and web-based formats; second, to develop a typology of information technology uses during trips based on different types and levels of perceived travel risks; and third, to investigate differences in information technology use between everyday contexts and trip specific purposes and the effectiveness of involvement with information technology on explaining information technology use away from home. A panel survey methodology was employed to collect data from Canadian travelers.

The findings suggest individuals believe it is important to reduce travel uncertainty, and, at some point before an actual vacation experience starts, a traveler attempts to become more certain about their travel decisions. Results did not show that tolerance for travel uncertainty significantly influenced various information search behaviors as theory would suggest. Relationships between traditional and web formats were tested and some results suggested that web-based information sources are complementing rather than replacing traditional information source uses.

Findings also suggest that perceived travel risks were not significantly related to

ion technology uses during trips, as was expected in the proposed theoretical
The results of this study revealed that: (1) the high perceived risk group did not
actual trips examined in this study; (2) high levels of perceived satisfaction risk
nd in a majority of travelers while en route suggesting that travelers cognitively
their travel decisions or the credibility and usefulness of information they used
l planning; (3) uncertainty and risk were tested and found to not be equivalent
; and (4) travelers' use of advanced high-tech devices or services were
erall, the research found information technology was not actively used on trips.
he panel study findings suggest involvement with information technology was
an effective tool to predict information technology use, particularly for a trip
Despite the capability of information technology to enhance a traveler's
ce, the results indicate individuals rely on information technology more
ely at home in pursuing a variety of goals. This use distinction suggests concerns
nctional capacities of information technology in destinations or places away from
work environments, which appears to inhibit individuals from bringing
ion technology on vacations.

While the research results did not meet the proposed models that suggested that
traits (tolerance for travel uncertainty, perceived travel risk and involvement
ormation technology) would predict information and technology uses, insights
diffusion of web-based information were gained. It is recommended that the
industry forge partnerships with the information technology industry to remove
ents in use and applications of technology and wired environments for travelers,
n foster the enhancement of traveler's mobility and flexibility.

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CHAPTER I

INTRODUCTION

Travel is a high risk purchase in the sense that any trip potentially can produce uncertain conditions, consequences or outcomes in which a traveler may experience risks, hazards, or losses. The view of travel as a high risk purchase is based on three ideas. First, travel has consumption characteristics of services (Williams, 2002). Unlike the products in a retail store, travel products cannot be directly observed or tested for satisfaction beforehand (Kotler et al., 2006). Second, vacations are assumed to be a relatively expensive product which requires significant amounts of time and money (Crotts, 2000). Third, a traveler has "novelty motives," or desires to visit new destinations on vacations (Gitelson & Crompton, 1983).

Since the concept of risk was introduced by Knight (1921), risk perception has been used as a theoretical framework to explain consumer behaviors (Kogan & Wallach, 1964). Risk-taking theory suggests a consumer perceives risk in purchase situations when she/he faces several choices (Sheth & Venkatesan, 1968) and recognizes that the information or knowledge already stored in memory is not sufficient or appropriate in the choice situation. In tourism, risk is perceived by tourists during the process of purchasing and consuming travel products and services (Tsaur et al., 1997). Most vacations involve a variety of alternative destination, activity, transportation, and accommodation choices; thus, creating uncertainty with the presence of choices in travel behavior. This initial chapter discusses nine topics: uncertainty reduction theory; risk perception theory; comparison of uncertainty and risk; travel information search; travel information sources; web-based information sources; information technology; involvement with information

technology; and information search phases. These topics represent the breadth of this dissertation.

Tolerance for travel uncertainty

Travelers experience uncertainty about vacations (Daniels & Norman, 2001) and uncertainty typically causes the enactment of information seeking behavior. Axiom 3 of the Uncertainty Reduction Theory (URT), authored by Berger and Calabrese (1975), asserts that "high levels of uncertainty cause increases in information seeking behavior. As uncertainty levels decline, information seeking behavior decreases" (p. 101). Kellermann and Reynolds (1990) demonstrated an inconsistent finding with Axiom 3, which showed "tolerance for uncertainty" is a more accurate predictor of information search behaviors than "uncertainty." In other words, the intensity of information search is affected not by levels of uncertainty, but levels of tolerance for uncertainty.

To measure tolerance for uncertainty, Kellermann and Reynolds (1990) employed two components, (1) "importance of reducing uncertainty" or the concern with the significance of what one does not know about a person, and (2) "the need for certainty" or one's need or want for better understanding of or ability to predict other individual's behavior. Although URT was originally conceptualized to explain information acquisition in initial conversations between interpersonal relationships, the theory has been recently tested in tourism studies in recognition that travelers make decisions under some degree of uncertainty (Daniels & Norman, 2001). In Daniels and Norman's study, tolerance for uncertainty was employed to explore the patterns in travel uncertainty among travel inquirers and how uncertainty was related to travel information sources used for travel planning. Daniels and Norman found that a range of tolerance for travel

uncertainty exists and tolerance is positively related to the use of brochures, travel guides, and magazine articles. This dissertation employed Kellermann and Reynolds' model suggesting that tolerance for uncertainty is a determinant of information search behaviors and re-examined the relationship between tolerance for travel uncertainty and types of information sources used for travel planning.

Risk perception theory

Risk in tourism has been examined in several studies (Lepp & Gibson, 2003; Reisinger & Mavondo, 2005; Roehl, 1988; Roehl & Fesenmaier, 1992). Perceived risk is often measured as a multidimensional concept with physical loss, psychological risk, time risk, financial risk, performance risk, and social risk components (Cunningham et al., 2005; Roehl & Fesenmaier, 1992; Sonmez & Graefe, 1998a; 1998b). Roehl and Fesenmaier (1992) found perceived travel risk varies depending on tourists' characteristics and tourists experienced three types of risk: physical-equipment, vacation, and destination. Sonmez and Graefe (1998a) identified four types of risk as most associated with tourism: financial, psychological, satisfaction, and time. Recently, concern about the risk of terrorism has been a major factor when choosing a vacation destination (Sonmez & Graefe, 1998b), and academic research has been conducted on the impacts of terrorism on travel-related destination choices (Goodrich, 2002; Han, 2005; Sonmez & Graefe, 1998b). Roehl and Fesenmaier (1992) further examined risk by the types of information used by travelers with clustering of subjects into three groups: risk neutral, functional risk, and place risk. They found that members of the risk neutral group tend to consult a travel agent or a tourist office or chamber of commerce, while functional risk group members are more likely to have used information sources such as maps and

personal experiences. Members in the place risk group are less likely to contact a tourist office or chamber of commerce than members of the risk neutral and functional group.

Comparison of uncertainty and risk

While most studies have used uncertainty and risk as equivalent concepts, several studies have stressed the conceptual distinction between uncertainty and risk (e.g., Crowe & Horn, 1967; Head, 1967; Knight, 1921; Wood, 1964). First, *uncertainty* is used to describe the lack of knowledge of an event that happened in the past, or could happen in the present or future (Hofstede, 1980), whereas *risk* is used when the probabilities of all possible outcomes and specific undesirable concerns regarding the future are known to the decision maker, such as financial risk and social risk (Crowe & Horn, 1967; Williams & Heins, 1964). Consequently, as "uncertainty" cannot be interpreted as "risk", "uncertainty avoidance" does not equal "risk avoidance" or "intolerance for risk" (Hofstede, 1980).

Second, uncertainty is subjective and varies across individuals, while risk is objective. Pfeffer (1956) defined uncertainty as "a state of a person's knowledge, his/her feelings, and his/her strength of conviction about any matter. Uncertainty varies from person to person and for any given person, from time to time" (p. 42). On the other hand, risk is defined as the probability of the occurrence of an event, which is the same for everyone (Crowe & Horn, 1967; Head, 1967; Knight, 1921). For example, if two men sit next to each other on the same flight for vacation to the same destination, the risk that the airplane might crash would be identical. However, one man may be seriously worried about a crash of flight, while the other man may be completely unconcerned about the possible hazard. That is, the risk is the same, but the uncertainties regarding the

possibility of a hazard vary from person to person. It is important to understand that even though actual risk in a given situation is objective and the same for everyone, the perception of risk is highly individualistic (Weber & Milliman, 1997).

Crowe and Horn (1967) illustrated four situations in which the concepts of uncertainty and risk are distinct: (1) both risk and uncertainty are present: a consumer perceives a risk in purchasing a product due to not having knowledge about or experience with the product resulting in uncertainty of choice; (2) situations in which both risk and uncertainty are absent. For example, most people understand they can stay on the ground and do not have a possibility to float in the air due to gravity; therefore, in general, they would not experience uncertainty about this fact; (3) situations in which risk is present and uncertainty is absent: a gambler understands that gambling involves a chance of money loss and feels no uncertainty concerning this risk; and (4) situations in which risk is absent but uncertainty is present. For example, an obese person must lose weight and there is no possibility that he/she will be harmed from it. However, he/she is uncertain about the best way to lose weight.

As mentioned earlier, most studies have used uncertainty and risk interchangeably. Moreover, travel risk literature has not distinguished between general vacation perceptions and specific trip perceptions. Roehl and Fesenmaier (1992) examined "perceived risk" related to vacations in general and then for a specific destination using the same measurement scale. Their study concluded that risk perceptions are situation specific and thus, risk perceptions about vacations in general are not necessarily deterministic of travel behaviors. Risk perception associated with product class differs from risk perception about a particular product (Bettman, 1973; 1975; Dowling, 1986)

and general risk perception has little relationship to risk perception for a vacation (Dowling & Stealin, 1994). In conclusion, consumers' perceptions change over time and with the occurrence of major events (Dolnicar, 2005). Therefore, the nature of the difference between uncertainty and risk suggests that separate operational measurements of travel-related perceptions should be used. For example, the perception a traveler experiences with the idea of taking a vacation is *travel uncertainty*, while the perception identified after a specific trip decision is made is *travel risk.*

Information search

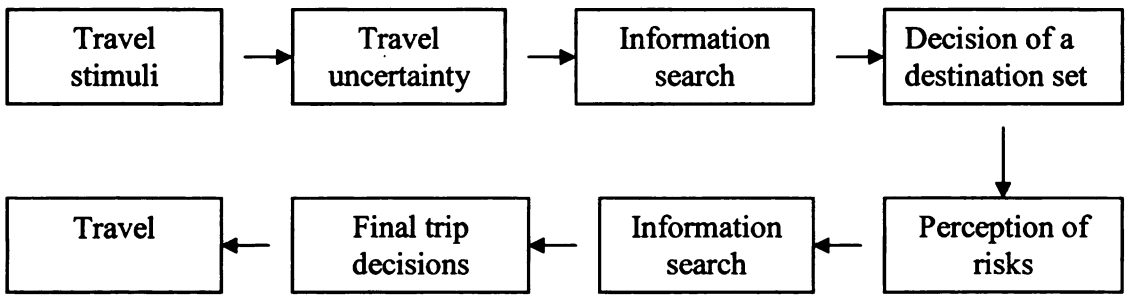
Most existing research on risk-taking theory has been conducted using one-time surveys, which question consumers only once about their behaviors for reducing uncertainty or risk (Sheth & Venkatesan, 1968). Yet, the importance of repeated measurement of information seeking behavior over time, which is considered as the uncertainty and risk reduction process, has been emphasized. In decision making situations, consumers' perceptions and information seeking behaviors may change as the buyer gains experience with purchases (Roehl, 1988; Sheth & Venkatesan, 1968) and information processing (Clatter & Turner, 1978). The behavior change in information seeking over time can be found in tourism literature. Mayo and Jarvis (1981) suggested travel behavior can be explained by the decision process; from routine decision-making to extensive decision-making about where to go and what to do, and by the influence of psychological factors on a traveler's choices. When the traveler uses a routine decision-making approach, "decisions are made quickly and with very little mental effort" (Mayo & Jarvis, 1981). In complex decision process situations, extensive decisions require

considerable time and effort in seeking information and evaluating the alternatives available.

Fodness and Murray (1998) suggested a similar concept in which individual information seeking behavior can be explained by "the temporal dimension" of information search strategies: (1) ongoing search: consumers acquire a knowledge base for upcoming decisions or the entertainment factor of the search activity itself (Bloch et al., 1986), and (2) prepurchase: consumers become more involved in the specific information search relevant to a certain purchase decision.

Understanding how travelers make decisions or search for information is not enough. Full understanding of travelers' decisions requires insight into what influences their choices. Figure 1-1 shows the flows of events which occur before and after a set of destination choices including: "travel stimuli display" (Moutinho, 1987), experience travel uncertainty, general information search, destination choice, recognition destination risk, specific information search, and final trip decisions.

Figure 1-1. Traveler information search model (adapted from Moutinho, 1987)



(1) travel stimuli display: travel uncertainty is caused by travel stimuli display, and according to Moutinho (1987), travel stimuli display, which is apprehended intentionally or incidentally by consumers, can appear via mass-media or personal sources.

(2) experience travel uncertainty: consumers exposed to stimuli arouse uncertainty perceptions about vacations in general and face travel decisions (whether to go somewhere).

(3) uncertainty then leads to a search for general information; she/he retrieves destinations which she/he has been to avoid the repeat visitation if her/his motivation is to visit a new destination and also comprehend how much money and time can be spent on this trip. The level of information search is dependent on the degree of perceived uncertainty or tolerance for uncertainty and the outcomes the tourist expects (Sunnafrank, 1986), that is, travel uncertainty with positive outcome values is associated with active information search (Figure 1-2). An individual who is aware of the higher possibility of her/his trip occurring, but uncertain about destination choices or travel plans, then information search is more active than an individual without a chance for a trip or an individual who is certain about the travel plan.

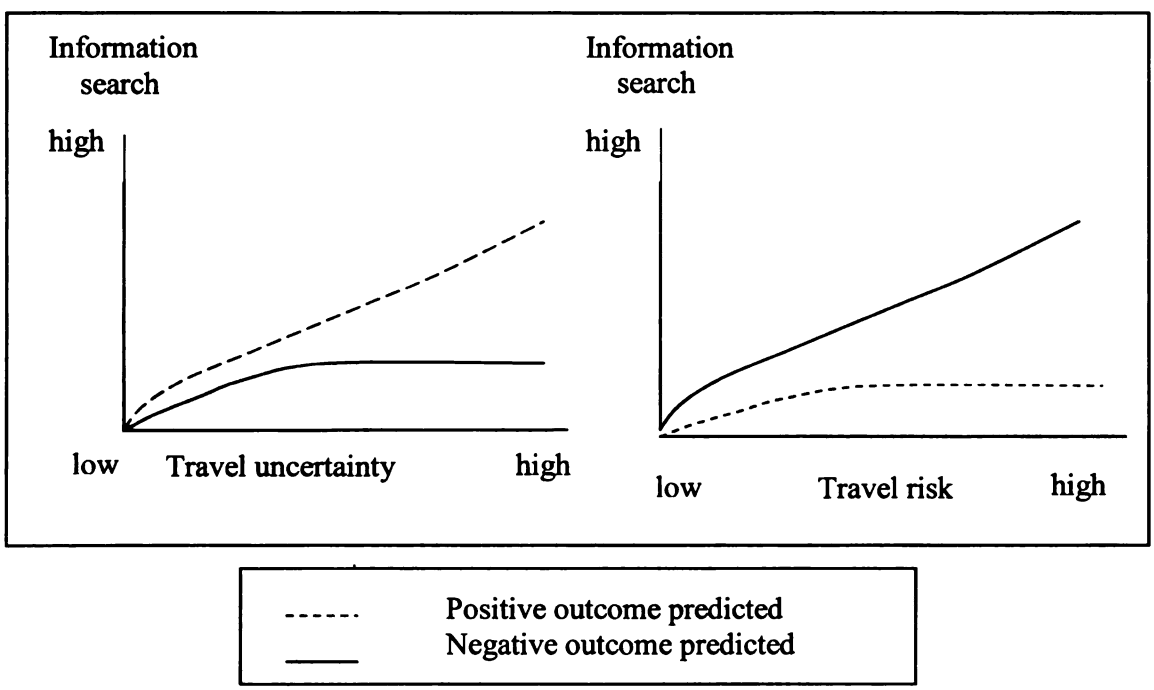
(4) after information search a travel decision is made and certain questions must then be addressed: Where to go? Where to stay? What to do there? How much money should be spent? How many days should be spent? These questions are considered along with a traveler's destination choices.

(5) after the destination choice is made, a traveler can predict the outcomes or consequences of the trip and perceived risks in terms of physical, equipment, political, money and time. Risk perception involves the outcome values the traveler expects: a predicted negative outcome value causes high risk and assessment a predicted positive risk value causes low risk (Jia et al., 1999; Woodside & Lysonski, 1989) (Figure 1-2).

(6) an individual attempts to seek alternative ways to satisfy her/his need by evaluating and reducing the perceived risk through specific information. The level of information search depends on the level of risk perceived, for example, the high level of risk results in higher levels of information search, and

(7) final decision(s) is made about key characteristics of a trip.

Figure 1-2. Relation between predicted outcome values and travel uncertainty and risk



Information sources

Within the travel context, information search is viewed as an uncertainty and risk reducer (Hsu & Lin, 2006). As Festinger (1964) mentioned, "information seeking in the predecision period is not selective but is rather objective and impartial." People who desire certain choices actively seek information (Mills, 1965). The sources can be classified into two types; internal sources, including personal memory and experience, and external source which includes four components: (1) personal (e.g., advice from

friends and relatives), (2) market-dominated (e.g., brochures, magazine, newspaper), (3) travel advisors (e.g., travel clubs, travel agents, tourist offices), and (4) observed sources (e.g., prepurchase visit) (Crotts, 2000; Fodness & Murray, 1997). Travelers' decision making for destination choices, transportation, accommodation, and activities requires information search through various channels: travel agencies, friends and families, the Internet, newspapers and magazines, airline companies and commercial advertisements (Jang, 2004).

Web-based information sources

Since 1990, there has been an increased amount of web-based information available in addition to traditional sources (Werthner & Klein, 1999), thereby changing travel decision making, vacation planning, and information search. Travel firms and destination marketers are meeting the challenge to stay ahead of consumers and be innovative with travel information services and products. Today, many studies consider web-based information (World Wide Web) as an important and unique external information source (Bieger & Laesse, 2004; D'Ambra & Wilson, 2004; Oorni, 2004). The significance of the Internet as a communication channel in the tourism context has been well recognized (Card et al., 2003; Daigle & Zimmerman, 2004; Heung, 2003). These studies suggest the Internet enhances tourist experiences with its advantages, such as worldwide accessibility to information, time and cost savings, real-time information services, and interactive communication capabilities. Travelers who are experienced in web usage are able to successfully identify and obtain needed information from a specific domain (D'Ambra & Wilson, 2004).

Several studies have explored the relationship between online information search and travelers' socio-demographic characteristics and found significant relationships (Bonn et al., 1999; Weber & Roehl, 1999). Bonn and colleagues (1999) found individuals who use the Internet to seek travel information are more likely to be college-educated and under the age of 45, and these tourists stay more often in commercial accommodations and spend more money while traveling. Weber and Roehl (1999) found individuals who seek tourism information through the Internet are more likely to have higher incomes; employed in management, professional or computer-related occupations; and have more years of online experience.

Information technology

Many factors have influenced the development of the Internet market, especially concerning companies that offer Internet services, which provides consumers with a convenient and efficient way to become members of the Internet society (Donthu & Garcia, 1999). Information and communication technology has gained its importance from a growing desire for travel and travelers' needs for electronic connectivity while away from their home or office using portable electronic communication devices such as cell phones, laptops, and personal digital assistants. The Travel Industry Association of America (TIA) (2004) found a large number of both business travelers and pleasure tourists who brought cellular phones with them on their trips taken in the past year. Also four in ten business travelers and one in five pleasure tourists reported having accessed the Internet during their trips (TIA, 2004). Today, last-minute travel opportunities are available to travelers and often provide lower prices offers for airline tickets and hotel rooms that might otherwise remain empty (Dacko, 2004). Information technologies are

projected to bring more purchasing opportunities to the travel and tourism domain. While diffusion of information technologies have been processed rapidly by the travelers, the segmentation of technology demand has been focused on tourism business and organization sectors (e.g., Buhalis, 1998; Wong & Kwan, 2001; Yuan et al., 2006) and few empirical studies have examined individuals' use of information technologies.

Involvement with information technology

In social-psychological terms *involvement* is "a person's perceived relevance of the object based on inherent needs, values, and interests" (Mittal, 1983). As a behavioral term *involvement* is "time and/or intensity of effort expended in pursuing a particular activity" (Stone, 1984). Salam (1998) proposed the definition of Internet involvement as "an unobservable state of motivation of a person regarding the Internet or the World Wide Web and his or her perceived relevance related to the Internet based on inherent needs, values, interest goals and objectives" (p 45). Research interest in Internet use for trips has been further narrowed to travelers' adoption and use of information technologies with today's new and dynamic forms of Internet access (Kanter, 2001). Individuals have different levels of involvement in innovative technologies (Bhatnagar et al., 2000; Eastin, 2002; Rogers, 2003) Some individuals are more likely to adopt and use new technologies, while others follow the innovators of the society (Rogers, 2003).

The influential factors of consumer use of information technology have been investigated including socio-demographic (Bonn et al., 1999; Weber & Roehl, 1999) and psychological characteristics such as perceptions, interpretations (DeSanctis & Poole, 1994), and technology preferences (Korgaohnka & Moschis, 1987). The degree of involvement with information technology is expected to explain the individual

differences in use of information technology because of its multidimensional nature (Assael, 1998).

Information search phases

To effectively and efficiently promote a destination to potential visitors, it is critical to identify not only the types of information sources or technologies used for vacations, but also when they are used. In other words, knowing when visitors search for information to make their decisions across an entire span of time on vacation has important implications for the entire tourism industry (Crotts, 2000). Generally a three-stage decision process includes before-search, after-search, and post-choice (Park, 1978; Park et al., 1981; Park & Lutz, 1982).

Perdue (1985) grouped tourists on the basis of the timing of their travel decision and attraction decisions. In a study conducted by Crotts and Reid (1993), 72% of respondents decided which recreational activities they would engage in prior to leaving home, whereas 4% made their decisions en route to and 25% after arriving in their destinations. In addition, Crotts (2000) found the destination was channeling about 83% of its promotional budgets to "at home before trip" strategies, 12% to en route promotions, and 5% to after-arriving strategies. Traveler's experiences with information during a vacation differ based on the length of stay (Vogt & Stewart, 1998): for example, travelers who stay three days or more show more positive feelings about information use during trips.

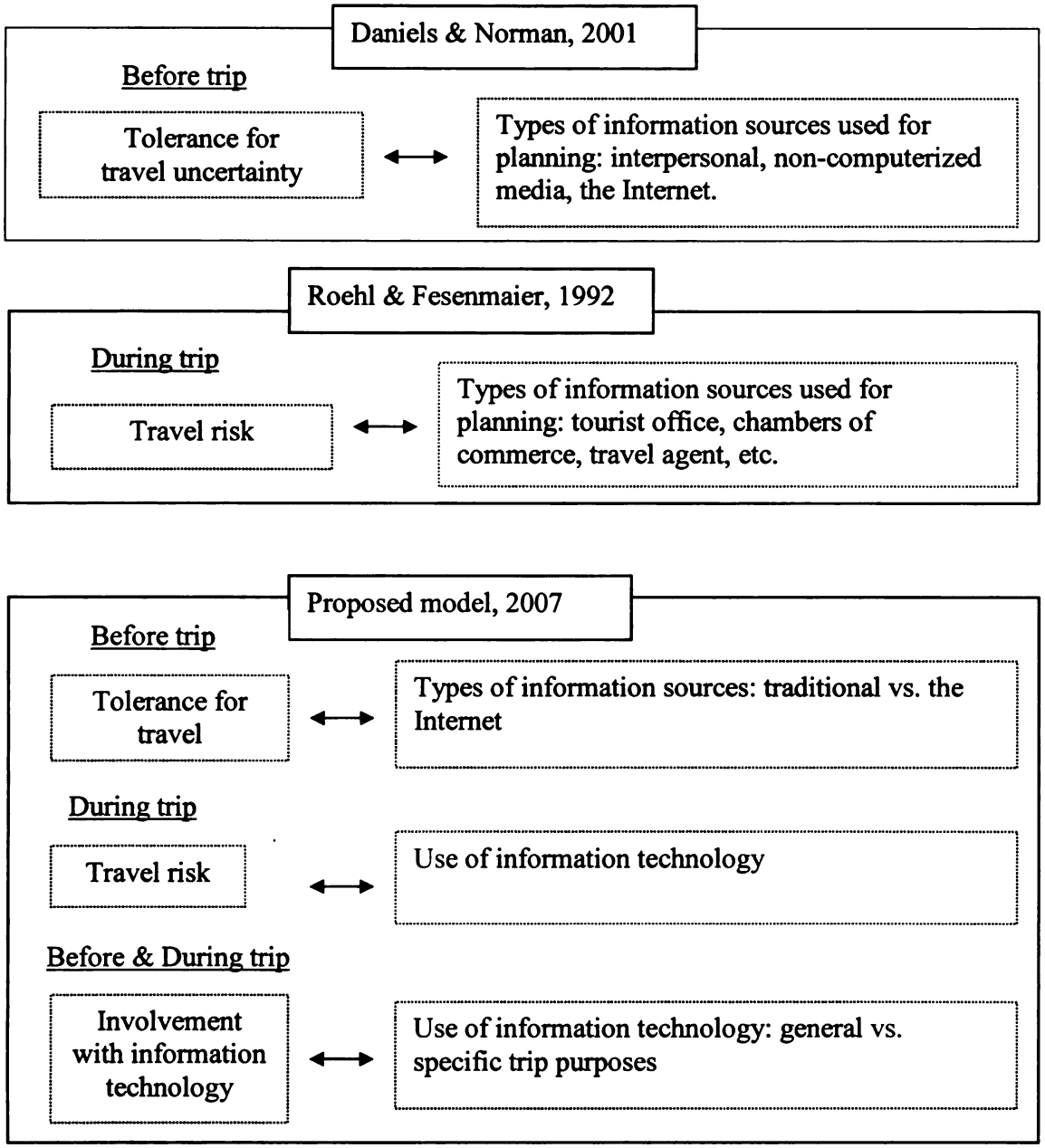
While most research studies explain information search behavior prior to trips, few studies attempt to comprehensively illustrate travelers' information search behavior based on travelers' perceptions over several vacation phases. Further, while traditional

theories explained information search behaviors related to uncertainty or risk perception, they do not encapsulate theories relevant to web-based information.

Statement of the Problem

The problem this research addresses is the role and impact of travelers' perceptions on use of information source and technology (IT) (See Figure 1-3). Included in this research is an attempt to provide insights on how individuals' tolerance for travel uncertainty affects their use of travel information sources, including both traditional and web-based sources for travel planning. Also, the influence of risk perception on actual use of information technology during trips is analyzed. Further, this study sought to understand the effect of involvement with information technology on the interplay between general use of information technologies and use of information technologies for specific trip purposes.

Figure 1-3. The model development



Purpose of the Study and Justification

Prior studies (Money & Crrots, 2003; Roehl & Fesenmaier, 1992) have not considered the distinct measurements for uncertainty and risk or vacations in general and specific trips. However, as this dissertation has addressed, it is clear that distinct concepts exist for uncertainty and risk. Also, the influence of travel risk perceptions on

information search has been studied within the traditional information category (Roehl & Fesenmaier, 1992) but not the current web-based information technology. Therefore, this research aimed to identify travelers' perceptions and their influences of information usage, so to further the understanding of web-based information source use for trips and actual use of information technology during vacations.

Tourism is an information intensive industry in that travelers rely on the exchange of information with the tourism industry through various information channels to reduce any perceptions of travel uncertainty and risk and thus improve the quality of the trip (Fodness & Murray, 1997). According to anxiety/uncertainty management (AUM) theory, when travelers experience travel uncertainty, they have difficulty adapting to a new environment (Gudykunst & Hammer, 1988). When tourists perceive risk in their purchases of various products or services, their purchases can be postponed or avoided (Roehl, 1988). Therefore, the study of uncertainty and risk reduction will contribute to understanding travel related information search behaviors (Crotts, 2000; Gitelson & Crompton, 1983; Reisinger & Mavondo, 2005; Roehl & Fesenmaier, 1992; Williams, 2002).

As mentioned earlier, most studies have used uncertainty and risk interchangeably, and the measurements and applications of the two concepts in general and for specific trips have not been addressed by researchers. This study acknowledges differences between uncertainty and risk; travel uncertainty is a perception about vacations in general, which entails ongoing information search strategy, while travel risk is for a specific trip, which leads to prepurchase information strategies.

While numerous studies have been conducted to determine information sources used to plan trips, only a few studies (Daniels & Norman, 2001; Roehl & Fesenmaier, 1992) have focused on travel information search behaviors based on levels of tolerance for travel uncertainty and types of perceived travel risk. Specifically Daniels and Norman (2001) examined high/low level of tolerance for travel uncertainty, whereas Roehl and Fesenmaier (1992) examined neutral risk, functional risk, and place risk. Essentially, it is important to distinguish between travel uncertainty and travel risk because it may lead to different information search behaviors documented in travel research. Thus, identifying the tolerance for travel uncertainty and perceived travel risk is a first step in this research. A second step is to identify types of information sources and information technologies used by tourists; and a third step is to examine information technology use for general and trip specific purposes and the relationship between involvement with and use of information technology for trips. By understanding perceived travel risks (i.e., terrorism risk, financial risk, physical risk, functional risk, social risk, psychological risk, time risk) and significant influential variables of risk perceptions, such as tolerance for travel uncertainty, motivation, socio-demographics, and travel behaviors, then the effectiveness of information technology in vacation contexts becomes more apparent.

Travelers' decision making entails information search through internal and external sources in traditional and web-based formats (Jang, 2004). For tourism marketers it is crucial to understand when and which type of information source or technology is used to reduce travel uncertainty and perceived travel risks to be able to design effective marketing. Previous studies have been conducted to determine the information sources used before trips; however, there is limited academic research on

information search behavior for travel planning and purchasing across multiple phases of a vacation (before and during the trip).

Today, information search behavior is not necessarily restricted to "at home" contexts. Since the Internet has become widespread, tourists can search for travel information anytime and anywhere using portable devices such as laptop computers, cell phones, and Personal Digital Assistance (PDA). The Internet has played a vital role as a significantly different communication channel from the conventional or traditional information sources. First, the Internet can provide a virtual tour of a destination of specific business, which allows travelers to have indirect travel experience of vacation with a vivid and clear destination image before actual product purchase (Cho & Fesenmaier, 2000). Second, the Internet can provide up-to-date information at anytime in a convenient format to travelers from almost anywhere eliminating any temporal and spatial limits of search activity (Fesenmaier & Jeng, 2000). Lastly, the Internet is a multi-tasking source which provides rich information, interactive communication opportunity, and customized information. The multi-tasking technology is suitable for the heterogeneity characteristic of vacation, which integrates various products: accommodations, transportations, events, and restaurants (Beldona, 2003).

Despite online services providing benefits to travelers for information search and purchasing, the Internet has not yet fully replaced traditional information sources or purchase methods but instead has complemented them (Bjork, 1999). Peterson and colleagues (1997) found consumers who gather information about products/services on the Internet face limits in purchasing products/services on the Internet due to trust and social contact issues. Recent studies in tourism have confirmed that travel planning on the

web faces challenges with security of information and quality of information (Hueng, 2003; Weber & Roehl, 1999). It is important, therefore, for destination marketers to examine the effectiveness of the Internet and information technology as a communication channel in an effort to understand the benefits associated with online travel planning and purchasing.

Delimitation

The study is delimited to the following:

1. Uncertainty and risk are interchangeably used by many studies (Baird & Thomas, 2006; Dowling & Staelin, 1994; Locander & Hermann, 1979; Taylor, 1974). However, this study was delimited to the conceptualization of travel uncertainty and risk as different concepts. Travel uncertainty is a term for unknown possibility of event happening related to travel, while travel risk used in this study is a term for known loss or danger related to a specific trip.
2. Uncertainty scales and risk scales were selected from published studies.
3. Those individuals who requested information from a Canadian destination marketing organization during 2004. The sample was further qualified by those individuals who gave consent to be a panel participant for at least one year. This sample, thus, may be considered a self-selected sample.
4. The sample was delimited to only Canadian residents, however these individuals could have traveled anywhere in the world.
5. The study requested data collection over several phases. The qualifying study conducted at phase one and monitoring study conducted at phase two are delimited to the search and consumption of information or travel products/ services "in general", whereas

the travel diary conducted at phase three is delimited to the search and consumption of information or travel products/ services associated with a specific trip and measured during the trip.

6. Trips analyzed in this study were delimited to leisure or pleasure trips taken in 2006.

Limits of the Study

The study is limited by the following:

1. This study used secondary data, therefore, the researcher was not in direct control of methods measurement and preliminary data analyses.

2. The samples of this study were those of individuals who requested information from three Canadian destination marketing organizations and therefore, may not be representative of other individuals or destinations.

3. The respondents' ages were ranged from 14 to 84 years old with the mean 49 and median 51. The respondents appear to be slightly older and may not be representative of the Canadian population.

4. Study findings may not be generalizable to non-Canadian populations, since the study was conducted in Canada. Subjects' responses may be influenced and different by their social and cultural background in which the study is conducted.

5. The extent to which the scales borrowed from literature were reliable and valid and a good representation of consumer behavior.

6. The types of vacations and destinations visited varied greatly (all over the world). Therefore, the experiences in these places varied across the study.

Overview of Survey Research Methods

A multi-year panel secondary data study was used to address the research objectives. It is necessary to explain the overview of methods here because the next three chapters will present different parts of the panel.

Phase 1: Instrument development, sampling, and panel recruitment (Pre-trip stage)

Participants were recruited through three Canadian destination marketing organizations (Parks Canada, Saskatchewan Tourism, and NS Dept. of Tourism, Culture & Heritage). Possible participants were identified from information requesters/visitors who gave their permission to be contacted by the University of Manitoba. Letters were sent to obtain informed written consent to be a panel participant for at least one year, if not longer. A panel study requires multiple contacts and questionnaire completions. To reduce the likelihood of attrition, monetary incentives and prize drawing, plus close contact with participants, were employed.

Phase 1 participants completed a profile questionnaire that provided travel behavior information, information technology use, and demographic profiles, as well as a list of upcoming trips. Seven-hundred-fifty-six letters requesting participation letters (Canadian residents only) were sent. After excluding 24 due to bad addresses with a return to sender, 732 was the net sample and 331 questionnaires were returned. Of those 320 individuals agreed to continue in the panel at this stage of the study (150 of participants preferred paper communication and 170 of participants preferred online communication for future communication interactions).

Phase 2: Panel monitoring questionnaires (Pre-trip stage)

A regularly scheduled monitoring questionnaire for January and May was sent (electronic or paper based on participant's preference) to participants to report on:

a) the general use of information sources and information technologies in everyday life (general);

b) tolerance for travel uncertainty; and

c) any upcoming trips for which they would be willing to complete a vacation diary (Phase 3).

From the 320 potential panel members, eight were eliminated for bad address or late responding and two monitor questionnaires were sent to 312 participants within a four month interval (January, May). Respondents were categorized into 167 online panel members and 145 paper form panel members. Two hundred sixty respondents were obtained from the first monitoring survey and 242 respondents were obtained from the second monitoring survey.

Phase 3: Vacation diary

Respondents were provided with a diary that contained three parts to complete: pre-trip; during trip (up to 10 days); and post-trip. Pre-trip questions focused on types of products/services booked/purchased online before trips, travel motivation, types and levels of travel risk perceived en route, and types of information technology available for trips. During trip participants reported daily regarding several trip aspects such as helpfulness of information sources, use of information technology, experiences with information technology use, and the place where information was assessed (i.e., channel context of information: portable; in-car; highway based; and on-site at the destination).

Post-trip questions related to trip satisfaction, trip spending, and their perceptions of information technologies on vacation satisfaction and return to daily life.

Among the monitoring participants, vacation diaries were sent to those who planned upcoming trips. One of four respondents in the monitoring one and one of two respondents in the monitoring two agreed to be participated in the vacation diary. Finally, 103 diaries were completed by 86 participants during their trips taken within three to four months (17 sent two vacation diaries based on their separate trips during the time period). The remaining parts of the panel were not traveling during the time period or just did not respond.

Table 1-1. Summary of panel participation

Sample	Qualifying	Monitoring 1	Monitoring 2	Vacation diary
732	331 (45.2%)	260 (78.5%)	242 (73.1%)	103 (39.6%) *

* The response rate is based on the number of participants in the monitoring 1.

Nonrespondents Error

One of the errors that occur in sample survey research is nonresponse error (Dillman, 2000). This type of error occurs when nonrespondents who were included in the sample fail to provide usable responses and differ from respondents on the characteristics of interest in the study (Lindner & Murphy, 2001). Ary and colleagues (1996) suggested that if a response rate of less than 75% was achieved, then a follow-up study on those who did not response should be conducted to evaluate possible potential nonresponse error.

The purpose of this follow-up inquiry was to determine if any significant differences between those who responded to the qualifying survey and those who did not existed. Ten percent of the 400 who did not return the qualifying survey were recontacted

in a nonrespose study (n=41). A set of 18 questions were asked that were replicates of questions found in the qualifying survey. The questions included the level of involvement with information technology, traveler characteristics, number of years the Internet had been used, and information technology use. Independent Sample Tests and chi-square tests were applied to evaluate differences in the two groups (respondents and nonrespondents).

The results of Independent Sample Tests on traveler characteristics, involvement with information technology, and years of Internet use are presented in Table 1-2. As shown, a slight difference was found in one of the traveler characteristics (well traveled person) (t=-1.99, $p<.05$). Respondents (mean score was 4.6) were found to be more likely to rate themselves as well traveled individuals than nonrespondents (mean score was 4.1).

Table 1-2. Sample difference tests on traveler characteristics, involvement with information technology, and years of Internet use

Variables	Respondents (Mean)	Non-respondents (Mean)	Independent Sample Test	df	*p*
Well traveled person	4.6 [a]	4.1	-1.99	364	**.05**
Skilled travelers	4.7	4.4	-1.18	352	.24
Use of the Internet	5.0	5.1	.26	364	.80
Use of technology	4.4	4.5	.19	367	.85
Ownership of Technology	5.0	5.1	1.42	364	.16
Years of using the Internet	8.0	8.7	1.1	331	.26

a. Scale: from 1=strongly disagree, 7=strongly agree.

Results of involvement with information technology are presented in Table 1-3. As shown, three tests were statistically significant. Nonrespondents were found to be more likely to possess a cell phone with Internet access (X^2(df=1)=8.92, $p<.01$), cell

phone with camera (X^2(df=1)=18.11, p<.001), and Personal Digital Assistance with Internet access (X^2(df=1)=13.6, p<.01) than respondents.

Table 1-3. Sample difference tests on ownership of information technology

Ownership of	Respondents	Non-respondents	X^2 [a]	p
Cell phone	68.1%	70.7%	.12	.73
Cell phone with Internet access	18.8	39.0	4.08	**.00**
Cell phone with camera	9.1	31.7	18.1	**.00**
Digital camera	69.6	65.9	.24	.62
Laptop computer	25.5	19.5	.71	.40
Laptop computer with wireless Internet	21.0	24.4	.26	.62
Desktop computer	83.6	92.7	2.32	.13
GPS/GPS in vehicle	8.8	4.9	.74	.39
Personal Digital Assistance (PDA)	14.6	12.2	.17	.68
PDA with Internet access	1.8	12.2	13.6	**.00**
Pager	5.2	2.4	.59	.44
Onstar service	4.9	7.3	.45	.50

a. Analyses were conducted using Pearson chi-square tests at 1 degree of freedom.

Overall, this investigation into potential nonresponse error suggested that those who responded to the qualifying survey and those who did not respond are similar on perceived travel skill, levels of involvement with information technology, and years of Internet use. However, the results showed that the ownership of selected information technology may be under represented in the full respondent sample.

Definitions

The following terms are defined to clarify their use in the study:

Importance of travel uncertainty reduction: significance of a travelers' desire to anticipate the possible outcomes of a vacation (adaptation of Kellerman & Reynolds, 1990).

Information technologies: electronic devices which allow the consumer to store, communicate, and process information through computer and telecommunications networks.

Involvement with information technologies: perception and behavioral relevance with information technologies based on inherent needs, values, interest, goals and objectives (adaptation of Salam, 1998).

Need for travel certainty: travelers' need or want for better understanding of vacation outcomes or the ability to predict vacation outcomes (adaptation of Kellerman & Reynolds, 1990).

Ongoing travel information search: building a knowledge base for unspecified future trips.

Prepurchase travel information search: acquisition of a knowledge base for a specified current trip.

Tolerance for travel uncertainty: acceptance of the state which a traveler cannot anticipate the possible outcomes of a vacation (adaptation of Kellerman & Reynolds, 1990).

Traditional information source: non-computerized sources such as printed and mass-media, personal advise, and professional consultants.

Travel risk: chance of outcome happening during trip, which is significantly different from what a traveler expected before a trip (adaptation of Mayo & Jarvis, 1981).

Travel uncertainty: lack of knowledge or inability to predict and explain an event happening during trip (adaptation of Berger & Calabrese, 1975).

Vacation phases: Several steps occurring in the tourism process including (1) pre-trip anticipation; (2) travel to the destination; (3) on-site behavior; (4) return travel; (5) recollection; and (6) feedback (Parrinello, 2001).

Web-based information source: computerized sources such as email, websites, mapquest, and e-newspapers.

Organization of the Dissertation

Beyond the introduction section of this dissertation, four additional chapters will examine information search behavior within a tourism context. Chapter 2 will discuss the types of information sources used by utilizing a conceptual framework for tolerance for uncertainty model including results from phase 2. Chapter 3 will present types of perceived travel risks and actual use of information technology during trip, which includes results of phase 3. Chapter 4 will narrow down the focus to the panel respondents participating in all three phases of the survey (qualifying, monitoring and vacation diary) and examine whether any differences exist in use of information technologies between general and specific trip purposes. Further, effectiveness of involvement with information technology on use of information technology for trips will be discussed. Chapter 5 will draw conclusions across the three studies concerning the use of travel information sources and information technologies for trips.

CHAPTER II

UNDERSTANDING TRAVEL UNCERTAINTY AND TRAVEL INFORMATION SOURCES

1. INTRODUCTION

Travelers prepare for trips by recognizing their uncertainty about vacations in general (Moutinho, 1987). Not all travelers have the same degree of uncertainty and one's tolerance for uncertainty varies (Williams, 2002) depending on individual characteristics such as personality, life style, demographic, psychographic, and experience (Vogt, 1993). Gaining information about a vacation trip or destination is viewed as central to decreasing travel uncertainty (Daniels & Norman, 2001; Locander & Hermann, 1979; Mayo & Jarvis, 1981) and thus improving the quality of the travel experience (Fodness & Murray, 1997). Information search for travel planning is an important element of the pre-trip experience (Vogt, 1993). Numerous studies (e.g., Etzel & Wahlers, 1985; Fakeye & Crompton, 1991; Fesenmaier & Vogt, 1993; Gitelson & Crompton, 1983; Um & Crompton, 1990; Vogt et al., 1998) have examined information sources used in travel planning. These studies have shown personal advice from family, friends, and relatives to be preferred and highly used, compared to advertisements and articles found in mass media formats (e.g., newspaper, magazine, radio, television). Research has shown that more experienced travelers are more likely to utilize communication mediums because of an individual's awareness of their availability and value (Etzel & Wahlers, 1985).

The Internet has emerged as a new information channel and has been extensively researched within a travel decision context (e.g., Heichler, 1997; Oorni, 2004; Srikanth,

2005; Yoffie, 1997; Weber & Roehl, 1999). These studies found that travel products/services are one of the top three product categories searched for and purchased online. Among travel products purchased online, airline tickets, accommodations, and car rental are the top three (TIA, 2004).

Even though it is well known that there is a significant causal relationship between uncertainty and information search using various information sources, little research has focused on information search at various levels of tolerance for travel uncertainty (e.g., Daniels & Norman, 2001; Kellerman & Reynolds, 1990). The limited literature suggests tolerance for uncertainty is the better indicator of information search than uncertainty. This position follows previous studies that have argued that indirect methods of measurement must be employed for a non specific purchasing situation because consumers may think imprecisely and cannot articulate their thinking (Greatorex & Mitchell, 1994; Hsu & Lin, 2006). Therefore, the concept of tolerance for travel uncertainty is employed to predict use of information sources in two formats, (1) traditional and (2) web-based.

Statement of the Problem

Past studies examined travel uncertainty and travel risk with no distinction, however, it is clear that the concepts between uncertainty and risk are different. This chapter focuses on tolerance for travel uncertainty as a dominant factor affecting general vacation information search. Further, the relationship between tolerance for travel uncertainty and use of information sources in traditional and web-based formats will be examined.

Research Questions

This study addresses the following research questions:

1. What levels of tolerance for travel uncertainty are experienced by travelers?
2. What are the types of traditional information sources used for planning a trip?
3. What are the types of web-based information sources used for planning a trip?
4. Do web-based information sources replace or complement traditional information sources for travel planning?
5. What are the use levels of traditional information sources that travelers search for when planning a trip by different tolerance for travel uncertainty levels?
6. What are the use levels of web-based information sources that travelers search for when planning a trip by different tolerance for travel uncertainty levels?
7. Is there a significant relationship between the levels of tolerance for travel uncertainty and the types of information sources searched?

2. LITERATURE REVIEW

It is essential for travelers and the travel market to communicate through various communication channels at multi-stages, including: ongoing search, pre-purchase search or destination choices search, planning search, en-route search, and after-trip search (Pan, 2003). As Mayo and Jarvis (1981) stated, a traveler's behavior is a sequence of decisions, which are influenced by psychological factors, such as perceptions and personal traits. That is, the initial information search for vacation possibilities is caused by a primary motivation to reduce travel uncertainty and make decisions about traveling. Information is sought through various travel information sources including internal sources, which are obtained through ongoing searches, experiences and knowledge; and external sources, which are used when internal sources do not provide sufficient information (Bettman, 1971; Engel & Blackwell, 1982; Pan, 2003). Other individual characteristics have been

studied in discriminating information source utilization in terms of product knowledge, familiarity, experience, purchase and ego involvement, and attitudes toward shopping, and time availability (Assael, 1987; Beatty & Smith, 1987; Kerstetter & Cho, 2004; Vogt, 1993).

Uncertainty Reduction Theory (URT) suggested by Berger and Calabrese (1975) explains the relationship between levels of uncertainty and information seeking during interpersonal communication as being positive in nature. Further, Kellerman and Reynolds (1990) demonstrated that tolerance of uncertainty more accurately predicts information search behavior than uncertainty perceptions. Although URT was originally conceptualized to explain information acquisition in initial conversations, the theory has been applied in the tourism area as travelers make decisions under some degree of uncertainty (Daniels & Norman, 2001).

Consumers rarely rely on a single information source (Engel & Blackwell, 1982) and thus, consumers are likely to use the web in combination with traditional sources and access various sellers through different channels. Oorni (2004) provided evidence that the Internet is a complementary information source and the majority of consumers who search for travel information on the Internet also still utilize conventional information sources. This is because the tourism marketers do not manage online information efficiently to meet the complex nature of travel products/services. Since the travel industry has been identified as an industry greatly affected by the advent of the Internet (Weber & Roehl, 1999) it is important to reevaluate the efficiency of the Internet as a reducer of travel uncertainty and the relationship between tolerance for uncertainty and use of web-based information sources for planning and purchasing.

Literature related to travel uncertainty and information search for vacation opportunities, is reviewed and organized in the following sections: (a) Uncertainty Reduction Theory, (b) travel information search, (c) travel information sources, and (d) use of the Internet in travel.

Uncertainty reduction theory

An individual's behavior is a sequence of decisions, which are made under some degree of uncertainty (Bonoma & Johnston, 1979), because consequences or outcomes followed by any decision are generally vague and imprecise. A number of studies have investigated the phenomenon of uncertainty (e.g., Bonoma & Johnson, 1979; Einhorn & Hogarth, 1985; Ghosh & Grain, 1993; Ghosh & Ray, 1992, 1997; Kahn & Sarin,1988; Payne et al., 1993; Urbany et al., 1989) in many disciplines such as economics (e.g., Knight, 1921), marketing (Field et al., 2006; Murray, 1991; Murray & Schlacter, 1990; Zeithaml, 1988), psychology (e.g., Einhorn & Hogarth , 1985; Rotton, 1972; Mills, 1965), and communication (Berger, 1979; 1986; 1987; Berger & Calabrese, 1975; Gudykunst & Nishida, 1984; Kellerman & Reynolds, 1990; Sunnafrank, 1986; 1990). Despite the different study approaches, there is an agreement that an individual's response to an event depends on how much is known about the event or the degree of perceived uncertainty. As noted by Schaninger and Sciglimpaglia (1981), three types of situations are perceived as being uncertain; (1) "novelty" or a completely new situation with no ability to predict; (2) "complexity" or a complex situation in which a great number of cues exist; and (3) "insolubility" or a contradictory situation in which inconsistent information exists for a given choices or alternatives.

People are naturally motivated to reduce uncertainty (Berger & Calabrese, 1975) and they may greatly benefit from various decision aids to reduce uncertainty such as knowledge, information, or communications. According to Prentice (2004), the first strategy in reducing uncertainty is to acquire knowledge from use of informational sources; and the second is using an experiential source (e.g., past experience). Marketing theorists have long argued that consumers seek information from a variety of sources when faced with uncertainty (Cox, 1967; Murray, 1991) and among various uncertainty reduction methods, interpersonal communication to obtain information is primarily suggested to reduce uncertainty (Sunnafrank, 1986). Festinger (1964) suggested that "information seeking in the predecision period is not selective but is rather objective and impartial." People who desire to increase their certainty for choices by obtaining information will actively search for information (Mills, 1965).

Uncertainty Reduction Theory was developed by Berger and Calabrese (1975) to explain interpersonal communication based on motives to reduce uncertainty by seeking information. For instance, after initial conversation occurs between strangers, conversation increases so that uncertainty is reduced which allows the prediction and explanation of future behavior of the person with whom she/he is interacting (Berger & Calabrese, 1975). URT originally stated seven axioms to hypothesize the relationship between uncertainty and observable facts:

Axiom 1: Given the high level of uncertainty present at the onset of the entry phase, as the amount of verbal communication between strangers increases, the level of uncertainty for each individual will decrease. As uncertainty is further reduced, the amount of verbal communication will increase (p. 102).

Axiom 2: As nonverbal affiliative expressiveness increases, uncertainty levels will decrease in an initial interaction situation. In addition, decreases in uncertainty level will cause increases in nonverbal affiliative expressiveness (p. 103).

Axiom 3: High levels of uncertainty will cause increases in information-seeking behavior. As uncertainty levels decline, information-seeking behavior decreases (p. 103).

Axiom 4: High levels of uncertainty in a relationship cause decreases in the intimacy level of communication content. Low levels of uncertainty produce high levels of intimacy (p.103).

Axiom 5: High levels of uncertainty produce high rates of reciprocity. Low levels of uncertainty produce low reciprocity rates (p. 105).

Axiom 6: Similarities between persons reduce uncertainty, while dissimilarities produce increases in uncertainty (p. 106).

Axiom 7: Increases in uncertainty produce decreases in an attitude toward a person (liking); decreases in uncertainty level produce increases an attitude toward a person (liking) (p. 107).

Extensive research based on the Axioms suggested by Berger and Calabrese (1975) shows there is modest support for the theory: uncertainty appears to be a negative influence on relationships including a decrease in attitude (liking) in a person (Kellermann & Reynolds, 1990), reduced attraction (Gudykunst et al., 1985), and increased negative feelings (Knobloch & Solomon, 1999). Even though discussions of URT have generally focused on interpersonal and intercultural communication, the theory has been further applied to a variety of contexts such as cross cultural (Gudynkust et al., 1985), organizational and mass communication (Berger, 1987; Kramer, 1993;

Kramer et al., 2004; Napier et al., 1989), and computer-mediated interactions (Contractor et al., 1996; Ramirez et al., 2002; Walther, 1994).

This dissertation examines only Axiom 3 (Berger & Calabrese, 1975), thus it is worthwhile to discuss information seeking and uncertainty in greater detail. Axiom 3 specifies a positive relationship between the level of uncertainty and information seeking: If an individual is uncertain, then she/he is likely to increase information seeking; if an individual is certain, then she/he decreases information seeking (Kellerman & Reynolds, 1990). Douglas' study (1990) confirmed Axiom 3 that information seeking by asking questions was more frequent during an initial conversation and uncertainty was positively correlated with information seeking. Also, a study in the organizational context found that employees who were faced with uncertainty during a merger and acquisition needed more information than could be obtained from sources such as communication with supervisors and customers (Napier et al., 1989).

More recent research studies have identified problems with Uncertainty Reduction Theory and modified the initial theory. Kellerman and Reynolds (1990) suggested one's tolerance for uncertainty might be accounted for prior to testing uncertainty to explain information search behavior. Because tested subjects have inconsistent levels of tolerance for uncertainty, tolerance for uncertainty should preceded uncertainty perceptions. Kellerman and Reynolds (1990) demonstrated an inconsistent finding with Axiom 3 and showed that tolerance of uncertainty more accurately predicts information search behaviors than uncertainty. In other words, one's level of information search is affected not by an increase in uncertainty perceptions but an increase in the level at which uncertainty is tolerated. Kellerman and Reynolds (1990) followed several

procedures to measure tolerance for uncertainty: first, employing the eight-item uncertainty scale, a so-called "slight variation of CLUES7" which was suggested by Clatterbuck (1979); second, revising the uncertainty scale to measure "need" instead of "ability" to account for one's behavior; and lastly, explaining tolerance for uncertainty in two components, (1) "importance of reducing uncertainty: the concern with the significance of what one does not know about the target person," and (2) "need for certainty: one's need or want for better understanding of or ability to predict the target person." Importance of reducing uncertainty and need for certainty both include six measurement scales (Table 2-1).

Table 2-1.Tolerance for uncertainty (Kellerman & Reynolds, 1990)

Importance for reduction uncertainty
1. What I don't know about the person doesn't really matter.
2. I believe it is of real importance for me to understand the person better than I presently do.
3. I may not understand the person well, but that's o.k.
4. Any uncertainty I might have about how the person might act really bothers me.
5. While the person has attitudes and opinions I don't know, I really don't care much about them.
6. What I don't know about the person is important for me to know.
Need for certainty
1. It would really bother me if the person did something I couldn't understand.
2. I have no real need to anticipate how the person will act.
3. I truly need to get to know the person considerably better than I do.
4. It wouldn't matter to me if the person acted a little bit weird.
5. I want to be certain about how the person would act when I talked with him/her.
6. It's not necessary to know much about the person.

Although URT was originally conceptualized to explain information acquisition between interpersonal relationships, the theory was applied in the tourism area as travelers make decisions under some degree of uncertainty. Daniels and Norman (2001) applied the tolerance for uncertainty scale to explore types of travel information source used for travel. Their study suggested that tolerance for uncertainty exists in potential

travelers and is positively related to some information sources including brochures, travel guides, and magazine articles.

Despite the existence of travel uncertainty, individuals continue to travel for several reasons. First, one of travelers' primary motivations is to visit new destinations (Gitelson & Crompton, 1983). "Novelty-seekers" who try to experience new environments accept a certain degree of uncertainty. Second, travelers voluntarily experience thrill or unrestrained behavior. These travelers are depicted as "action-seekers" and perceive dangers as adventure opportunities (Uriely & Belhassen, 2006). Novelty-seeking is closely related to travel uncertainty, and action-seeking motives are closely related to risk taking behavior (see chapter 3). Because the term uncertainty is used for situations which cannot be predicted, travel uncertainty is applied to vacations with novelty-seeking motives in which the outcomes or consequences cannot be anticipated. Travels with action-seeking motives are made by travelers who perceive risks as thrills experienced.

Travel information search

Knowledge of information acquisition strategies is vital for both marketing managers and scholars because information search is part of early influential stages in the purchase decision process. Marketers in tourism industry can benefit from an understanding of tourists' information search behaviors in three ways (Schul & Crompton, 1983): (1) knowledge of information search processes allows segmentation of information users to improve the efficiency of information channels; (2) knowledge of search processes assists positioning of product/ service and effective communication strategies targeted at specific information user segments; and (3) knowledge of search

processes aids in the development of appropriate marketing strategies for different market segments and market analysis.

A few research studies have recognized the travel information search behavior for travel planning as a central element of vacation (e.g., Fodness & Murray, 1997; 1998; 1999; Schul & Crompton, 1983; Van Raaij & Francken, 1984; Vogt, 1993). Travel information search is defined as motivated behavior to seek advice from various sources to decide where to go, what to do, and for making specific travel arrangements and has been studied from various perspectives in travel contexts. Van Raaij and Francken (1984) suggested that tourists go through a five-stage information search process, which can be refer to "vacation sequence": generic decision, information acquisition, decision making, vacation activities, satisfaction and complaints. The vacation sequence is very similar to Engel and Blackwell's (1982) consumer decision process: problem recognition, information acquisition, evaluation of alternatives, selection of an alternative, and post-choice. Vogt (1993) investigated the roles of touristic information such as "functional, hedonic, innovation, aesthetic, and sign" and the types of information source including "social, personal, tourism initiatives, marketing, and editorial." Fodness and Murray (1997) conceptualized information search in terms of "degree of information search" (number of information sources used and amount of time spent to search information) and "direction of information search" (specific information sources used). Further, Fodness and Murray (1999) attempted to construct and test a comprehensive model of tourist information search with respect to decision types, traveling party composition, purpose of trips, and mode of travel. In addition, patterns of information search behavior

were identified based on two stages of the information process: before and after trip decision making (Bieger & Laesser, 2004).

Efforts have been made to identify influential factors of travelers' information search (Assael, 1987; Snepenger et al., 1990). Assael (1987) proposed five variables such as: experience and expertise, familiarity, destination choice, length of time to plan or planning horizon, and intention to take a trip. On the other hand, Snepenger and colleagues (1990) suggested four variables: the composition of the traveling party, the presence of family and friends at the destination, prior visits to the destination, and the degree of novelty associated with the destination. Literature reviews on information search is mainly focused on prior knowledge, which is comprised of past experience, expertise, and/or familiarity.

One of the frequently discussed factors which influence information search behaviors is prior knowledge, a multidimensional construct comprised of past experience, expertise and/or familiarity (e.g., Assael, 1987; Etzel & Wahlers, 1985; Fodness & Murray, 1999; Kerstetter & Cho, 2004; Milman & Pizam, 1995; Prentice, 2004; Snepenger et al., 1990; Vogt et al., 1998). Etzel and Wahlers (1985) found experienced travelers are more likely to be users of the mass-media because they possess a greater awareness of the information availability and value. Vogt and colleagues (1998) suggested that experienced travelers use various information sources and appear to be active information seekers. Moreover, Schul and Crompton (1983) found those who actively seek information desire controllable environments with pre-arranged trips of activities, schedules, and accommodations. Gitelson and Crompton (1983) found that

information seekers reported higher trip expenditures, more frequent trips, stayed longer, and had higher education levels than nonseekers.

Vogt and colleagues (1998) discussed several different perspectives about expertise and information search could be found in consumer behavior literature. The first perspective is that a positive relationship between levels of expertise and information search exists. That is, experts with high levels of knowledge or skill seek more information. An alternative view is that a negative relationship is found that experts tend to use information stored in their memory and therefore are less likely look for external information. However, additional information seeking is desired by experts when the information already stored is unfavorable, inconsistent, and insufficient (Heslin et al., 1972).

Familiarity is described as awareness or perception about a destination (Kerstetter & Cho, 2004) and can be obtained from actual experience with the destination and/or knowledge stored in memory. Familiarity is seen as a dimension of prior knowledge (Kerstetter & Cho, 2004) and/or experience with destinations. Familiarity draws from prior knowledge therefore, there may be little need for external information search (Brucks, 1985; Johnson & Russo, 1984), whereas familiarity obtained from actual experience in a destination has been shown to lead to extensive information seeking (Milman & Pizam, 1995). Thus, contradictory findings exist depending on which dimension of familiarity in tourist information search behavior is examined (Kerstetter & Cho, 2004; Vogt et al., 1998).

Crompton (1979) reported that travelers with the motivation of novelty seeking are more likely to seek out greater amounts of information. Andereck and Caldwell

(1991) confirmed that tourism motives influence information search behavior. Traveling parties have been shown to heavily influence travel planning (Fodness & Murray, 1999). Traveling with children, for example, requires a greater information search to manage unfamiliar environments faced during trips. Fodness and Murray (1999) found information search strategies vary depending on the purpose of trip and mode of travel. When the purpose of trip is to vacation or travel by personal automobile, active external information search prior to trip is evident. When the purpose of trip is to visit friends or relatives or for RV travelers, ongoing search strategy is adopted.

Consumers' socioeconomic variables have been found to be important factors in information processing (Schaninger & Sciglimpaglia, 1981). Schaninger and Sciglimpaglia (1981) suggested two reasons why older consumers have been likely to process less information than younger consumers. First, older consumers are less capable of processing large amounts of information. Second, older consumers are more experienced information seekers and can better evaluate relevant or irrelevant information.

Consumer behavior studies have presented contradictory evidence with the different socioeconomic status, as reflected by income and education influences information search. Engel and Blackwell (1982) found a curvilinear relationship between levels of information search and social class, whereas other research (Claxton et al., 1974; Newman & Staeline, 1972) reported a linear relationship. Unlike consumer studies, the tourism literature has established similar results in that travelers with high levels of income and education tend to engage in more information search than travelers with low income and education (Fodness & Murray, 1999; Gitelson & Crompton, 1983).

Many studies have indicated that the major purpose of information search is to reduce the uncertainty of product choice (Bettman, 1979; Bloch et al., 1986; Kim et al., in press) and personality traits may influence information search (Cox, 1967; Schaninger & Sciglimpaglia, 1981). High anxiety and low self-esteem individuals are found to be less capable of acquiring information (Schaninger & Sciglimpaglia, 1981). Cox (1967) found that individuals high in need for certainty are more likely to need new information, whereas Schaninger and Sciglimpaglia (1981) did not support this claim. Bettman (1971), who developed a theoretical model of information search behavior incorporating tolerance for uncertainty, suggested that individuals who are more tolerant of uncertainty should search for more information and should process rather than reject discrepant information.

Travel information sources

Travelers need information for various reasons including: selecting a destination, accommodation, transportation and activity (Perdue, 1985); and imaging a travel destination (Raitz & Dakhil, 1989). Generally, travelers share information with others and use multiple information sources (Fodness & Murray, 1998). The sources can be classified into two types; internal sources, including personal memory and experience, and external source which includes four components: (1) personal (e.g., advice from friends and relatives), (2) market-dominated (e.g., brochures, magazine, newspaper), (3) travel advisors (e.g., travel clubs, travel agents, tourist offices), and (4) observed sources (e.g., prepurchase visit) (Crotts, 2000; Fodness & Murray, 1997). Many tourism studies on information sources have found that consumers use advice from family members, friends, or acquaintances as the most used information source (Engel & Blackwell, 1982;

Fesenmaier & Vogt, 1993; Gitelson & Crompton, 1983; Rao et al., 1992; Van Raaij & Francken, 1984). Other popular travel information sources are past experiences (Raitz & Dakhil, 1989; Vogt, 1993). However, the choice of information source may vary by stage of the vacation and by type of information sought (Hyde & Lawson, 2003). For independent travelers, the most influential information sources in the preparation of vacation plans are travel guides and brochures (Hyde & Lawson, 2003). While on vacation, these travelers are eager for information about local subdestinations, attractions, and activities from any source. As mentioned earlier, travelers use a combination of information sources to plan trips such as personal experience, friends and family, and travel agencies (Fondess & Murray, 1998) and recent studies have suggested travelers are likely to use the Internet in combination with traditional sources and access various sellers through different channels (Oorni, 2004).

Researchers are interested in which factors influence choice of information sources used. Gender differences influence information source preferences (Meyers-Levy, 1988). Males were found to rely on their own knowledge and use only highly available information, in contrast to females who tend to rely on a variety external information sources. Murray (1991) found that perceived effectiveness of information sources and confidence play an important role on source choices. Only a personal source or advice from others was significant in explaining the difference of information utilization between services and tangible goods. Individuals were more likely to consider the perceived effectiveness of information when buying services in comparison to goods (Murray, 1991). Further, Murray (1991) showed that consumers had greater confidence in personal sources in comparison to non-personal sources for services. Finally, the

credibility of an information source has been found to be the strongest predictor of the type of information sources used (Kerstetter & Cho, 2004).

Claterbuck (1979) argued that the absolute amount of information is not a sufficient predictor of uncertainty reduction because it does not reflect the perceived quality of the information. Berger (1987) also asserted that the quality rather than the quantity of information exchanged between individuals should have a greater impact on the reduction uncertainty. Hewes and colleagues (1985) found uncertainty generally causes certain types of information usage. In their study, people who experience uncertainty appear to obtain two-thirds of their information about others in their social networks from direct contact and one-third of their information from third party sources. Even though third-party sources may be biased, a majority of the respondents tend to take these biases into account in interpreting these messages.

Efforts have been made to identify types of information source used for traveling. Traveling with children would influence the use of decisive external sources at the pre-trip stage (Fodness & Murray, 1999). Etzel and Wahlers (1985) found that first time visitors are likely to show higher usage of radio and television, road signs, and professional assistance such as AAA, while repeat visitors tend to report previous experience, books and magazines as significant influences on attraction decisions made before trips (Perdue, 1985). Sussmann and Rashcovsky (1997) investigated information sources used for travel planning by ethnicity (English-Canadians and French-Canadians) and found differences exist: information sources used by English Canadians includes, in order of importance: friends/relatives, past experience, travel agent, brochures, books, magazines/newspapers, tourism offices/consulates, and TV/radio. French-Canadians

reported that they used information including: friends/relatives, brochures, travel agencies, past experiences, magazines/newspapers, books; tourism offices/consulates, and TV/radio.

Although many researchers have attempted to analyze travelers information search behavior and traveler profiles (e.g., Fodness & Murray, 1999; Kerstetter & Cho, 2004), few have attempted to define these profiles on the basis of information source utilization with regard to individuals' travel uncertainty (Daniels & Norman, 2001; Roehl, 1988).

Use of the Internet for vacation planning

New media and technology for travel information seeking is a relatively recent phenomenon (Ramirez et al., 2002). As the nature of information transmission changes from paper to electronic it is important to examine tourists' information search patterns (MacKay et al., 2005) and to understand the distinct features of travelers who search for information online (Weber & Roehl, 1999). The evaluation and measurement of information sought through traditional media has been the domain of most information studies (D'Ambra & Wilson, 2004). In the past ten years, however the travel and tourism industry has made efforts to examine the Internet as an important information source (Heichler, 1997; Heung, 2003; Oorni, 2004; Yoffie, 1997). Since the Internet has increased global accessibility, interactive communication and customization capabilities which enable travelers to save time and money (Cai et al., 2004; Kim et al., in press), make comparisons of facilities and prices, and visualize a trip, have become of an interest to researchers and practitioners (Jang, 2004).

Studies have found that travel information search on the Internet is "a complex, dynamic, and contingent process" (Jeng, 2000; Pan, 2003). Pan (2003) explained that online travel information seekers use a variety of travel web sites provided by both tourism marketers such as transportation, accommodations, travel destination, and non-tourism organizations such as mass-media, sports, and map providers. Walle (1996) envisioned that the Internet could be used in two distinctive ways: (1) an information source which the user searches the web for resources, and (2) a means of making and facilitating transactions. Further, Walle (1996) suggested two Internet tactics from a supply perspective: information on the Internet does not target and contact specific people and such "an outbound Internet tactic" is primarily intended to mass market and promote a product to all interested Internet users. Destination marketers created web pages where travelers can receive information and see photographs of places they plan to visit. At the same time, the Internet allows Internet users to interact with an organization and make purchases, which is called "an inbound Internet tactic." Here, the Internet user is found to follow traditional, temporal information procedures such as ongoing search and pre-purchase planning. Outbound Internet information provides services to access opportunities to inbound information users who request detailed information or make online purchases (Walle, 1996).

Online users often want useful information before purchasing and also extra "benefits" when making reservations, which can result in an increase in sales volume, and improve the reputation of an online service provider. Law and Leung (2000) found that users of an airline website needed the following information:

1) the availability of product/ service information, and product pricing;

2) the provision of extra benefits, such as discounted airfares and free upgrades; and

3) the existence of additional services and facilities such as online seat requests, online check-in services, online car reservations, and online hotel reservations.

These three types of information services are a marketing strategy to attract customers and develop customer loyalty (Law & Leung, 2000).

Cai and colleagues (2004) suggested that the core information obtained through the Internet is to help select a vacation destination. D'Ambra and Wilson (2004) found airlines and destinations are most highly searched by international travelers, followed by flight costs and schedules. Several studies have explored the relationships between online information search and travelers' socio-demographic characteristics (Bonn et al., 1999; Weber & Roehl, 1999). Bonn and colleagues (1999) found people who use the Internet to seek travel information are more likely to be college-educated and under the age of 45 years old; they also stay more often in commercial accommodations and spend more money while traveling. Weber and Roehl (1999) found people who seek tourism information through the Internet are more likely to have higher incomes; have management, professional or computer-related occupations; and have more years of online experience.

The types of travel information sources on the Internet have been studied by Beldona (2003). His study categorized online information sources into three areas: marketing dominated sites provided by venders and destination organizations; "consumer-dominated sites being online travel communities sharing travel information"; and "neutral sources" including mass media and personal homepages.

Despite findings that online services provide various benefits to travelers for searching/purchasing travel products/services, the Internet has not fully replaced traditional information sources or purchase methods but complemented them (Bjork, 1999). Peterson and colleagues (1997) found that consumers are able to gather information about products and services on the Internet; however, the actual Internet shopping for products involves trust and social contact issues. Recent studies in tourism have confirmed that travel planning on the web faces challenges with security of information and quality of information (Hueng, 2003; Weber & Roehl, 1999). Klein and colleagues (2004) highlighted the downsides of electronic shopping for travel products; some flight prices are higher online than those offered by traditional travel agencies; and wide price dispersion exists online for scheduled airline tickets, which lessen consumers' ability to search and compare prices. Search programs that compare prices have improved consumers' ability to buy at the most desirable price. Despite widespread use of the Internet, evidence shows that consumer still experiences an obstacle in the booking/purchasing of travel products online.

3. METHODS

The problem of this study was to investigate the effect of travel uncertainty on the use of information sources for tourism planning in two formats; traditional and web-based. This study asserts that travel uncertainty can be distinguished on two domains, importance and need, as defined by Kellerman and Reynolds (1990).

It is expected that two types of tolerance for travel uncertainty (importance and need) will predict the types of information source used for travel planning. It is also

expected that the level of tolerance for travel uncertainty will be related to information sources.

The methods in this study included two steps. First, data were reviewed including the scales and measurement. Second, the data analysis was explained.

Data

This study used data sets from a recent panel data survey conducted by the University of Manitoba in Canada. The study employed a periodic monitoring questionnaire that focused on surveying travelers and inquiring into the role of tolerance for travel uncertainty on travel information sources used. As shown in Table 2-2, the monitoring study consisted of information on: (1) experience with the Internet, (2) self-rated traveler characteristics, (3) travel planning styles, (4) tolerance for travel uncertainty, and (5) travel information sources in two formats, traditional and web-based. Information on socio-demographic characteristics including age, gender, income, education, and marital status, were obtained from the qualifying instrument; the first data set of the panel study.

Table 2-2. Constructs and associated scales

Constructs and associate scales	Number of items	Measurement
Characteristics of sample		
Tourists' demographics	Age, income, education	Ordinal
	Gender, marital status	Nominal
Experience with the Internet	Years of Internet use	Ordinal
	Frequency of Internet use	Ordinal
Self-rated traveler characteristics	Well traveled person Skilled traveler	Interval
Travel planning styles	Travel plan phases	Nominal
	Role in decision making	Nominal
Tolerance for travel uncertainty	4 items of importance	Interval
	4 items of need	Interval
Travel information source	22 items of traditional sources	Nominal
	22 items of web-based sources	Nominal

The respondents were asked to indicate years of Internet use and select one of seven choices: (1) every few weeks; (2) 1-2 days a week; (3) 3-5 days a week; (4) about once a day; (5) several times a day; (6) continuously; and (7) other. Since most responses to "(7) other" were found to be "no use of the Internet", (7) other was recoded to be "0 days" a week in this study for the appropriate cases. Bruce (1998) translated the notion of frequent Internet users into those who used the Internet for information search everyday. Hence, this research followed Bruce's classification of Internet use into three groups: those who used the Internet less than seven days a week (less frequent users), everyday (frequent users), and several times a day (more frequent users).

The respondents were asked to respond to items pertaining to tolerance for travel uncertainty for a general context (not a specific trip). Travel uncertainty was measured with an eight-item adaptation of Daniels and Norman's (2001) two-factor measurement scale for importance and need for travel certainty, which were originated from Kellerman and Reynolds' (1990) two-factor measurement scales for interpersonal relationship (see

Table 2-1). For each item, travelers indicated levels of tolerance for travel uncertainty on a seven-point scale (1=strongly disagree to 7=strongly agree). Prior to analysis, items were recoded as necessary to reflect 1 as "strongly agree" and 7 as "strongly disagree."

Travel information was measured for 22 information sources across two formats, traditional and web-based. Traditional refers to how information is presented (print, telephone, or in person) and web-based refers to online sources. This type of measurement allowed an understanding of the crossover of information sources to non-electronic and web-based formats. For example, a convention and visitor bureau may offer printed materials by phone or on a web site.

Respondents were asked to indicate whether they use these sources for searching for travel information. Information sources provided in the questionnaire included one's own experiences, friends or families, travel agents, mass media, brochures, and web sites provided by various destination-specific sources such as chambers of commerce, convention/visitor bureaus, visitor information centers, accommodations, and travel reservation search engines (e.g., Travelocity, Expedia).

The monitoring questionnaires were administered twice within a four month time interval, but only the first monitoring data set was selected for this research because of the following reason. The travel information source variable in the monitoring one offered a three category response set including "traditional", "Internet", and "didn't use", while the monitoring two was slightly modified to two categories "traditional" and "Internet" or directed respondents not to check any thing if they did not use either format. Respondents' effort on these two formats was considered (see data analysis in page 53).

Data analysis

SPSS software (version 14.0) was used to analyze the data for this research. **Step 1** discussed the characteristics of samples in term of demographics, Internet use, traveler characteristics, travel planning styles, information technology and length of trips. **Step 2** tested the reliability of monitoring 1 and 2 using a paired-sample *t* tests on tolerance for travel uncertainty as test-retest designs are widely used and supported by many researchers for the reliability of empirical measurements (Weiss, 1998). To segment respondents into groups with similar levels of tolerance for travel uncertainty, this study followed the methods conducted by Roehl (1988) to group samples in his study, which were shown from step 3 through 6. **Step 3** estimated Principal Components Factor Analysis with promax rotation on eight tolerance for travel uncertainty items to identify its structure through data summarization. Factor analysis allowed testing of conceptual factors and relationships among tolerance for travel uncertainty. Since the previous studies (Daniels & Norman, 2001; Kellerman & Reynolds, 1990) suggested the items were highly correlated, an oblique solution, which allows factors to be correlated, was used (Gorsuch, 1983). In an oblique solution two sets of factor loading were obtained, structure loading and pattern loading. The pattern loading is usually considered to be superior to the structure loadings (Harman, 1976) because it contains information about the unique contribution of a variable to a factor (Field, 2005). Therefore, the pattern loading is reported in this study. **Step 4** described each factor and showed consistency in the two identified factors (importance and need). **Step 5** clustered two factor scores derived from the two identified tolerance for travel uncertainty factors using a Hierarchical approach with Ward's method and obtained three clusters. **Step 6** evaluated

whether the identified clusters on variables shows significant differences using MANOVA and ANOVAs on three tolerance for travel uncertainty groups on the two identified tolerance for travel uncertainty factors. **Step 7** compared group characteristics including demographics (income, gender, marital status, education, age), use of the Internet, self-rated traveler characteristics, and travel planning styles.

Step 8 estimated Principal Components Factor Analysis with varimax rotation on 22 information sources to identify structure through data summarization and tested conceptual factors and relationships among travel information sources. For data analysis on information sources, choice of no response (missing) may be interpreted in two ways. For example, in the use of travel maps, a respondent may choose no category because they did not use the source at all or simply they did not want to respond. For the data analysis of monitoring one, missing data were interpreted as respondents who did not use a specific source if they reported using other sources and as respondents who did not want to respond if they reported using no source at all (34 cases among 260 cases were found as missing on all 22 items of information sources). For monitoring two, 64 cases among 242 cases were found as missing on all 22 items of information sources. Comparing the number of missing data in the monitoring one to the monitoring two, one can assume that missing data in the monitoring two appears to be more issue in the repeated surveys. Therefore, we decided to select only monitoring one data for this part of the research. In **Step 9,** ANOVAs were estimated to identify any significant differences in mean factor scores among the tolerance for travel uncertainty groups across the six identified information factors (from step 5). Lastly, **Step 10** used a cross-tabulation method to demonstrate usage patterns of information sources based on the

groups of tolerance for travel uncertainty. **Step 11** showed the average number of information sources used on average among tolerance for travel uncertainty groups. **Step 12** presented correlations between tolerance for travel uncertainty and specific information source used. In **the last step** of analyses, Phi coefficients were employed to test the strength of association in information source utilization between traditional and web format for tolerance for each travel uncertainty groups.

4. RESULTS

In this section, the results are shown to meet the data analysis strategy from step one through thirteen.

Sample

As shown in Table 1-1 (Chapter 1), the monitoring one yielded a sample size of 260 and the monitoring two a sample size of 242. In the monitoring two, 37 respondents were lost from the monitoring one and 19 new respondents were added (completed the qualifying survey but not the monitoring one survey).

The demographics of samples for the monitoring one and two are described in Table 2-3 and showed slight differences. Overall, respondents in the two repeated surveys were an equal mix of males and females, most were married, slightly half of the respondents reported they had at least a bachelor degree, and almost half reported a household income of C$80,000 or more, and the mean ages are about 50 years old.

Table 2-3. Demographic profiles

	Monitoring 1	Monitoring 2
Age	n=260	n=241
mean, range	49; 18 ~ 64 years	50; 16~64 years
Gender	n=260	n=241
male	49.6%	48.1%
female	50.4	51.9
Income	n=232	n=200
less than C$40,000	14.2 %	13.0 %
C$40,000~C$79,999	39.7	40.5
C$80,000 or more	46.1	46.5
Education	n=243	n=209
no bachelor degree	58.4 %	57.9 %
bachelor degree	41.6	42.1
Marital status	n=254	n=234
single	16.9 %	15.8 %
married/living-common law	83.1	84.2

Table 2-4 presents that the average number of years an individual has used the Internet (for any purpose) was nine years and two-thirds of respondents used the Internet several times a day and the remaining respondents used the Internet less frequently.

Table 2-4. Internet usage profiles

	Monitoring 1	Monitoring 2
Years using the Internet	n=226	
mean; range	9; 1 ~ 25 years	Not asked
How often using the Internet	n=233	n=201
less frequent users (less than seven times a week)	18.3%	13.6 %
frequent users (everyday)	17.1	19.9
more frequent users (several times a day)	64.5	66.5

A third characteristic of the samples includes self-rated traveler characteristics. Participants rated themselves as well traveled persons and skilled travelers (4.6 and 4.7 respectively on a 7 scales for both monitoring one and two) (Table 2-5).

Table 2-5. Self-rated traveler characteristics

	Monitoring 1	Monitoring 2
Well traveled person	4.61 [a] (n=255)	4.58 (n=237)
Skilled traveler	4.73 (n=251)	4.68 (n=231)

a. Scale: from 1=strongly disagree, 7=strongly agree.

Table 2-6 describes the manner in which the last trips were planned. Slightly less than half of the respondents reported they generally planned their entire trips in advance at home and the other half of the respondents planned most trips at home and found detailed information at destinations. A small percentage of respondents planned en route or at a destination. Five percent of the respondents indicated they did not plan their trip at all.

More than half of respondents reported they shared decisions for a trip with the travel party and one-third of respondents indicated they were the primary decision maker of a trip. Very few respondents were not involved in decision making process at all.

Table 2-6. Travel planning styles

	Monitoring 1	Monitoring 2
Travel plan phases	n=259	n=240
at home (in advance)	40.6%	41.3%
en route	5.6	5.4
at home and destination both	45.0	44.6
at destination	3.2	3.3
no plan at all	5.6	5.4
Decision maker	n=259	n=240
primary decision-maker	32.7%	33.4%
Shared decision maker	66.5	65.8
no decision maker	0.8	0.8

Test-retest reliability

Test-retest designs are widely used and supported by many researchers for the reliability of empirical measurements (Weiss, 1998). McKelvie (1992) argued that reliability estimated under test-retest designs is not inflated due to "learning/practice effect (subjects learn from the first administration and adjust their answers on the second)" and should be conducted within an appropriate time interval. Test-retest reliability, which shows stability of the measurements, is conducted based on the same test to the same subjects at two points in time. One of the easiest ways to examine the reliability is to test the correlation between two studies conducted across time because they are assumed to reflect the same true variable. If one obtains exactly the same results on the second test, then the retest reliability coefficient will be 1.00. However, invariably, the correlation of measurements across time will be less than perfect because of the instability of empirical measurement caused by situational conditions.

This study employed a paired-sample *t* test to examine the difference in tolerance for travel uncertainty between the monitoring one and two. Table 2-7 indicated that there were no significance differences in the eight tolerance for travel uncertainty items between monitoring one and two.

Table 2-7. Test-retest reliability

Tolerance for travel uncertainty variables	Monitoring1 (Mean)	Monitoring2 (Mean)	Paired-sample *t* test	df	*p*
Importance 1	5.68 [a]	5.58	.92	237	.36
Importance 2	5.43	5.18	1.95	236	.05
Importance 3	5.45	5.24	1.67	234	.10
Importance 4	3.97	4.06	-.56	233	.58
Need 1	5.39	5.22	1.30	235	.20
Need 2	4.41	4.25	.92	231	.36
Need 3	4.42	4.34	.54	237	.59
Need 4	4.86	4.73	.94	235	.35

a. Scale: from 1=strongly disagree, 7=strongly agree.

Factor analysis of tolerance for travel uncertainty

Next, the eight tolerance for travel uncertainty items were factor analyzed using principal components analysis with promax rotation. The same results were found for the monitoring one and two data (Table 2-8 and 2-9 respectively). The factor analysis holds that two factors were derived with eigen values greater than one. The factor analysis suggested a removal of one item, "I believe it is of real importance to learn as much as possible about a travel destination in advance" and an exchange of one item in importance, "Any uncertainty that I have about a travel destination really bothers me", with one item of need, "It is not necessary to know much about a travel destination before going there." Three items remained in the importance factor and four items remained in the need factor.

Table 2-8. Factor analysis of tolerance for uncertainty scale (Monitoring 1)

Variables	Factor loadings
Importance of reducing travel uncertainty (Variance explained=49.2%; mean=5.4; alpha=.75)	
Importance 2: What I don't know about a vacation destination doesn't really matter. (R) [a]	.865
Importance 3: I may not understand a lot about a travel destination, but it is o.k. (R)	.823
Need 1: It is not necessary to know much about a travel destination before going there. (R)	.758
Need for travel certainty (Variance explained=16.9%; mean=4.4; alpha=.82)	
Need 2: It would really bother me if I didn't understand a vacation destination before I leave home.	.861
Need 3: I have a real need to anticipate what will take place at a vacation destination before I leave home.	.831
Need 4: I want to be certain about the opportunities that will be available at a vacation destination before I leave home.	.781
Importance 4: Any uncertainty that I have about a travel destination really bothers me.	.733

a. (R) = reverse coded.
Scale: from 1=strongly disagree, 7=strongly agree.

Table 2-9. Factor analysis of tolerance for uncertainty scale (Monitoring 2)

Variables	Factor loadings
Importance of reducing travel uncertainty (Variance explained=49.0%; mean=5.2; alpha=.72)	
Importance 2: What I don't know about a vacation destination doesn't really matter. (R) [a]	.779
Importance 3: I may not understand a lot about a travel destination, but it is o.k. (R)	.876
Need 1: It is not necessary to know much about a travel destination before going there. (R)	.742
Need for travel certainty (Variance explained=15.9%; mean=4.4; alpha=.82)	
Need 2: It would really bother me if I didn't understand a vacation destination before I leave home.	.782
Need 3: I have a real need to anticipate what will take place at a vacation destination before I leave home.	.878
Need 4: I want to be certain about the opportunities that will be available at a vacation destination before I leave home.	.833
Importance 4: Any uncertainty that I have about a travel destination really bothers me.	.696

a. (R) = reverse coded.
Scale: from 1=strongly disagree, 7=strongly agree.

Description of two identified factors: Importance and need

Factor scores were derived from the two identified tolerance for travel uncertainty factors. These factor scores were standardized and had means of zero and standard deviations of one (Table 2-10).

Table 2-10. Description of the identified factors

Variable	Mean	SD	Min.	Max.
Factor scores for factor 1 (Importance)	0.0	1.0	-3.08	1.54
Factor scores for factor 2 (Need)	0.0	1.0	-2.47	1.89

A high factor score indicates strong agreement identified by a factor, while a low factor score indicates strong disagreement represented by a factor. In other words, a high factor scores indicated low tolerance for travel uncertainty, while a low factor score indicated high tolerance for travel uncertainty.

The standard deviation and mean of each factor score (SD=1 and mean=0) was used to identify the respondents as within one standard deviation of the mean factor score (-1.0~1.0), titled as "moderate tolerance", more than one standard deviation above the mean factor score (1.0 through highest), titled as "low tolerance", and more than one standard deviation below the mean factor score (-1.0 through lowest), titled as "high tolerance." The respondents were then classified by high, moderate or low on each of the two factors as shown in Table 2-11. Nine combinations were produced based on three levels (high-moderate-low) of two dimensions (importance-need). It was expected that large numbers of respondents would be included into the low-low, moderate-moderate, and high-high combinations, which represented consistently high, moderate, and low tolerance for travel uncertainty. Seventeen respondents were categorized in the

consistently high level of tolerance for travel uncertainty, 118 were in the consistently moderate level, and 19 were in the consistent low level.

Table 2-11. Consistency of the respondents' levels of each identified factor

Factor 1 (Importance)	Factor 2 (Need)	n	Percent
High [a]	High	17	6.8%
High	Moderate	22	8.7
High	Low	2	0.8
Moderate [b]	High	22	8.7
Moderate	Moderate	118	46.8
Moderate	Low	21	8.3
Low [c]	High	4	1.6
Low	Moderate	27	10.7
Low	Low	19	7.6
Total		252	100.0%

a. high=more than one standard deviation above the mean factor score (strong agreement).
b. moderate=within ± one standard deviation of the mean factor score (neutral agreement).
c. low=more than one standard deviation below the mean factor score (strong disagreement).

Clustering the respondents based on the two identified factor scores

To identify a set of groups which both minimized within-group variation and maximized between-group variation, a hierarchical cluster analysis was used on the factor scores of two identified factors (important dimension and need dimension) and three clusters were obtained. The first cluster included 48.4% of the respondents, the second and the third accounted for 21.4% and 30.2% of the respondents respectively. ANOVAs were estimated to investigate the presence of any significant difference among the three groups of each factors as shown in Table 2-12.

For the importance factor, the first and second clusters were significantly different from the third cluster, while for the need factor, the first cluster was significantly different from the second and third factors. In using these mean factor scores it appears

that, on average, respondents in the third cluster showed the lowest mean scores, which was titled the "high tolerance for travel uncertainty" group (High). The respondents in the first cluster displayed low tolerance in the need factor, while the respondents in the second cluster presented low tolerance in the importance factor. Therefore, the first cluster was titled the "low tolerance for travel uncertainty in need" group (Low-Need) and the second cluster is referred to as the "low tolerance in importance" group (Low-Importance).

Table 2-12. Differences in mean factor scores across clusters

Cluster	Importance[a] (factor 1)	Need (factor 2)	n	Percent
	[b]			
1	.45 A	.82 A	122	48.4%
2	.62 A	-.62 B	54	21.4
3	-.1.16 B	-.87 B	76	30.2
Total			252	100.0%

a. Analyses were conducting using ANOVA at 2 degrees of freedom.
b. Different letters represent significant group differences at $p < .05$ or less using Bonferroni Multiple Range Test.

Comparison of clusters based on the original tolerance for travel uncertainty items

To evaluate whether the cluster analysis was effective in classifying the respondents (Roehl, 1988), a multiple analysis of variance (MANOVA) was used to examine the tolerance for travel uncertainty items based on the three cluster (Table 2-13). The results of the MANOVA showed the overall significance. Once the overall significance was established, then each of the individual items was examined using ANOVAs to compare mean scores of the three clusters. All nine variables were significantly different across clusters. Cluster 1(low-need) had the highest mean scores on need variables, cluster 2 (low-importance) had the highest mean scores on two of importance variables and cluster 3 (high tolerance) included the lowest mean scores on

all nine items. This analysis suggests that respondents in the cluster 1 (low-need) reflected their needs or wants for better understanding of or ability to predict vacation destinations, whereas respondents in the cluster 2 (low-importance) expressed their concerns with the significance of what they do not know about vacation destinations.

Table 2-13. Comparison of mean scores of the tolerance for travel uncertainty items based on the three clusters

Tolerance for travel uncertainty variables	Clusters			Univariate	
	1	2	3	F	*p*
Importance 1	5.84 [a A b]	6.22 [A]	4.30 [B]	57.84	**.00**
Importance 2	5.94 [A]	6.19 [A]	4.07 [B]	104.49	**.00**
Importance 3 (former need1)	6.03 [A]	5.87 [A]	3.99 [B]	90.92	**.00**
Overall importance mean	5.94 [A]	6.09 [A]	4.12 [B]	175.24	**.00**
Need 1 (former importance 4)	4.98 [A]	3.26 [B]	2.74 [B]	62.44	**.00**
Need 2	5.83 [A]	2.76 [B]	3.21 [B]	150.87	**.00**
Need 3	5.61 [A]	3.69 [B]	3.08 [C]	119.30	**.00**
Need 4	5.70 [A]	4.39 [B]	3.70 [C]	59.35	**.00**
Overall need mean	5.53 [A]	3.52 [B]	3.18 [B]	219.00	**.00**

* MANOVA: F(16, 486)=46.74, $p<.01$ based on Wilks'criterion.
* All F tests for one way ANOVA were statistically significant at $p<.001$.
a. Scale: from 1=strongly disagree, 7=strongly agree.
b. Different letters represent significant group differences at $p < .05$ or less using Bonferroni Multiple Range Test.

Demographic profiles for tolerance for travel uncertainty groups

Table 2-14 showed demographic profiles for groups of tolerance for travel uncertainty. No significant associations were found for demographics by the cluster groups. A cross-tabulation described the three groups in detail.

The average age of the low-need group members and high tolerance group members were 48 and 49 years old and the low-importance group members were 53 years old. The low-need group was slightly more likely to be female (53%) than male (47%), whereas low-importance and high tolerance groups included more males than females.

Fifty-four percent of the low-need group earned C$80,000 or more, compared to 46% of the high and 33% of the low-importance group. In terms of education, the low-need group was more likely to hold bachelor degrees (47%) than the low-importance (31%) or high tolerance group (43%). The low-importance group members were more likely to be married/living common law (93%) than the other two groups (82% of the low-need, 80% of the high tolerance group).

Table 2-14. Demographic characteristics on tolerance for travel uncertainty groups

	Tolerance for travel uncertainty groups				
	L-N n=117	L-I n=53	H n=70	F [a]	*p*
Age (mean)	48.3	52.5	49.2	1.76	.17
	Tolerance for travel uncertainty groups				
	L-N	L-I	H	X^{2} [b]	*p*
Gender	n=122	n=54	n=76		
male	46.7%	51.9%	52.6%	.79	.67
female	53.3	48.1	47.4		
Income	n=110	n=48	n=66		
less than C$40,000	14.5%	14.6%	13.6%	6.64	.16
C$40,000 ~ C$79,999	31.8	52.1	40.9		
C$80,000 or more	53.6	33.3	45.5		
Education	n=116	n=51	n=68		
no bachelor degree	53.4%	68.6%	57.4%	3.36	.19
bachelor degree	46.6	31.4	42.6		
Marital status	n=120	n=53	n=73		
Single	18.3%	7.5%	20.5%	4.21	.12
married/living- common law	81.7	92.5	79.5		

a. Analyses were conducting using ANOVA at 2 degrees of freedom.
b. Analyses were conducted using Pearson chi-square tests at 2 degrees of freedom.

Internet use profiles for tolerance for travel uncertainty groups

As shown in Table 2-15, no significant associations were found in the Internet use profile across the tolerance for travel uncertainty groups. The average number of years

the respondents in the three groups have used the Internet was eight years. Respondents in the high tolerance for travel uncertainty group (73%) were more likely to be more frequent users than low tolerance groups (66% of the low-need and 58% of the low-importance), but overall the association was not significant.

Table 2-15. Internet use profile on tolerance for travel uncertainty groups

	Tolerance for travel uncertainty groups				
	L-N n=120	L-I n=49	H n=64	F [a]	*p*
Years of using the Internet (mean)	7.5	8.4	8.2	1.86	.16
	Tolerance for travel uncertainty groups				
	L-N n=110	L-I n=50	H n=66	X^{2} [b]	*p*
Frequency of using the Internet					
less frequent users (less than seven times a week)	12.7%	22.5%	18.7%	8.62	.71
frequent users (everyday)	21.1	19.6	8.0		
more frequent users (several times a day)	66.2	57.8	73.3		

a. Analyses were conducting using ANOVA at 2 degrees of freedom.
b. Analyses were conducted using Pearson chi-square tests at 2 degrees of freedom.

Travelers' characteristics on tolerance for travel uncertainty groups

ANOVAs showed that there were no significant differences in self-rated traveler characteristics (Table 2-16). Respondents in each group rated themselves as a well traveled person (5 on 7 scales) and skilled traveler (5 on 7 scales).

Table 2-16. Self-rated traveler characteristics on tolerance for travel uncertainty groups

	Tolerance for travel uncertainty groups				
	L-N	L-I	H	F [b]	*p*
Well traveled person	n=118 4.7 [a]	n=53 4.5	n=76 4.6	.40	.67
Skilled traveler	n=118 4.8	n=50 4.7	n=75 4.7	.27	.76

a. Scale: from 1=strongly disagree, 7=strongly agree.
b. Analyses were conducting using ANOVA at 2 degrees of freedom.

Travel planning styles based on tolerance for travel uncertainty groups

The styles of travel planning did not vary by the tolerance for travel uncertainty groups (Table 2-17). However, a trend in the data was shown that respondents in the low-need group were more likely to have planned the entire trips in advance (48%) than the low-importance and high tolerance groups (34% both). The low-importance group was more likely to have planned most of the trips at home and filled in the details at a destination (49%), than the low-need (44%) or high tolerance (43%) groups. The high tolerance group was more likely to have taken trips without much planning (11%) or have planned at the destinations (5%) than the two low tolerance groups.

No significant association was found in the styles of decision making however, the result of Chi-square test may be unreliable because of too few cases in the last choice, no decision maker. More than half of respondents in the three groups reported they shared decisions for a trip with the travel party and slightly less or more than one -third of respondents indicated they were the primary decision maker of a trip. Very few respondents were not involved in decision making process at all.

Table 2-17. Travel planning styles based on tolerance for travel uncertainty groups

	Tolerance for travel uncertainty groups				
	L-N n=122	L-I n=53	H n=76	X^2	*p*
Travel plan phases					
at home (in advance)	47.5%	34.0%	34.2%	12.72 [a]	.12 [c]
en route	3.3	9.4	6.6		
at home and destination both	44.3	49.1	43.4		
at destination	2.5	1.9	5.3		
no plan at all	2.5	5.7	10.5		
Decision maker					
primary decision-maker	36.9%	22.6%	32.9%	5.17 [b]	.27 [c]
shared decision maker	63.1	75.5	65.8		
no decision maker	0.0	1.9	1.3		

a. Analyses were conducted using Pearson chi-square tests at 8 degrees of freedom.
b. Analyses were conducted using Pearson chi-square tests at 4 degrees of freedom.
c. Too few cases for a reliable nonparametric Chi-square test.

Factor analysis of traditional information sources

In step eight of the analyses, a principal components factor analysis with varimax rotation on 22 traditional information sources provided six sets of factors that were correlated with one another but largely independent of other subsets of variables (after 3 items, visitor information center, airline, and past experience were removed for low factor loadings). The items all appeared conceptually related, which is an important assumption of factor analysis, so these were considered proper (Diekhoff, 1992). As shown in Table 2-18, the six factors were used to create a multi-set of information variables: mass-media, destination organization, travel business, published material, professional consultant, and personal advice.

The first factor was represented by mass-media information such as commercials and programs on television, radio, and newspaper/magazine. The second factor was represented by destination organizations such as convention visitor bureau and chamber

of commerce. The third factor was represented by travel businesses including accommodations and attractions, and the fourth factor was represented by published material including CAA/AAA or other motor club, guide books, and travel maps. The fifth factor included professional consultant, described tour operators, travel agency, and travel websites (used in print). The final factor included personal advice included advice from family and friends. One notable finding is that information obtained by travel websites and presented in traditional forms is identified in the factor "professional consultant."

Table 2-18. Factor analysis of traditional information source utilization

Variables	Factor 1 Mass media	Factor 2 Destination organization	Factor 3 Travel businesses	Factor 4 Published material	Factor 5 Professional consultant	Factor 6 Personal advice
Television programs	.73	.19	.05	.11	.17	-.12
Television commercial	.71	.37	.03	-.16	.02	-.08
Radio commercial	.63	.23	-.21	.01	-.06	.23
Newspaper/magazine articles	.62	-.15	.36	.24	.20	.19
Newspaper/magazine ads	.62	-.18	.29	.13	.13	.31
Destinations tourism department	.11	.74	.17	.20	.03	.06
Convention visitor bureau	.23	.72	-.02	.13	.07	.10
Chamber of commerce	.02	.56	.32	-.02	.02	.15
Accommodations	-.03	.17	.67	.07	.04	-.01
Attractions and/or events	.12	-.02	.67	.24	.05	.10
Other transportation	.05	.30	.55	-.10	.03	-.01
CAA/AAA or other motor club	-.10	.09	.12	.76	.03	.07
Guide books	.20	-.05	-.12	.67	.41	.04
Travel maps	.16	.26	.20	.65	-.09	.05
Tour operators	.10	.08	.01	-.06	.80	.05
Travel agency	.03	.04	.00	.14	.69	.15
Travel websites	.10	.03	.40	.06	.53	-.09
Advice from family	.18	.04	.02	.02	.02	.80
Advice from friends	-.04	.23	.04	.11	.14	.71
Eigen value	2.41	1.92	1.80	1.72	1.70	1.43
Percent of variance explained	12.70	10.09	9.49	9.08	8.96	7.55

Factor analysis of web-based information sources

A principal components factor analysis with varimax rotation was conducted with 22 web-based information sources and provided six sets of factors (after 3 items, past experience, chamber of commerce, and attractions and/or events were removed for low factor loadings) (Table 2-19). The first factor was represented by travel businesses such as airline, accommodations, and travel websites. Interpretation of the second factor

suggested that one web-based information dimension involves the destination travel organizations including travel maps, CAA/AAA or other motor clubs, destination tourism department, visitor information, and convention visitor bureau. The third factor was represented by broadcast media such as TV and radio and the fourth factor was identified by printed media such as newspaper/magazine and guidebook. The fifth factor, professional consultant, described tour operators and travel agency. The final factor, personal advice, included advice from family and friends.

As compared to the results of the factor analysis of traditional information sources, two notable changes were found in the results of the analysis of the web-based information sources. First, travel websites found online were placed in the first factor, travel businesses, while travel websites found in traditional forms were placed in professional consultants. Second, the results of the factor analysis of traditional information sources provided one mass-media factor, whereas the mass-media factor was categorized into two factors, broadcast media and printed media, in the results of the factor analysis of web-based information sources.

Table 2-19. Factor analysis of web-based information source utilization

Variables	Factor 1 Travel businesses	Factor 2 Destination travel organization	Factor 3 Broadcast media	Factor 4 Printed media	Factor 5 Professional consultant	Factor 6 Personal advice
Airlines	.82	.13	.05	.04	.20	-.04
Other transportation	.81	.06	-.12	.00	-.02	.15
Travel websites	.73	.15	.01	.11	.17	-.04
Accommodations	.63	.35	.06	-.05	-.15	.14
Destinations tourism department	.19	.77	.09	-.18	.03	.07
Travel maps	.21	.68	.03	.12	-.17	.12
Visitor information centers	.09	.66	-.06	.11	.31	-.05
Convention visitor bureau	.16	.60	.17	.03	.13	.13
CAA/AAA or other motor club	-.01	.47	-.08	.36	.05	-.03
Television commercials	.05	.04	.86	.09	.13	-.01
Radio commercials	-.00	.15	.76	-.05	.17	-.07
Television programs	-.06	-.05	.66	.25	-.04	-.03
Newspaper/magazine ads	.12	.04	.19	.78	.06	.03
Newspaper/magazine articles	.05	.15	.05	.74	.08	.06
Guide books	-.08	-.05	.11	.60	.28	.10
Travel agency	.03	.10	.21	.16	.80	.10
Tour operators	.18	.07	.06	.15	.79	.15
Advice from friends	.13	.04	-.02	.07	.02	.90
Advice from family	.01	.16	-.09	.08	.25	.81
Eigen value	2.46	2.37	1.92	1.85	1.69	1.59
Percent of variance explained	12.92	12.47	10.10	9.72	8.87	8.34

Differences in mean factor scores across six identified traditional information factor among tolerance for travel uncertainty groups

ANOVAs were estimated to determine whether there were significant differences in mean factor scores across six identified traditional information factors based on the tolerance for travel uncertainty groups. Mean factor scores for each group were presented in Table 2-20. No significant differences were found in mean factor scores of the six

identified factors among the three tolerance for travel uncertainty groups. Overall, the high tolerance group showed the lowest scores (the lowest level of traditional information source utilization). The low-importance group had the lowest mean scores on the destination organization and personal advice factors and the low-need group had the lowest mean score on the published material factor.

Table 2-20. Differences in mean factor scores across six identified traditional information factors among tolerance for travel uncertainty groups

Traditional information source factors	Tolerance for travel uncertainty groups			Univariate [a]	
	L-N n=108	L-I n=46	H n=64	F	*p*
Mass media	.06	-.05	-.07	.41	.66
Destination organization	.07	-.10	-.05	.56	.57
Travel businesses	.03	.02	-.04	.11	.89
Published material	-.05	.17	-.03	.78	.46
Professional consultant	.04	.03	-.12	.55	.58
Personal advice	.05	-.18	.01	.84	.43

a. Analyses were conducting using ANOVAs at 2 degrees of freedom.

Differences in mean factor scores across six identified web-based information factors among tolerance for travel uncertainty groups

ANOVAs were conducted to determine whether there were significant differences in mean factor scores for web-based factors among tolerance for travel uncertainty groups. As shown in Table 2-2, no significant differences in mean factor scores on the six identified web-based factors were observed. The low-importance group had the highest mean scores on the printed media and personal advice factors, while the low-need group had the lowest mean score on those factors.

Table 2-21. Differences in mean factor scores across six identified web-based information factors among tolerance for travel uncertainty groups

Web-based information source factors	Tolerance for travel uncertainty groups			Univariate [a]	
	L-N n=108	L-I n=47	H n=65	F	*p*
Travel businesses	.04	.02	-.06	.21	.81
Destination travel organization	-.04	.06	-.04	.18	.83
Broadcast media	.10	.02	-.14	1.17	.31
Printed media	-.10	.20	.00	1.15	.24
Professional consultant	.05	-.11	-.07	.57	.57
Personal advice	-.08	.26	-.05	2.05	.13

a. Analyses were conducting using ANOVA at 2 degrees of freedom.

Usage patterns of traditional information sources based on tolerance for travel uncertainty groups

A cross-tabulation method was used to display any usage patterns of traditional information sources among tolerance for travel uncertainty groups (Table 2-22). Past experiences, personal advice, and travel neutral sources were more likely to be used than other sources by respondents regardless of grouping.

No significant association was observed in traditional information sources among tolerance for travel uncertainty groups. However, as shown in the results of ANOVAs (Table 2-20), a cross tabulation of information source utilization by the three groups, showed respondents in the high tolerance group were less likely to use traditional information sources than the two low tolerance groups (low-need and low-importance). Overall, mass-media including television programs, radio commercial, newspaper/magazine articles, and newspaper/magazine ads) was used by the low-need group and published material including CAA/AAA or other motor club, guide books, and travel maps is used by the low-importance group.

Table 2-22. Usage patterns of traditional information sources based on tolerance for travel uncertainty groups

	Tolerance for travel uncertainty groups					
	L-N N=108	L-I N=47	H n=65	Total n=220	X^2 [a]	*p*
Mass media						
Television programs	**15.7%** [b]	10.6%	9.2%	12.7% [c]	1.78	.41
Television commercial	8.3	8.5	**9.2**	8.6	.04	.98
Radio commercial	**8.3**	6.4	7.7	7.7	.18	.92
Newspaper/magazine articles	**31.5**	23.4	20.0	26.4	3.03	.22
Newspaper/magazine ads	**25.0**	19.1	18.5	21.8	1.27	.53
Destination organization						
Destination's tourism department	**24.1**	14.9	20.0	20.9	1.72	.42
Convention visitor bureau	**13.9**	10.9	6.3	11.0	2.40	.30
Chamber of commerce	**3.7**	2.1	3.1	3.2	.27	.88
Travel business						
Accommodations	27.8	**34.0**	27.7	29.1	.71	.70
Attractions and/or events	23.1	**27.7**	24.6	24.5	.36	.84
Other transportation	**22.2**	12.8	15.4	18.2	2.45	.29
Published material						
CAA/AAA or other motor club	30.6	**42.6**	29.2	32.7	2.65	.27
Guide books	37.0	**42.6**	36.9	38.2	.48	.79
Travel maps	52.8	**53.2**	52.3	52.7	.01	1.00
Professional consultant						
Tour operators	**9.3**	8.5	3.1	7.3	2.44	.30
Travel agency	**25.0**	17.0	20.0	21.8	1.40	.50
Travel websites	7.4	**12.8**	6.2	8.2	1.76	.42
Personal advice						
Advice from family	**47.2**	38.3	38.5	42.7	1.75	.42
Advice from friends	50.9	46.8	**58.5**	52.3	1.64	.44
Excluded sources						
Past experiences	66.7	68.1	**69.2**	67.7	.13	.94
Visitor information centers	31.5	**40.4**	26.2	31.8	2.57	.28
Airlines	13.0	**19.1**	15.4	15.0	.99	.61

a. Analyses were conducted using Pearson chi-square tests at 2 degrees of freedom.
b. The highlighted percentages indicate the largest estimate for the information source use.
c. Total percentages indicate only users of information sources and those who did not use were excluded.

Usage patterns of web-based information sources based on tolerance for travel uncertainty groups

Table 2-23 showed a significant association in newspaper/magazine ads and overall, no significant associations were observed in web information sources among tolerance for travel uncertainty groups. Generally, web-based information sources appear to be used more by the low-importance group than the two groups (low-need and high). The low-need group was more likely to use broadcast media including television commercials and radio commercials on the web. Guide books and other transportation web sites were more likely to be used by the high tolerance group.

Number of information sources used by tolerance for travel uncertainty groups

The average number of information sources used by each group was estimated. Respondents in the low-need group reported they would use 5.7 information sources in traditional format and 4.4 in web format. Respondents in the low-importance group indicated they use 5.6 sources in traditional format and 5.3 sources in web format. Respondents in the high tolerance group used 5.2 information sources in traditional format and 4.5 information sources in web format.

Table 2-23. Usage patterns of web-based information sources based on tolerance for travel uncertainty groups

	Tolerance for travel uncertainty groups					
	L-N n=108	L-I n=47	H n=65	Total n=220	X^2 [a]	*p*
Travel business						
Airline	**47.2%** [b]	42.6%	38.5%	43.6% [c]	1.30	.52
Other transportation	30.6	29.8	**32.3**	30.9	.09	.95
Travel websites	41.7	**42.6**	35.4	40.0	.83	.66
Accommodations	50.0	**59.6**	50.8	52.3	1.29	.53
Destination travel organization						
Destination's tourism department	42.6	**48.9**	36.9	42.3	1.62	.44
Travel maps	35.2	**36.2**	33.8	35.0	.07	.97
Visitor information centers	22.2	**27.7**	27.7	25.0	.87	.65
Convention visitor bureau	19.4	**25.5**	13.8	19.1	2.43	.30
CAA/AAA or motor club	**12.0**	10.6	10.8	11.4	.10	.95
Broadcast media						
Television commercial	**0.9**	0.0	0.0	0.5	- [d]	-
Radio commercial	**2.8**	0.0	0.0	1.4	-	-
Television programs	2.8	**4.3**	0.0	2.3	-	-
Printed media						
Newspaper/magazine ads	4.6	**17.0**	4.6	7.3	8.42	**.02**
Newspaper/magazine articles	20.4	**23.4**	20.0	20.9	.23	.89
Guide books	8.3	12.8	**13.8**	10.9	1.48	.48
Professional consultant						
Tour operators	**11.1**	6.4	4.6	8.2	2.54	.28
Travel agency	7.4	**10.6**	6.2	7.7	.80	.67
Personal advice						
Advice from friends	5.6	**17.0**	7.7	8.6	5.56	.06
Advice from family	9.3	**14.9**	7.7	10.0	1.70	.43
Excluded sources						
Past experiences	16.7	**27.7**	20.0	20.0	2.47	.29
Attraction and/or events	**41.7**	40.0	38.5	40.5	.17	.92
Chamber of commerce	8.3	**19.1**	7.7	10.5	4.84	.09

a. Analyses were conducted using Pearson chi-square tests at 2 degrees of freedom.
b. The highlighted percentages indicate the largest estimate for the information source use.
c. Total indicated users of information sources and excluded those who did not use.
d. Too few cases for a reliable nonparametric Chi-square test.

Correlations between travel uncertainty and specific information source

Correlations were measured to determine the relationship between tolerance for travel uncertainty and specific type of information sources. Significant correlations were observed in few sources. In terms of traditional sources, TV programs were significantly correlated to both factors (importance and need) of tolerance for travel uncertainty (r=.17, $p<.05$ for importance; r=.15, $p<.05$ for need). TV commercials were related to importance factor (r=.15, $p<.05$), while travel maps were correlated significantly with need factor (r=.20, $p<.05$). Considering web-based information sources, only the destination travel organization factor was significantly correlated with importance factor (r=.23, $p<.01$). For example, destinations tourism department (r=.15, p<.05), travel maps (r=.21, p<.01), visitor information center (r=.20, p<.01), and convention/visitor bureau (r=.15, r<.05) were significantly correlated with the importance factor.

Consistency in information source utilization between traditional and web formats

In the last step of analyses, Phi coefficients were employed to test the strength of association in information source utilization between traditional and web formats for the tolerance for travel uncertainty groups and showed whether sources in web format were used in the same way in traditional format. In other words, knowing the usage pattern of sources in both traditional and web formats can help determine whether web-based information is replacing or complementing traditional information sources for travel planning (Table 2-24). Overall, no strong associations were observed between traditional and web format uses among tolerance for travel uncertainty groups. A negative Phi value indicates information source use of either in traditional or web format, whereas a positive Phi value indicates a similar pattern of information source use in between traditional and

web formats. For example, respondents in the low-need group showed consistent usage patterns in newspaper/magazine ads in between traditional and web formats and inconsistent usage patterns in accommodations in between traditional and web formats.

Table 2-24. Consistency in information source utilization of traditional and web format

Traditional vs. web format	Tolerance for travel uncertainty groups [a]		
	L-N	L-I	H
Television programs	-.07	-.07	- [b]
Television commercial	-.03	-	-
Radio commercial	-.05	-	-
Newspaper/magazine articles	.00	.17	.14
Newspaper/magazine ads	.28 ** [c]	.21	-.11
Destination's tourism department	-.00	-.17	-.22
Convention visitor bureau	.07	.11	-.10
Chamber of commerce	.12	.30 *	-.05
Accommodations	-.29 **	-.33 *	-.42 ***
Attractions and/or events	.03	-.03	.14
Other transportation	-.26 **	.03	-.30 *
Airlines	-.09	-.09	-.16
CAA/AAA or other motor club	.19	-.02	-.01
Guide books	.19	-.07	.06
Visitor information centers	-.03	-.22	.02
Travel maps	-.00	-.27	-.16
Tour operators	.09	.54 ***	-.04
Travel agency	.08	.21	-.13
Travel websites	-.17	-.07	-.06
Advice from family	.08	-.08	.01
Advice from friends	-.00	-.20	-.11
Past experiences	-.21 *	-.29 *	-.08

a. Analyses were conducted with a Phi (2x2).
b. No use of information source.
c. * significant at .05 level; ** significant at .01 level; *** significant at .001 level.

5. DISCUSSION AND IMPLICATIONS

An objective of this study was to examine the relationship between levels of tolerance for travel uncertainty and types of information source use in two formats: traditional and web-based. In this discussion section, the results presented earlier have been further elaborated in four sections. First, findings are reviewed. Second, applications for travel market are discussed. Third, considerations for chapter 3 are proposed. Lastly, limitations of this study and suggestions for future study are addressed.

Discussion of Findings

This study was conducted for situations in which respondents did not necessarily plan a specific trip. Adapting a concept introduced in communication studies, the proposed model suggested that tolerance for travel uncertainty is an important determinant of information seeking behavior and a negative relationship was expected between tolerance for travel uncertainty and information seeking.

Tolerance for travel uncertainty

Research question 1. Do travelers experience tolerance for travel uncertainty?

The results showed that individuals believe it is important to reduce travel uncertainty and at some point before an actual vacation experience to reach more certainty about travel decisions. This study aimed to study the importance of reducing uncertainty, rather than the actual part or stage of reaching a higher level of certainty. By studying the importance of the act of reducing, it is suggested that individuals are active in their efforts to be more certain. Additionally, efforts were made to apply a reliable set of tolerance for travel uncertainty scales, and two factors of tolerance for travel uncertainty were supported with two data sets (monitoring one and two) allowing for a

test-retest exercise. Therefore, we concluded that two factors, importance and need for tolerance for travel uncertainty, are not unidimensional as suggested by previous studies (e.g., Daniels & Norman, 2001; Kellerman & Reynolds, 1990).

Creating a typology using the tolerance for travel uncertainty items resulted in three identified groups; a low-need group, a low-importance group, and a high tolerance group. The low-need group appeared to hold a high level of need for achieving a better understanding of vacation destinations. The low- importance group appeared to hold a high level of concern for information deficiency or what they do not know about vacation destinations. Respondents in the high tolerance group did not hold concerns about travel uncertainty and appeared more confident about travel preparations.

The identified tolerance groups did not vary in a statistically significant way by demographics, Internet use, self-rated traveler characteristics, and decision making styles. Cross tabulation methods showed some trends that begin to show some expected results and deserve further comments about several variables: (1) the decision making styles: respondents in the low-need group were more likely to advance plan most of their trips at home, respondents in the low-importance group were more likely to continue planning en route or at destinations, and those who held high tolerance for travel uncertainty were more likely not to plan for travel at all; (2) education and income: previous studies testing traditional travel information source use showed travelers with higher education and income were more likely to seek information (Etzel & Wahlers, 1985; Gitelson & Crompton, 1983). The results here have shown the low-need group which included a great or proportion of individuals with higher income and education, than the low-

importance and high tolerance group was more likely to use traditional information sources than the other two tolerance groups (low-importance and high).

Information source utilization

Research question 2. What are the types of traditional information sources used for planning a trip?

Research question 3. What are the types of web-based information sources used for planning a trip?

The results illustrated that six identified factors exist in traditional and web-based information sources. For traditional format, mass media, destination organizations, travel business, published material, professional consultant, and personal advice were the six factors. For web format, travel business, destination travel organization, broadcast media, printed media, professional consultant and personal advice were the six factors.

As mentioned earlier, travelers were likely to use various combinations of information sources for travel planning including: (1) personal experience, friends and family, and travel agencies (Fodness & Murray, 1998), (2) the Internet in combination with traditional sources (Oorni, 2004), and (3) various sellers through different channels such as accommodations, attractions, events, or airlines.

The result of this study showed that among traditional information sources, past experiences appeared to be the most effective information source followed by personal advice from friends and family. Consistent with Murray's (1991) findings, personal source or advice from others was perceived as an effective information source in travel decision making. Traditional portable information such as travel maps and guidebooks also appeared to be frequently used. It appeared that web sites provided by travel businesses such as accommodations or airlines, travel websites, and attraction and/or

events have emerged as an important information sources instead of using conventional toll free numbers. Additionally, travel articles in newspapers/magazines appeared to be used both in print and web formats.

Research question 4. Do web-based information sources replace or complement traditional information sources for travel planning?

Even though the Internet has been widely accessible to travelers for information search, the results showed that certain types of information sources were still more used in traditional formats than online. For example, past experience, personal advice, and broadcast media were more used in traditional format than web format.

Information source utilization based on tolerance for travel uncertainty

Research question 5. What are the use levels of traditional information sources that travelers search for when planning a trip by different tolerance for travel uncertainty levels?

Research question 6. What are the use levels of web-based information sources that travelers search for when planning a trip by different tolerance for travel uncertainty levels?

The proposed model suggested there would be a negative relationship between tolerance for travel uncertainty and information seeking. Even though the statistical tests provided insignificant results in information source utilization at the different types and levels of tolerance for travel uncertainty groups, the descriptive analysis conducted by cross tabulation methods reflected that the proposed model by Kellerman and Reynolds (1990) was not denied. In general, the two low tolerance groups (low-importance and low-need) held higher use levels of traditional and web-based information sources, as compared to the high tolerance group.

Research question 7. Is there a significant relationship between the levels of tolerance for travel uncertainty and the types of information sources searched?

Overall, traditional information sources were more likely to be used by the low-need group, whereas web-based information sources were more likely to be used by the low-importance group. The choice of information sources may vary by stage of the vacation and by type of information sought (Hyde & Lawson, 2003). As shown by Hyde and Lawson (2003) that the most influential information sources in the preparation of vacation plans were travel guides and brochures, the low-importance group showed high levels of travel guide and brochure uses at the pretrip stage.

Conclusions

Schaninger and Sciglimpaglis (1981) noted that consumers with high tolerance tend to take personal or internal information, while intolerant consumers use objective information which provides certainty in purchasing of heterogeneous products. Money and Crotts (2003) examined the effect of uncertainty on vacation decision making at levels of cultural traits based on the Hofstede's cultural dimension (1980). In Money and Crotts' study (2003), Japanese, who were characterized as a low tolerance for uncertainty group, used more travel agents, while Germans, who were identified as a medium tolerance for uncertainty group, used significantly more often personal advice from friends and family. Consistent with previous studies, this study showed that a variety external information sources were more likely to be used by the low tolerance groups (low-importance and low-need), while past experiences and advice from friends were more likely to be used by the high tolerance group.

Regardless of the amount of information available, most consumers use only two or three sources in processing information (Assael, 1998). Similarly, this study found that

despite the availability of a full complement of travel information, respondents indicated they would use five information sources, on average, both in traditional and web formats. Etzel and Wahlers (1985) suggested cost of information search, which includes the time, effort and money, is an important issue when gathering external information. Requesting information through a phone call, coupon, or on line is not particularly costly when considering the benefits of selecting an appropriate destination or reducing travel uncertainty, therefore, mass media, travel maps, and destination organization websites appeared to be more attractive for travelers.

TV programs, TV commercials, and travel maps in traditional format and information provided by destination organizations and travel maps in web format were related to tolerance for travel uncertainty. It is suggested that travel uncertainty can be reduced by information seeking increased through broadcast media, travel maps and the destination organization websites.

Most information sources showed a weak association in utilization between traditional and web formats for the three tolerance groups. This suggests that web-based information sources cannot replace, but instead complement traditional information sources. For example, mass media or past experiences were preferred to be presented in traditional format, while travel business information was preferred in web format.

In summary, it may be natural that insignificances were observed in the relationship between tolerance for travel uncertainty and information use, because as Roehl (1988) noted in his dissertation, attitudes about risk in general contexts (referred as "uncertainty" in this study) displayed little relationship to decision making behavior. However, more importantly, the information usage patterns described by cross tabulation

methods suggested that uncertainty reduction behavior in vacation taking may not differ from that found in interpersonal communication behavior as suggested by Kellerman and Reynolds (1990). For example, the high tolerance group indicated lower levels of information use in both traditional and web formats, while the two low tolerance groups (low-importance and low-need) were more likely to use various information sources.

Applications for Travel Market

Even though the statistical results of this study showed that tolerance for travel uncertainty is not an efficient predictor of information seeking behavior, several implications are suggested. First, travel marketers and planners can benefit from understanding travelers' experience with uncertainty and their display of tolerance for travel uncertainty. For example, people experience uncertainty about vacation in general regardless of actual vacation plan in future.

Second, certain information sources were highly used by the low tolerance groups. In particular, broadcast media were more likely to be used by the low-need group, while travel websites provided by travel businesses were more likely to be used by the low-importance group. Therefore, it is important to consider broadcast advertising that focuses on two factors: (1) "hedonic information need" (Vogt, 1993), which captures consumers' attention and stimulate interests, and (2) "functional need" (Vogt, 1993) which helps consumers narrow their alternatives and establish "brand loyalty" based on TV images. Additionally, the Internet was observed as a significant communication channel between travelers and travel businesses or destination organizations, therefore it is important to focus on the contents which consider travel uncertainty and present

detailed information regarding accommodations, activities, transportations, weather, and culture, which help reduce travel uncertainty.

Considerations for Travel Diary (Chapter 3)

The identified tolerance groups did not differ statistically in several characteristics such as demographics, traveler characteristics, Internet use, and travel planning styles. As noted by Roehl (1988), risk perceptions about vacation in general (referred as travel uncertainty in this study) were found not to be related to travel behavior. This study expected travel uncertainty may be related to information seeking behavior yet did not show statistical significance. Therefore, it is necessary to determine whether any relationship exists between tolerance for travel uncertainty and risk perceptions about the vacation destinations.

Since this study tested tolerance for travel uncertainty which was not related to a specific trip, in Chapter 3, we turn attention to types of information technology used for those who actually take trips.

Limitations of this Study and Suggestions for Future Study

Due to the limitations of the secondary data used in this study, suggestions are made focusing on the survey methods and measurement. The question regarding information sources and formats generally used presented challenges to the researchers. The first format with three categories including "traditional", "Internet", and "didn't use" yielded 34 missing data cases. The revision of this question on monitoring two yielded 64 missing cases. These types of question formats are best worked out in pilot or pretests.

Two previous studies (Daniels & Norman, 2001; Kellerman & Reynolds, (1990) showed the importance of reducing uncertainty and the need to be certainty dimensions

measured the same quality however, our study showed two dimensional concepts, the importance of reducing travel uncertainty and the need to be certain about vacation held. Therefore, it may be useful for future studies to repeat this measure to further understand the characteristics of the two identified tolerance for travel uncertainty dimensions.

Communication research studies have made efforts to find influential factors on uncertainty, including culture (e.g., Gudykunst & Nishida, 1984; Gudykunst et al., 1985), ethnicity (e.g., Gudykunst & Hammer, 1988), confidence (Clatterbuck, 1978), and social identity and intimacy of relationships (Gudykunst & Hammer, 1988). However, these identified significant influential factors explained in communication studies were not examined here. It may be useful to study tolerance for travel uncertainty toward some fixed set of destinations visited by heterogeneous travelers with various national, cultural, social, and ethnical backgrounds.

Travel experience is proved to be an important factor related to travel uncertainty (Etzel & Wahlers, 1985). We recommend more inquiry into the role of past travel experience influencing tolerance for travel uncertainty levels.

CHAPTER III

UNDERSTANDING TRAVELER RISK AND THE USE OF INFORMATION TECHNOLOGY

1. INTRODUCTION

In general a consumer perceives high risk when he or she buys a product which has the following characteristics: lacks information, high price, new product, technologically complex, quality variations exist among brands, or an important purchase (Assaeal, 1998). Due to the unique characteristics of services, such as intangibility, simultaneity of production and consumption, and nonstandardiztion (Murray, 1991), services are perceived to be riskier purchases than goods. Risk perceptions vary depending on the situations and therefore should be measured for specific incidents (Dowling, 1986; Gemunden, 1985; Jackson et al., 1972; Knowles et al., 1973; Knowles, 1976; MacCrimmon & Wehrung, 1986). However, the majority of studies on travel risk do not differentiate risk perceptions between a general context and a specific situation (Hales & Shams, 1991; Mattila et al., 2001; Moutinho, 1987; Reisinger & Mavondo, 2005; Roehl & Fesenmaier, 1992). Roehl and Fesenmaier (1992) measured risk perceptions for vacations in general and at a destination, and Carr (2001) compared risk perceptions between a home setting and a destination context. These studies found a lack of agreement concerning the relationship between how people behave in general and on their vacations.

According to Sheth and Venkateasan (1968), studies on risk-taking theory based on one-time surveys do not measure the appropriate level of the risk-reduction process. Risk reduction processes change over time as a consumer gains experience by repeated

purchases or acquired information. Therefore, the level of risk reduction processes should not be determined at one time point but continually in the same situation (Howard & Sheth, 1968; Sheth & Venkatesan, 1968).

Travelers may perceive risk differently based on travel motivations. Dolnicar (2005) reported that bad weather is of greatest concern when thinking about adventure travel, whereas money value is considered highly for cultural trips. In addition, travel risk perceptions vary depending on tourists' characteristics. Roehl and Fesenmaier (1992) attempted to distinguish tourists by three groups based on their risk perceptions: (1) the risk neutral group: those who do not perceive vacations or traveling to destinations as risky; (2) the functional risk group: those who consider the possibility of mechanical, equipment and organizational risks; and (3) the place risk group: those who perceive tourism and traveling as risky. Past travel experiences, as well as good communication skills, have been found to increase safety feeling because it is possible to be well informed about the local culture in a destination (Pinhey & Iverson, 1994).

The most popular consumer strategy for reducing risk perceptions associated with a buying situation is seeking information (Assael, 1998; Mayo & Jarvis, 1981). As a general rule, the more reliable information a consumer acquires the less risk he or she will perceive in a buying situation (Mayo & Jarvis, 1981). Traditionally, some information sources can be obtained and utilized for pre-trip planning (e.g., TV advertising), whereas other sources (e.g., maps, road signs, highway information centers) are used during a trip. Travelers en route to their destinations report the use of travel information centers and communications with other people to learn about attractions and activities; and such information can influence an independent traveler's length of stay and

choice of attractions and activities in the destination area (Fesenmaier et al., 1993). At their destination, travelers seek information from personal sources, such as fellow travelers and employees of accommodation facilities and commercial sectors (MaDonough & Ackert, 1986). The Internet can eliminate any temporal and spatial limits of travel information searches (Fesenmaier & Jeng, 2000). On line information can also be transferred to portable electronic means which travelers bring along on a vacation (Andereck & Vogt, 2005).

Today's wireless and portable devices play important roles as information sources by providing accessibility to information on the web. The growing desire for travel and travelers' needs for electronic connectivity while en route and away from home has increased the importance of information and communication technology. Travel Industry Association of America (2004) reported portable electronic communication devices such as cell phones, laptops, and personal digital assistants help people stay connected and informed while away from their home or office.

Advancements in information technology may result in a change of travel risk perceptions and allows the reduction of risk while on vacation. Information technology allows travelers en route to have access to information and allows changes of preplanned decisions due to the unexpected situational events. Despite the significant role of information technology as a risk reliever, a search of related previous studies shows that the effectiveness of information technology on travel risk perceptions has been uninvestigated or unpublished. Unlike past studies that focus on pretrip information search, this study captures in situ information technology use during a trip. The components of risk perceptions and types of travel are discussed in detail.

Statement of the Problem

Research on information seeking behavior has been conducted by many tourism scholars. A theoretical approach has been made to extend the understanding of travel behavior and improve trip quality. Past studies examined travel information search focused on pretrip information using conventional information sources (e.g., Gitelson & Crompton, 1983; Vogt & Fesenmaier, 1998), however, this study investigated in situ information technology use during a trip with daily planning efforts.

According to perceived risk theory, consumer behavior is engaged with risks which entail adverse consequences (Bauer, 1960; Kogan & Wallach, 1964). When perceived risk is lower than a consumer's acceptance level, it can have little effect on intended behavior and may be ignored, but high level of perceived risk can cause avoidance of action (Cunningham et al., 2005). Perceived risk is typically higher in the purchase of services than in the purchase of goods (Cunningham et al., 2005; Guseman, 1981; Laroche et al., 2004; Murray, 1991) and a consumer perceives the higher level of risk with travel products/services due to the typical characteristics such as intangibility, nonstandardization, and inseparability of production and consumption (Roehl, 1988). Considerable efforts have been made to understand the risk reduction strategy and research shows that information search minimizes perceived risks.

With the advancement of information technology, changes were induced into travel information search. This study attempts to examine information technology use on vacations based on travel risk perceptions. This study also examines the risk components and the associations with information technology use. Specifically, personal factors such as travel styles, travel motivation and tolerance for travel uncertainty are discussed.

Research Questions

This study addresses the following research questions:

1. What are the types and levels of travel risks experienced by travelers?
2. Is there a relationship between travel styles and perceived travel risks?
3. Is there a relationship between travel motivation and perceived travel risks?
4. Does perceived risk affect the use of information technology during a vacation?
5. Does perceived risk affect experiences with information technology used during a vacation?

2. LITERATURE REVIEW

A review of literature focuses mainly on travel risk and information technology use during a trip. Travelers' personal factors influencing travel risk perception are also reviewed.

Travel risk perceptions

Since Knight (1921) introduced the concept of risk in economics, risk perception has been well established as a framework to explain consumer behavior in purchase decisions (Bauer, 1960; Cox, 1967; Cunningham et al., 2005; Derbaix, 1983; Dowling & Staelin, 1994; Kogan & Wallach, 1964). A purchase decision involves considering possible losses, which can be interpreted in terms of "psycho/social", functional/economic", or in multi-dimensional forms (Taylor, 1974). The losses a consumer may involve in a buying situation are time, hazard, ego, and money (Roselius, 1971). Risk has been defined as the probability of all possible outcomes and specific undesirable concerns regarding the future, which are known to the decision maker (Crowe & Horn, 1967; Kogan & Wallach, 1964; Williams & Heins, 1964), and identified

in five components: financial, social, psychological, performance, and physical risk (Jacoby & Kaplan, 1972).

Bauer (1960) stated that "perceived risk" is meant as an individual response to risk that only he or she perceives. Even though risk is objective and presented to everyone in the same manner, risk is not perceived by everyone in the same way; some people are seen as more risk averse than others. Conversely, some people are more willing to accept risk (Stone & Winter, 1987; Williams, 2002). Derbaix (1983) tested four types of perceived risks in nine product classes and concluded that some perceived risks rank higher for some product classes than for others. For example, financial risk for durable goods, physical risk for non-durable goods related to health issues, and psychological risk for apparel are all perceived as highly. In addition to types of products purchased, how or where goods are acquired is also very important for risk perceptions (Hisrich et al., 1972). In particular, for expensive products such as carpet and furniture which have a low purchase frequency, a consumer perceives relatively high risk, therefore, store selection becomes critical. For services, the unique characteristics including intangibility, simultaneity of production and consumption, and nonstandardization (Murray, 1991; Roehl, 1988), can make risk of greater importance than some types of goods (Cunningham et al., 2005; Guseman, 1981; Laroche et al., 2004; Murray, 1991).

As demonstrated by Cheron and Ritchie (1982), clear differences exist in risk perception between goods and leisure activities. For example, the psychological risk is the dominant risk in leisure, while performance is the most dominant risk for store goods

(Jacoby & Kaplan, 1972). In addition, for leisure, risk can be an important attraction of certain leisure activities, particularly adventure (Cater, 2006).

In tourism research, perceived risk has been examined to understand the effects on travelers' decision making and travel behaviors (e.g., Han, 2005; Maser & Weiermair, 1998; Mitchell et al., 1999; Reisinger & Mavondo, 2005; Roehl & Fesenmaier, 1992. Sonmez & Graefe, 1998a; 1998b; Sonmez et al., 1999). Perceived risks in travel vary depending on personal characteristics such as travel motivation (Reisinger & Mavondo, 2005), past travel experiences (Pinhey & Iverson, 1994), and demographic variables (Carr, 2001). Mitchell and colleagues (1999) showed that travelers' perceived risks about one fixed destination varied ranging from such serious incidents as natural disasters or political issues to such trivial issues as hotel service problems. Lepp and Gibson (2003) suggested that tourists' preferences for familiarity or novelty are associated with risk perception. For example, organized mass tourists who visit familiar destinations prefer to avoid risk in a destination, whereas backpackers who seek novelty are attracted to risk in a destination (Reisinger & Mavondo, 2005).

Han (2005) summarized the development of ten dimensions of risk that tailored to tourism experiences as shown in Table 3-1. First, Moutinho (1987) adapted the five dimensions identified by Jacoby and Kaplan (1972) as "financial risk", "performance risk", "physical risk", "social risk" and "psychological risk" for traveler perceptions. Second, Roehl (1988) expanded that list to seven dimensions by adding "satisfaction risk", which appeared in the study concerning leisure activities by Cheron and Ritchie (1982), and "time risk" adapted from Roselius' study (1971). "Health risk" was studied

by Yavas (1990). Most recently, "political instability risk" (McCleary & Whitney, 1994) was considered for including "terrorism risk" (Sonmez & Graefe, 1998a; 1998b).

Table 3-1: Travel risks (Source: Han, 2005)

Types of travel risk	Definitions
Equipment	Possibility of mechanical, equipment, or organizational problems
Financial	Possibility of poor value for money spent during trip
Health	Possibility of becoming sick while traveling
Physical	Possibility of physical danger or injury detrimental to health
Psychological	Possibility of not reflecting my personality or self-image
Satisfaction	Possibility of personal dissatisfaction with a trip
Social	Possibility of negative opinions of me by others (disapproval of vacation choice or activities by friends/family/associates)
Terrorism	Possibility of being involved in a terrorist act
Time	Possibility of taking too much time or a waste time

Roehl and Fesenmaier (1992) placed tourists into three groups; (1) "the risk neutral group" in which tourists do not perceive vacations as risky; (2) "the functional risk group" which defines tourists who consider "the possibility of mechanical, equipment and organizational risks"; and (3) "the place risk group" in which tourists perceive vacations as risky. Roehl and Fesenmaier (1992) found that three groups exhibited differences for the most current trip taken, benefits sought from travel, and demographic profiles. The risk neutral group showed novelty-seeking motives and pursued benefits from adventure and excitement, whereas the functional risk group was more likely to include children in their travel party and they preferred one night trips. The functional risk group was concerned with equipment risk and physical risk (Roehl & Fesenmaier, 1992).

Previous studies have shown that perceived risks exist over phases of a vacation. Sonmez and Graefe (1998b) found that safety risk is evident with destination choice, whereas satisfaction risk and time risk are evident with vacation decision making (to go somewhere). Social risk is related to vacation style factors such as the number of destinations visited, frequency of trips taken, and choice of destinations (Reimer, 1990). Financial risk is also evident with one popular vacation activity, shopping which generates a large amount of revenue for the tourism industry (Oh et al., 2004; Yuksel, 2004; Yuksel & Yuksel, in press). Shopping raises travelers' concerns such as time risk, financial risk for overcharging, product performance risk for a poor product choice, and safety risk for the insecure shopping environments.

Terrorism risk changes travelers' destination choices or travel behaviors in a destination when a terrorist act is possible (Sonmez et al., 1999). Tourists try not to display their wealth and try to act as if they were the local residents, and also tend to fly economy class because terrorists have targeted travelers in the first class (D'Amore & Anuza, 1986). Finally, risk perception influences future travel behavior. The degree of safety a traveler perceives on a previous international trip helps to determine his/her interest in another international trip in the future (Sonmez & Graefe, 1998b).

Information search as a perceived risk reduction

Murray (1991) stated that depending on the level of perceived risk, several risk reduction or avoidance strategies are adopted by the consumer, one of which is additional information search. Murray (1991) further stated that the greater the level of perceived risk in a prepurchase situation, the greater consumer need for information search about the product. In other words, amount of perceived risk creates consumers' information

needs, and then consumers seek out certain types of sources, which seem most likely to meet their information needs. Previous research studies have verified the relation between amount and types of risk, depth of search, and types of sources (e.g., Locander & Hermann, 1979; Lutz & Reilly, 1973).

Hugstad and colleagues (1987) presented two important findings: (1) in high risk purchasing situations consumers use more sources of information than mid or low risk situations; and (2) certain types of information such as personal sources of information were more important in high risk situations than in mid or low risk situations. However, the relationship between levels of overall risk perception and amount of information acquired is arguable as several research studies suggested that there is no direct evidence showing that high perceived risk consumers seek greater amount of information (Arndt, 1967; Cox 1967; Gemunden, 1985). Because the cost (e.g., time and energy) of searching, storing, and processing information cannot exceed the benefits, a consumer instead considers a selective search for congruent information through effective alternative information channels (Gemunden, 1985). Also, specific risk components such as financial, performance, or social show a closer relationship to information search than overall risk perception. A consumer with a high level of risk perception does not search intensively for information if he or she perceives available information either as not trustworthy or as incompetent (Gemunden, 1985).

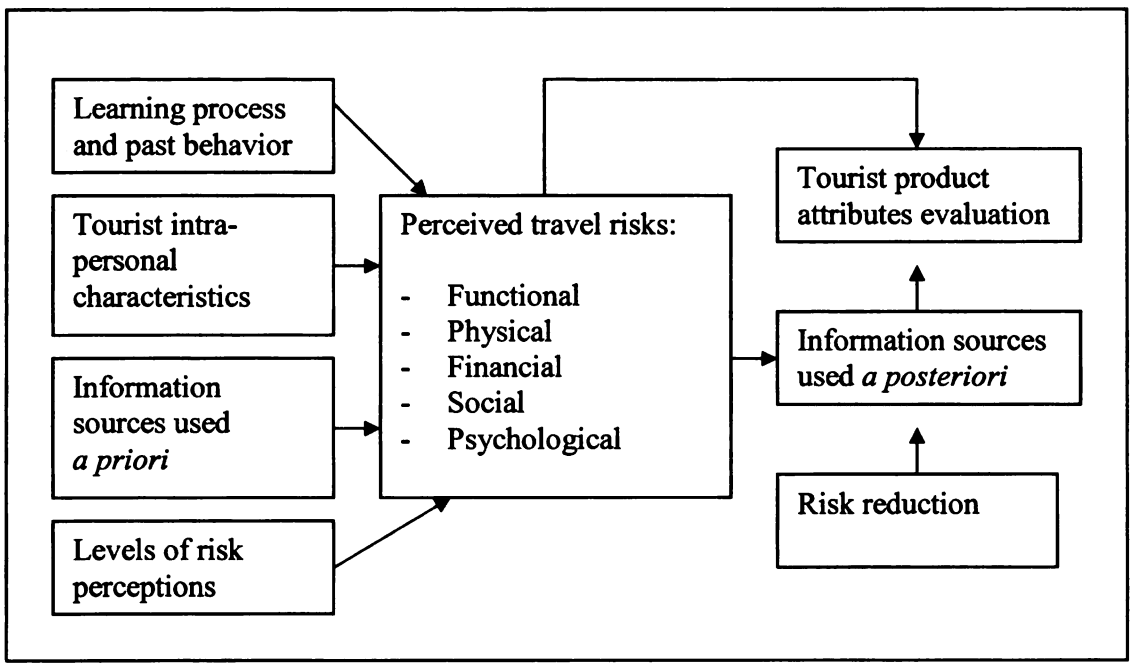
Travelers perceive risks because travel products/services cannot be experienced in advance and entail gaps in time and place between decision-making and consumption (Kim et al., in press). In addition, because travel products/services include heterogeneous components such as transportation, accommodation, meals, and activities, travelers

perceive risk and search intensively for information (Mitchell et al., 1999). Hsu and Lin (2006) found that the most dominant strategy for reducing perceived travel risks is asking family or friends for advice. The professional travel agent or tour operator plays a very important role when a traveler's psychosocial risk and/or safety risk are perceived to be high because the travel agent is viewed as one's personal travel counselor and he or she can have an important impact on the travel decision process (Mayo & Jarvis, 1981).

For those seeking to explore new destinations, they tend to use portable printed materials such as guidebooks and brochures (Snepenger, 1987). Travel guides are significant especially for international travelers who may not have sufficient information about the destination(s) which can cause high level of risk perceptions. Carter (1998) examined risk perceptions about international destinations informed in travel guide books for safety or risky: Europe and North America were perceived as safe; Africa was risky destination; and Asia was a risky but exotic place which is worth traveling. Carter's study implies that information obtained by travelers can define travel risk perceptions.

As illustrated in Figure 3-1, Moutinho (2000) suggested that to understand travel risk perception, the related variables such as tourist's learning process about travel, past behavior, personal characteristics, use of information sources before and after decisions are made, awareness of level of risk perceived or reduced, and evaluation of the product attributes, need to be examined.

Figure 3-1. The relationship of tourist risk variables (Source: Moutinho, 2000)



Use of information technology on vacation

As shown in chapter 2, the Internet has played a vital role which is significantly different from the conventional information sources. First, the Internet provides virtual tours which allow travelers indirect travel experience of a vacation with vivid and clear destination images before the actual product purchase (Cho & Fesenmaier, 2000). Second, Internet search environments eliminate any temporal and spatial limits of search activity (Fesenmaier & Jeng, 2000). In other words, the Internet can be accessed for information anytime from anywhere by travelers. Third, according to Bjork (1999), the content of a traditional market place is mainly goods, whereas information is the main product in a "market space" of the Internet. He showed the main differences between marketplaces and marketspaces are that goods are purchased through face-to-face interaction, and in marketspaces of the Internet, information and services do not need physical presence for the consumer or provider. Lastly, the Internet is a multi-tasking source which provides

rich information contexts, interactive communication options, and customized information. A vacation is an integrated product comprising various components such as accommodations, transportations, events, and restaurants (Beldona, 2003). Potential travelers tend to demand all the components of travel within a single website. Travelers can book flights, rent cars, and reserve hotel rooms at one site. When searching for a vacation, customers can enter their personal interests and activities into an intelligent application, review a list of destination choices from a global destination database, and narrow in on a vacation package tailored for them. The multi-taking source of the Internet allows travelers to build their own personalized vacation away from their home.

Many factors have influenced the development of the Internet market, especially companies that offer Internet services, which provide consumers with a convenient and efficient way to become members of an Internet community (Donthu & Garcia, 1999). Information and communication technology have been popular because of a growing traveler's need for electronic connectivity while en route. For example, mobile technologies provide customized and personalized web-services for tourists who inquire about available flights, arrange tickets, and pay for services (Pagiavlas & Marburger, 2005). Hyde and Lawson (2003) suggested tourism businesses should consider how travelers could be more easily reached in an information technology network.

Even though the diffusion of information technologies have been processed rapidly by consumers in travel contexts, most previous research has primarily focused on tourism business and organization sectors (Buhalis, 1998; Wong & Kwan, 2001; Yuan et al., 2006) and few empirical studies have examined individual differences in the use of information technology. Recently, Pagiavlas and Marburger (2005) highlighted the need

for research on information technology to further understand users and their needs and to facilitate applicable information because travel in future will be based on information technology.

Information search en route to and at destinations

As mentioned earlier, to effectively and efficiently promote a destination, it is critical to identify when information is used by travelers because travelers' decisions are made across an entire range of vacation contexts (Crotts, 2000; Park & Lutz, 1982). Jeng (1997) discussed that travelers exhibit three sets of decisions based on the timing of travel decisions made: (1) "a set of core decisions" made before trip, including when and where to travel, where to stay overnight and a travel route; (2) "a set of secondary decisions" made before departure but considered to be flexible including choice of attractions and activities; and (3) "a set of en route decisions" such as where to eat, shop, and stop for rest.

Poon (1993) suggested that changing demographics and lifestyles have resulted in a greater demand for choice and flexibility in vacations. Independent and experienced travelers who are flexible in travel plans and behaviors tend to request information available across vacations. In general, decisions of attraction (Perdue, 1985) and recreational activities are made prior to trips (Crotts & Reid, 1993). However, Vogt and colleagues (1993) found that the en route phase is also an important phase of information search for attractions and activities because travel information centers and other people, whom travelers meet en route, provide detailed information, which influences the length of stay and choice of attractions and activities in destinations. Further, travelers in a destination continue to seek information from personal sources, such as fellow travelers

or employees of accommodation facilities, and commercial advertising (McDonough & Ackert, 1986). In Tsang's study (1993), more than 40% of the travelers had no preplanning of vacation activities and only a minority of visitors had preplanned their length of stay in each destination. Domestic travelers who travel to familiar destinations are likely to undertake most of their information search and travel planning prior to departure (Crotts & Reid, 1993; Jeng, 1997), while international travelers to an unfamiliar destination are likely to undertake a majority of their information search and planning after arrival (Hyde & Lawson, 2003).

The choice of information sources may vary by stage of the vacation plan and by type of information sought (Hyde & Lawson, 2003). For independent travelers, the most influential information sources for vacation planning are travel guides and brochures, and travelers on vacation search for information about secondary destinations, attractions, and activities. Andereck and Vogt (2005) examined in situ information search for during trip planning and decision making and found that travelers became less dependent on most information sources as a trip progressed. They exemplified that "text-heavy and portable travel information" such as brochures and guidebook, and "directional/geographic information" such as maps, road signs, and billboards, are used less often as time progressed because travelers gain experience and familiarity. Some information sources including maps, road signs, billboards, local visitor centers, and employees at the destination are found to be heavily used during trips, while the Internet is used more often for pretrip planning. Moreover, they found only a few travelers search actively for web-based information during the trip (Andereck & Vogt, 2005).

Etzel and Wahlers (1985) found that repeat visitors tend to make attraction decisions before leaving home, whereas first-time visitors make attraction decisions either en route or after arriving at the destination. Regardless of when information is sought, the influence of the information packet on the decision to visit a destination is significantly less for repeat visitors compared to first-time visitors. First-time visitors who decide to visit the destination tend to use advertising from radio and television, road signs, and professional assistance such as AAA, while repeat visitors tend to use non-advertising such as previous experience, books and magazines (Perdue, 1985).

Tourism marketers have targeted marketing programs mainly at two phases: prior to trips and en route. Crotts (2000) found that 83% of marketing promotional budgets are distributed to "at home before trip", 12% to en route, and 5% to after-arriving strategies (Crotts 2000). Information technology which can be brought along on vacation by travelers allows for information search and purchasing of travel products/services over the course of an entire vacation rather than at the pre-trip planning phase (Andereck & Vogt, 2005).

3. METHODS

This research is primarily concerned with testing the theoretical axiom that risk perceptions influence information seeking behavior. We were interested in the relationship between risk and information technology use while individuals were traveling. Based on the research of Roehl and Fesenmaier (1992), it is expected that the types of travel risk will be associated with certain information technology used during trips. It is also expected that the level of travel risk perceptions will be related to information technology use.

The methods in the study included two steps. First, data were reviewed including the scales and measurement. Second, the data analysis was explained.

Data

This study used secondary data from a travel diary study. This travel diary focused on surveying participants on actual trips and queried them on various topics such as perceived travel risk and information technology use.

As shown in Table 3-2, the travel diary study consisted of scales measuring: (1) perceived travel risks (2) travel motivation, (3) enumeration of trips including travel experience, travel party, travel purpose, and travel mode, (4) daily use of information technologies, (5) daily use of the Internet, and (6) experiences with information technology use. Information on socio-demographic profiles including age, gender, income, education, and marital status, experience with the Internet, traveler characteristics, and decision making styles were obtained from the qualifying study, the first data set of the panel study.

Table 3-2. Constructs and associated scales

Constructs and associate scales	Number of items	Measurement
Destinations (Measured one time en route)	Open-ended	Nominal
Travel risk perceptions (Measured one time en route)	10 items	Ordinal
Travel motivations (Measured one time en route)	18 items	Ordinal
Enumeration of trips (Measured one time en route)	5 items travel experience/ travel party/travel purpose/ travel mode	Nominal/ Ordinal
Information technology availability (Measured one time en route)	10 items	Nominal
Effectiveness of information technology use on vacation activities (Measured everyday during trips)	5 items helpfulness of IT/enhancement of trips using IT/ skillfulness of using IT/ success of using IT/control of vacation using IT	Ordinal
Information technology use (Measured everyday during trips)	10 items	Nominal
Internet use (Measured everyday during trips)	1 item	Nominal

In the diary, respondents indicated their destination. Next, a 10-item adaptation of Roehl and Fesenmaier (1992) was provided to measure perceived travel risk on a seven-point scale (1=strongly disagree to 7=strongly agree). Respondents were asked to indicate whether they used 10 types of information technology (e.g., cell phones, laptop, Personal Digital Assistance) during that day. The effects of information technology use on vacation activities were measured with Vogt and Stewart (1998) scales. Vogt and Stewart (1998) employed Csikszentmihlyi's flow scales (Csikszentmihalyi & Csikszentmihalyi, 1988) to examine "how an individual feels at a certain point in time doing some identified activity, in a given place, and social circumstance," by questioning about the

challenge of the activity, an individual's skill in the activity, the importance of the activity, and the level of success in the activity. Experiences with information technology use were asked daily using five items including: (1) helpfulness of IT, (2) enhancement of trips using IT, (3) skillfulness of IT, (4) success of IT use, and (5) control of vacation using IT on a seven-point scale (1=strongly disagree to 7=strongly agree).

Data analysis

This study used SPSS software (version 14.0) to analyze the data. **Step 1** discussed the characteristics of samples in term of demographics, Internet use, self-rated traveler characteristics, travel planning styles, information technology use and length of trips. **Step 2** described levels of perceived risk. To segment respondents into groups with similar risk perceptions, this study followed the methods conducted by Roehl (1988) to group samples in his study, which were shown from step 3 through 6. **Step 3** estimated Principal Components Factor Analysis with varimax rotation on 10 travel risk items to identify its structure through data summarization. Factor analysis allowed testing of conceptual factors and relationships among travel risk. **Step 4** described each factor and reported internal consistency in the two identified factors. **Step 5** clustered two factor scores derived from the two identified travel risk factors using a Hierarchical approach with Ward's method. Two clusters were obtained. **Step 6** evaluated whether the identified clusters on variables shows significant differences in the 10 perceived risk variables using MANOVA and Independent Sample Test between the two risk groups, risk neutral and low risk groups. **Step 7** estimated Principal Components Factor Analysis with varimax rotation on 18 types of travel motivation to identify structure through data summarization and tested conceptual factors and relationships among travel motivation. In **Step 8,** an

Independent Sample Tests were used to determine whether there was a significant difference in mean factor scores between the two travel risk groups across the five identified travel motivation factors. **Step 9** estimated Independent Sample Tests to compare differences on age, the number of travel experience, self-rated traveler characteristics and years of Internet use between the two groups. **Step 10** used the Pearson chi-square tests for group characteristics including demographics (income, gender, marital status, and education), frequency of Internet use, travel party, trip purpose and transportation mode. Cross-tabulation methods were used to describe group characteristics including demographics, frequency of Internet use, travel party, trip purpose and transportation mode displayed by the two groups.

Step 11 used the Pearson chi-square tests for use of the Internet and information technology (cell phones with/out Internet access or camera, digital camera, laptop computer with/out wireless, desktop computer, Global Positioning System (GPS)/GPS in vehicle, Personal Digital Assistance (PDA) with/out Internet access, and Onstar Services) over a vacation based on the travel risk groups. Cross-tabulation methods were used to show the patterns of daily information technology use between the two risk groups. **Step 12** used the Pearson chi-square tests on Internet use over a vacation by the travel risk groups. Cross-tabulation methods were used to show the patterns of daily Internet use by the two risk groups. **Step 13** compared mean differences of daily experiences with IT use between the two risk groups using the Independent Sample Test.

4. RESULTS

In this section, the results are shown to meet the data analysis strategy from step one through thirteen as explained earlier and answer the research questions. As noted by Roehl (1988) identifying perceived travel risk is situational specific, this study measured the perceived risk for trips, not respondents. In other words, this study treated 34 cases (17 respondents took two trips during the survey period) as separate trips entailing different perceived risks. Uses of the Internet and information technology were also examined for trips, not respondents.

Sample

From the 260 participants in the monitoring survey, 103 diaries were completed by 86 participants who actually took trips from spring through summer (17 sent two vacation diaries based on their separate trips during the time period). The remaining panel members were not traveling and/or declined to take a diary for their upcoming trip(s).

The respondents' destination(s) were mostly within Canada, 19 travelers reported they traveled within the USA and 10 travelers' destinations included Europe, Mexico, Thailand, Cuba, and Africa.

The sample for travel diary was primarily old, well educated and affluent as shown in Table 3-3. The respondents were more likely to be female (55.8%) and most were married (83.5%). Over 80% of the respondents reported married or living-common law. Fifty-eight percent of the respondents reported they had at least a bachelor degree, 51% reported a household income of C$80,000 or more, and the mean ages are about 52 years old.

Table 3-3. Demographic profiles

Demographics	Travel diary
Age (mean, range) (n=86)	52; 25~80 years
Gender (n=86)	
female	55.8%
male	44.2
Income (n=80)	
less than C$40,000	8.7%
C$40,000 ~C$79,999	40.0
C$80,000 or more	51.3
Educations (n=85)	
no bachelor degree	42.4%
bachelor degree	57.6
Marital status (n=86)	
single	16.5%
married/living-common law	83.5

Respondents used the Internet (for any purpose) for an average of eight years. Almost two-thirds (64.2%) of respondents used the Internet several times a day, 15% of respondents used the Internet everyday, and 21% of respondents used less than once a day (Table 3-4).

Table 3-4. Internet usage profiles

Internet usage	Travel diary
Years using the Internet (n=79) (mean; range)	8; 2 ~ 25 years
How often using the Internet (n=81)	
less frequent users	21.0%
frequent users	14.8
more frequent users	64.2

A third characteristic of the samples includes self-rated traveler characteristics. Participants rated themselves as well traveled persons and skilled travelers (4.9 and 5.0 respectively) (Table 3-5).

Table 3-5. Self-rated traveler characteristics

Self-rated traveler characteristics	Travel diary
Well traveled person (n=85)	4.9 [a]
Skilled traveler (n=82)	5.0

a. Scale: from 1=strongly disagree, 7=strongly agree.

Table 3-6 describes the manner in which the respondent's last trip was planned. Slightly under half of the respondents reported they planned the entire trip in advance at home. Almost the other half of the respondents planned most of the trip at home and then found detailed information at the destination. A small percentage of respondents planned en route or once arriving at the destination. Four percent of the respondents indicated no planning for the trips at all.

One-third of the respondents (32.5%) were the primary decision-maker of their last trip and two-thirds of the respondents (67.5%) shared travel decisions for their trip.

Table 3-6. Travel planning styles

	Travel diary
Travel plan phases (n=85)	
at home (in advance)	43.4%
en route	3.6%
at home and destination both	44.6%
at destination	4.8%
no plan at all	3.6%
Decision maker (n=85)	
primary decision-maker	32.5%
shared decision maker	67.5%
no decision maker	0.0%

Perceived use of technology, Internet use, and ownership of technology were higher than the midpoint of the scale (4.4, 5.1 and 4.2 respectively) (Table 3-7).

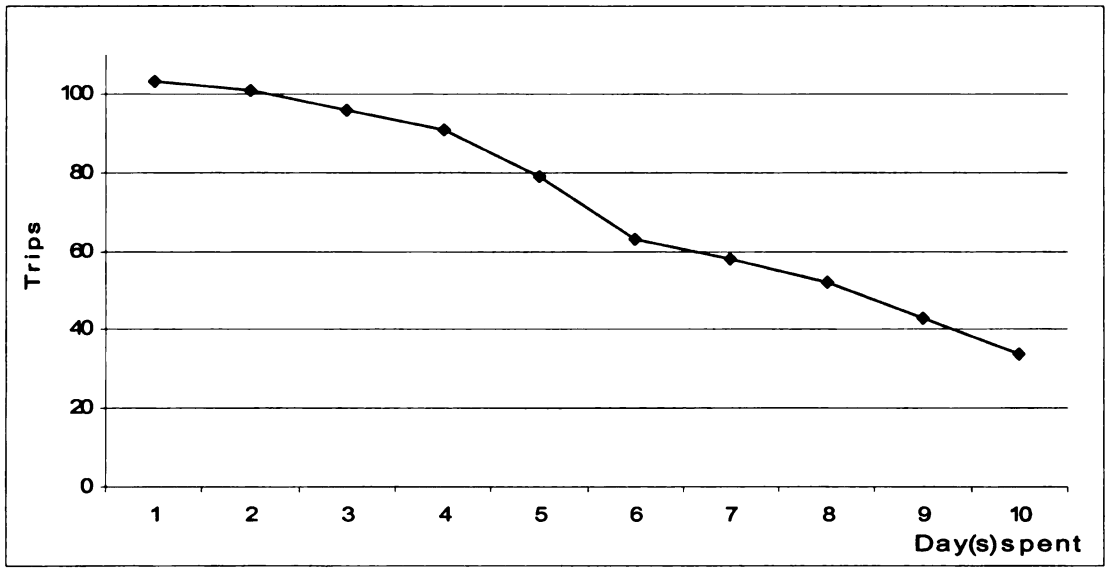
Table 3-7. Perceptions of information technology

	Travel diary
Use of technology (n=86)	4.4[a]
Use of the Internet (n=85)	5.1
Ownership of technology (n=83)	4.2

a. Scale: from 1=strongly disagree, 7=strongly agree.

The number of day(s) spent on vacation is shown in Figure 3-2. All trips were at least one day away from home and 50% of the trips lasted up to eight days away from home.

Figure 3-2. Day(s) away from home



Travel risk perception level

As shown in Table 3-8, besides satisfaction risk all types of travel risk were perceived to be low by respondents, for instance, political risk and terror risk were perceived to be very low (1.30 and 1.39 on a 7 scale respectively), while satisfaction risk which identifies personal satisfaction with a trip was perceived to be very high (5.44).

Table 3-8. Items analysis statistics for the travel risk scales

Components	Explanation	n [a]	Mean	SD
Equipment risk	Mechanical, equipment or organizational problems during ravel or at destination	99	2.44 [b]	1.26
Financial risk	Poor value for money spent	100	2.25	1.24
Health risk	Becoming sick while traveling or at destination	100	2.51	1.24
Physical risk	Physical danger/injury detrimental to health	100	1.99	1.12
Political risk	Becoming involved in political turmoil of the area being visited	100	1.30	.85
Psychological risk	Not reflecting my personality or self-image (disappointment with travel experience)	100	1.88	1.23
Satisfaction risk	Personal satisfaction	99	5.44	1.88
Social risk	Negative opinions of me by others (disapproval of vacation choice or activities by fiends/family/associates)	100	1.93	1.54
Terrorism risk	Being involved in a terrorist act	100	1.39	.96
Time risk	Taking too much time or a waste time	100	1.76	1.04

a. Number of trips in analysis.
b. Scale: from 1=strongly disagree, 7=strongly agree.

Factor analysis of travel risk scale

In the second step of analyses, a principal components factor analysis with varimax rotation on 10 travel risk items provided two sets of factors that were correlated with one another but largely independent of other subsets of variables (after removing satisfaction risk). As shown in Table 3-9, the first and second factors were created with a multi-set of travel risk variables with a Cronbach alpha of .79 and .75. The first factor

included political, terrorism, psychological, time, and social risk; the second factor included equipment, financial, health, and physical risk.

Table 3-9. Factor analysis of travel risk scale

Variables	Factor loadings
Factor 1 (Variance explained=42.6%; mean=1.7[a]; alpha=.79)	
Political risk	.88
Terrorism risk	.86
Psychological risk	.66
Time risk	.57
Social risk	.56
Factor 2 (Variance explained=14.1%; mean=2.3; alpha=.75)	
Equipment risk	.79
Financial risk	.77
Health risk	.79
Physical risk	.62

a. Scale: from 1=strongly disagree, 7=strongly agree.
* Satisfaction risk was removed for lack of commonality.

Description of three identified travel risk factors

Factor scores were derived from the two identified travel risk factors. These factor scores were standardized (Table 3-10).

Table 3-10. Description of the identified factors

Variable	Mean	SD	Min.	Max.
Factor scores for factor 1	0.0	1.0	-1.12	5.34
Factor scores for factor 2	0.0	1.0	-1.42	3.82

High factor scores indicate strong agreement identified by a factor, while low factor scores indicate strong disagreement represented by a factor. In other words, a high factor scores indicate high perceived travel risk, while a low factor score indicate that low perceived travel risk.

The standard deviation and mean of each factor score (SD=1 and mean=0 both) were used to identify respondents within one standard deviation of the mean factor score (-1.0~1.0), titled as "moderate group," more than one standard deviation above the mean factor score (1.0 through highest), titled as "high risk", and more than one standard deviation below the mean factor score (-1.0 through lowest), titled as "low risk." The respondents were then classified by whether they were in the high, moderate or low category on each of the three factors as shown in Table 3-11. Eight out of nine possible combinations were produced based on three levels (high-moderate-low) of the two factors. It was expected that a large number of respondents would be included the high-high, moderate-moderate, and low-low combinations, which represented consistently high, moderate, and low travel risk. However, no observations were categorized in the consistently low level of travel risk and only three observations were in the consistently high level. As a result, a cluster analysis was suggested to identify groups of travel risk perceptions.

Table 3-11. Consistency of the respondents' levels of each identified factor

Factor 1	Factor 2	n (trips)	Percent
High[a]	High	3	3.0%
High	Moderate	7	7.0
High	Low	1	1.0
Moderate[b]	High	10	10.0
Moderate	Moderate	63	64.0
Moderate	Low	11	11.0
Low[c]	High	2	2.0
Low	Moderate	2	2.0
Low	Low	0	0.0
Total		98	100.0%

a. high=more than one standard deviation above the mean factor score (strong agreement).
b. moderate=within ± one standard deviation of the mean factor score (neutral agreement).
c. low=more than one standard deviation below the mean factor score (strong disagreement).

Clustering perceived travel risks

To segment respondent's trips into groups with similar risk perceptions, a hierarchical cluster analysis using Ward's method with Squared Euclidean Distance was applied to the two identified factors and two clusters were obtained. The first cluster included 86.9% of the respondent's trips and the second cluster accounted for 13.1%. A significant contribution to differentiating two clusters was found in the first factor ($t=12.3$, $p<.001$), but the two clusters were not different on the second factor ($t=-.45$, $p=.66$) as shown in Table 3-12.

Table 3-12. Differences in mean factor scores across clusters

	Risk groups			
	Cluster 1	Cluster 2	t [b]	*p*
Factor 1	-.30	1.99	-12.1	**.00**
Factor 2	.02	-.12	.45	.66
n [a] (%)	86 (86.9%)	13 (13.1%)		

a. Number of trips in analysis.
b. Analyses were conducting using Independent Sample Test.

Comparison of clusters based on the original travel risk items

To evaluate whether the cluster analysis properly classified the respondent's trips (Roehl, 1988), a multiple analysis of variance (MANOVA) was used to examine the travel risk items based on the two clusters (Table 3-13). The results of the MANOVA showed overall significance. Once the significance of the overall solution was established, then each of the individual items was examined using Independent Sample Test to compare mean scores of the two clusters. The results showed that mean scores were significantly different for physical risk, political risk, psychological risk, social risk, terrorism risk, and time risk. In using these mean scores to characterize the two clusters it appeared that cluster 1 included respondents less concerned with travel risk than cluster 2.

Therefore, the first cluster was identified as the "low risk" group and the second cluster as the "risk neutral" group. It is note worthy that among those who traveled twice, twenty eight trips made by fourteen respondents were clustered into the low risk group, while two trips made by one respondent were clustered into the low risk and risk neutral separately. Two individuals who traveled twice provided only one trip to be useful for clustering and no data was provided on the perceived risk variables in the other trips.

Table 3-13. Differences in mean scores for travel risk between two clusters

Items	Clusters	n [a]	Mean	t [c]	*p*
Equipment risk	1	86	2.4 [b]	.26	.61
	2	13	2.6		
Financial risk	1	86	2.2	2.48	.12
	2	13	2.8		
Health risk	1	86	2.5	.66	.42
	2	13	2.8		
Physical risk	1	86	1.9	9.42	**.00**
	2	13	2.9		
Political risk	1	86	1.1	118.94	**.00**
	2	13	2.9		
Psychological risk	1	86	1.6	35.64	**.00**
	2	13	3.5		
Satisfaction risk	1	86	5.4	.05	.82
	2	13	5.5		
Social risk	1	86	1.7	12.95	**.00**
	2	13	3.3		
Terrorism risk	1	86	1.2	69.66	**.00**
	2	13	3.0		
Time risk	1	86	1.6	18.77	**.00**
	2	13	2.9		
Overall risk	1	85	2.2	-3.91	**.00**
	2	13	3.2		

* MANOVA: $F(10, 87)=104.76$, $p<.001$ based on Wilks'criterion.
a. Number of trips in analysis.
b. Scale: from 1=strongly disagree, 7=strongly agree.
c. Analyses were conducting using Independent Sample Test.

Demographic characteristics on travel risk groups

As shown in Table 3-14, the two risk groups were similar in age, gender, household income and education. The marital status of the two groups was significantly different (t=9.63, $p<.01$). The risk neutral group was more likely to include singles than the low risk group.

Table 3-14. Demographic characteristics based on travel risk groups

	Risk groups			
	Low risk n=71 [a]	Risk neutral n=13	t [b]	*p*
Age (mean; range)	52; 25~80	53; 33-77	.09	.76
	Risk groups			
	Low risk	Risk neutral	X^2 [c]	*p*
Gender	n=71	n=13		
male	43.7%	46.2%	.03	.87
female	56.3	53.8		
Income	n=65	n=13		
less than C$40,000	7.7%	15.4%	1.05	.59
C$40,000~79,999	41.5	30.8		
C$80,000 or more	50.8	53.8		
Education	n=70	n=13		
no bachelor degree	41.4%	46.2%	.10	.75
bachelor degree	58.6	53.8		
Marital status	n=71	n=13		
single	11.3%	46.2%	9.63	**.00**
married/living-common law	88.7	53.8		

a. Number of respondents in analysis.
b. Analyses were conducting using Independent Sample Test.
c. Analyses were conducted using Pearson chi-square tests.

Internet usage profiles based on travel risk groups

No significant differences were observed in Internet use between the two groups (Table 3-15). The average years that individuals in the low risk group had used the Internet was eight years and in the risk neutral group was seven years. Individuals who used the Internet several times a day were common in both risk groups.

Table 3-15. Internet usage profiles based on travel risk groups

	Travel risk groups			
	Low risk n=67 [a]	Risk neutral n=12	t [b]	*p*
Years using the Internet	8.2	7.4	.83	.41
	Travel risk groups			
	Low risk n=65	Risk neutral n=12	X^2 [c]	*p*
How often using the Internet				
less frequent users (less than seven times a week)	19.4%	16.7%	.66	.72
frequent users (everyday)	16.4	8.3		
more frequent users (several times a day)	64.2	75.0		

a. Number of respondents in analysis.
b. Analyses were conducting using Independent Sample Test.
c. Analyses were conducted using Pearson chi-square tests at 2 degree of freedom.

Travel characteristics based on travel risk groups

As shown in Table 3-16, no differences were found in the traveler characteristics of the two groups. Individuals in the low risk and risk neutral groups rated themselves as well traveled persons (4.9 and 4.4 respectively) and skilled travelers (5.0 and 4.5 on 7 point scales respectively).

Table 3-16. Self-rated traveler characteristics based on travel risk groups

	Travel risk groups			
	Low risk	Risk neutral	t [c]	*p*
Well traveled person	n=71 [a] 4.9 [b]	n=12 4.4	1.14	.26
Skilled travelers	n=68 5.0	n=12 4.5	1.13	.26

a. Number of respondents in analysis.
b. Scale: from 1=strongly disagree, 7=strongly agree.
c. Analyses were conducting using Independent Sample Test.

Travel planning styles based on travel risk groups

Travel planning styles did not vary by travel risk groups (Table 3-17). More than half of individuals in the risk neutral group trip planned entirely in advance of leaving (61.5%).

Half of the risk neutral group were the primary decision maker for the last trips and the other half shared decision making, whereas one-third of the low risk group were primary decision makers and two-thirds shared decision making.

Table 3-17. Travel planning styles of the last trips based on travel risk groups

	Travel risk groups			
	Low risk n=70 [a]	Risk neutral n=13	X^2	*p*
Travel plan phases				
at home (in advance)	40.0%	61.5%	3.84 [b]	.43 [d]
en route	2.9	7.7		
at home and destination both	47.1	30.8		
at destination	5.7	0.0		
no plan at all	4.3	0.0		
Decision maker				
primary decision-maker	30.0%	46.2%	1.30 [c]	.25 [d]
shared decision maker	70.0	53.8		
no decision maker	0.0	0.0		

a. Number of respondents in analysis.
b. Analyses were conducted using Pearson chi-square tests at 4 degrees of freedom.
c. Analyses were conducted using Pearson chi-square tests at 1 degree of freedom.
d. Too few cases for a reliable nonparametric Chi-square test.

Perceptions of information technology based on travel risk groups

In terms of perceptions of information technology (Table 3-18), significant differences were observed in the use of technology ($t=-2.15$, $p<.05$) and the Internet ($t=-1.93$, $p<.01$) between the two groups, but not in ownership of technology ($t=-.81$, $p=.42$)

Table 3-18. Perceptions of information technology based on travel risk groups

	Travel risk groups			
	Low risk	Risk neutral	t [c]	*p*
Use of technology	n=71 [a] 4.3 [b]	n=13 5.4	-2.15	**.04**
Use of the Internet	n=71 5.0	n=12 5.9	-3.01	**.00**
Ownership of technology	n=69 4.2	n=12 4.6	-.81	.42

a. Number of respondents in analysis.
b. Scale: from 1=strongly disagree, 7=strongly agree.
c. Analyses were conducting using Independent Sample Test.

Tolerance for travel uncertainty characteristics

The three groups of tolerance for travel uncertainty derived from Chapter 2 were examined based on their travel risk perceptions to determine whether any associations between tolerance for travel uncertainty and perceived travel risk exist. Individuals were cross-classified by whether they were in the low risk group or risk neutral group on each of the three tolerance for travel uncertainty groups. The results illustrated in Table 3-19 show no significant associations in tolerance for travel uncertainty between the two groups.

Table 3-19. Tolerance for travel uncertainty characteristics

	Travel risk groups				
	Low risk n=79 [a]	Risk neutral n=12	Total	X^{2} [b]	*p*
Tolerance groups					
L-N (low of need)	48.1%	60.0%	44	2.92	.23
L-I (low of importance)	16.5	30.0	16		
H (high tolerance)	35.4	10.0	29		

a. Number of trips in analysis.
b. Analyses were conducted using Pearson chi-square tests at 2 degree of freedom.

Availability of information technology on trip

Respondents were provided with a list of information technology and asked to indicate whether those information technologies were available for them on their trips. Differences were observed in availability of cell phones with Internet access (X^2(df=1) =4.08, p<.05) and cell phones with camera (X^2(df=1)=7.04, p<.001).

Table 3-20. Availability of information technology on trip

	Travel risk groups			
	Low risk n=86 [a]	Risk neutral n=13	X^2 [b]	p
Cell phone	53.5%	61.5%	.30	.59
Cell phone with Internet access	10.5	30.8	4.08	**.04**
Cell phone with camera	7.0	30.8	7.04	**.00**
Digital camera	72.1	76.9	.13	.72
Laptop computer	5.8	0.0	.80	.37
Laptop computer with wireless Internet	19.8	15.4	.14	.71
Desktop computer	10.5	0.0	1.50	.22
GPS/GPS in vehicle	9.3	0.0	1.32	.25
Personal Digital Assistance (PDA)	1.2	7.7	2.43	.12
PDA with Internet access	2.3	0.0	.31	.58

a. Number of trips in analysis.
b. Analyses were conducted using Pearson chi-square tests at 1 degree of freedom.

Factor analysis of travel motivations on travel risk groups

A principal components factor analysis with varimax rotation on 18 types of travel motivation identified five sets of factors that were conceptually correlated with one another but largely independent of other subsets of variables (after removing 2 items, "I want to test my abilities and develop skills" and "I want to meet people with similar interests"). As shown in Table 3-21, the five factors were used to create multi-set of travel motivation variables: novelty, entertainment, relaxation, relationship with people, and personal goal.

The first factor was represented by novelty such as to learn about local culture and history, to see new places, to meet people of host community, to have educational experiences, and to venture off on one's own. The second factor was represented by entertainment such as to be pampered, to be entertained, and to try different kinds of food. The third factor was represented by relaxation including to be away from work/daily routine, to recharge for the future, and to need rest and relaxation, and the fourth factor was represented by relationship with people including to enhance my relationship and to be with my family. The final factor, personal goal included to escape personal problems and to fulfill a lifelong dream.

Table 3-21. Factor analysis of travel motivations

Variables	Factor 1 Novelty	Factor 2 Entertainment	Factor 3 Relaxation	Factor 4 Relationship with people	Factor 5 Personal goal
Learn about local culture and history	.88	.19	.09	.01	-.01
See new places	.84	.03	.27	-.21	.10
Meet people of host community	.79	.25	-.02	.10	.08
See and do new things	.77	-.02	.20	-.24	.13
Educational experiences	.64	.05	.20	-.02	.12
Venture off on my own	.56	.28	-.14	.24	.22
Be pampered	.03	.86	.16	.03	.09
Be entertained	.12	.74	.31	-.10	.02
Try different kinds of food	.39	.67	.04	.06	.05
Be away from work/ daily routine	.00	.12	.81	.08	.18
Recharge for the future	.34	.12	.79	.21	.21
Need rest and relaxation	.20	.38	.71	.01	-.08
Enhance my relationship	-.10	.09	.06	.80	.13
Be with my family	.00	-.10	.13	.77	-.12
Escape personal problems	.05	.08	.18	.05	.88
Fulfill a lifelong dream	.42	.04	.07	-.06	.69

Differences in mean factor scores for five identified travel motivation factors

Independent Sample Tests were conducted to evaluate significant differences in mean factor scores across five identified travel motivation factors between the two travel risk groups. As shown in Table 3-22, a significant difference was found in the mean factor score for the relationship with people factor between the two groups. The novelty factor, which was almost significant, was in the direction of the risk neutral group more likely to be motivated by new experiences.

Table 3-22. Differences in mean factor scores across five identified motivation factors between the travel risk groups

Travel motivation factors	Travel risk groups	n [a]	Mean	t [b]	*p*
Novelty	Low risk	78	-.06	-2.01	.05
	Risk neutral	13	.38		
Entertainment	Low risk	78	.04	.53	.60
	Risk neutral	13	-.12		
Relaxation	Low risk	78	.02	.28	.78
	Risk neutral	13	-.06		
Relationship with people	Low risk	78	-.08	-2.27	**.03**
	Risk neutral	13	.58		
Personal goal	Low risk	78	-.02	-.64	.52
	Risk neutral	13	.17		

a. Number of trips in analysis.
b. Analyses were conducting using Independent Sample Test.

Travel experience with the destinations based on travel risk groups

In table 3-23 the results of the travel experience with the destinations are presented. The risk neutral group (53.8%) was more likely to have not visited the destination than the low risk group (24.4%). The numbers of times each group has visited to the destinations were compared using Independent Sample Test. No significant difference was observed. Average number of times the low risk group has been to the destinations was four times, while the risk neutral group has been to the destinations one time.

Table 3-23.Travel experience with the destination based on travel risk groups

	Travel risk groups			
	Low risk	Risk neutral	$X^{2\,b}$	*p*
First trip to the destination	n=86 [a]	n=13	4.82	**.03**
yes	24.4%	53.8%		
no	75.6	46.2		
	Travel risk groups			
	Low risk	Risk neutral	t^{c}	*p*
	n=82	n=12	1.36	.18
Number of previous trips	3.7 [d]	1.3 [d]		

a. Number of trips in analysis.
b. Analyses were conducted using Pearson chi-square tests at 1 degree of freedom.
c. Analyses were conducting using Independent Sample Test.
d. "0" was included in average number of previous trips.

Travel party based on travel risk groups

As shown in Table 3-24, the risk neutral group indicated spouses/partners as the travel party significantly more than the low risk group (X^2(df=1)=8.66, p<0.01). Eight-three percent of the low risk group traveled with spouse/partner, compared to 46% of the risk neutral group.

Table 3-24.Travel party based on travel risk groups

	Travel risk groups			
	Low risk n=86 [a]	Risk neutral n=13	$X^{2\,b}$	*p*
Alone	10.5%	15.4%	.28	.60
Spouses/partners	82.6	46.2	8.66	**.00**
Children under 13	12.8	15.4	.07	.80
Children between 13-17	8.1	7.7	.00	.96
Children over 17	8.1	7.7	.00	.96
Other relatives	10.5	7.7	.10	.76
Friends	9.3	23.1	2.17	.14

a. Number of trips in analysis.
b. Analyses were conducted using Pearson chi-square tests at 1 degree of freedom.

Travel purpose based on travel risk groups

The two groups displayed a significant difference in the travel purpose to visit friends/relatives ((X^2(df=1)=8.08, p<0.01. Seventy-one percent of low risk group visited friends/relatives, as compared to 31% of the risk neutral group (Table 3-25).

Table 3-25. Travel purpose based on travel risk groups

	Travel risk groups			
	Low risk n=86 [a]	Risk neutral n=13	X^2 [b]	p
Conference	8.1%	0.0%	1.14	.29
Meetings/work	12.8	0.0	1.87	.17
Visiting friends/relatives	70.9	30.8	8.08	**.00**

a. Number of trips in analysis.
b. Analyses were conducted using Pearson chi-square tests at 1 degree of freedom.

Travel mode based on travel risk groups

A significant association was not observed in travel mode of the two groups (Table 3-26). A notable feature is that the low risk group was more likely to use commercial airlines or their own car than the risk neutral group.

Table 3-26. Travel mode based on travel risk groups

	Travel risk groups			
	Low risk n=86 [a]	Risk neutral n=13	X^2 [b]	p
Commercial airline	38.4%	30.8%	5.57	.06
Own vehicle (car)	48.8	30.8		
Other (rental RV/car, train, bus etc.)	12.8	38.5		

a. Number of trips in analysis.
b. Analyses were conducted using Pearson chi-square tests at 8 degree of freedom.

Organized tour package based on travel risk groups

No significant difference was found between the two groups on whether the trip to the main destination was part of an organized tour package (X^2(df=1)=3.33, p=0.07). Fifteen percent of the risk neutral group indicated the trips was a part of an organized tour

package as compared to 4% of the low risk group (Table 3-27).

Table 3-27. Organized tour package based on travel risk groups

	Travel risk groups			
	Low risk n=86 [a]	Risk neutral n=13	t [b]	*p*
An organized tour package	3.5%	15.4%	3.33	.07

a. Number of trips in analysis.
b. Analyses were conducted using Pearson chi-square tests at 1 degree of freedom.

Number and percent of individuals of the two risk groups by night spent during trips

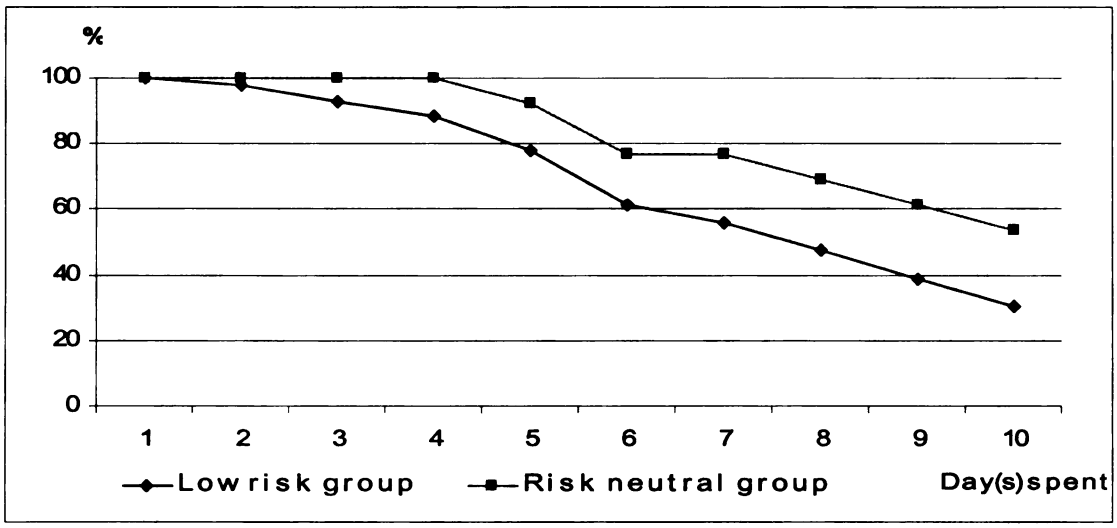
Table 3-28 and Figure 3-3 presents respectively the number of trips for each risk group and the percentage of trips by a day(s) away from home. A majority of the neutral risk group lasted seven days as compared to four days for the low risk group.

Table 3-28. Number of days spent by respondents in travel risk groups

	Travel risk groups			
	Low risk	Risk neutral	X^2 [b]	*p*
One day	86 [a] (100.0%)	13 (100.0%)	.	.
2 days	84 (97.7)	13 (100.0)	.31	.58
3 days	80 (93.0)	13 (100.0)	.97	.33
4 days	75 (88.4)	13 (100.0)	1.68	.20
5 days	65 (77.9)	12 (92.3)	1.45	.23
6 days	53 (61.6)	10 (76.9)	1.14	.29
7 days	48 (55.8)	10 (76.9)	2.07	.15
8 days	41 (47.7)	9 (69.2)	2.10	.15
9 days	33 (38.4)	8 (61.5)	2.50	.11
10 days	26 (30.2)	7 (53.8)	2.83	.09

a. Number of trips in analysis.
b. Analyses were conducted using Pearson chi-square tests at 1 degree of freedom.

Figure 3-3. Percentage of respondents in travel risk groups based on night(s) spent



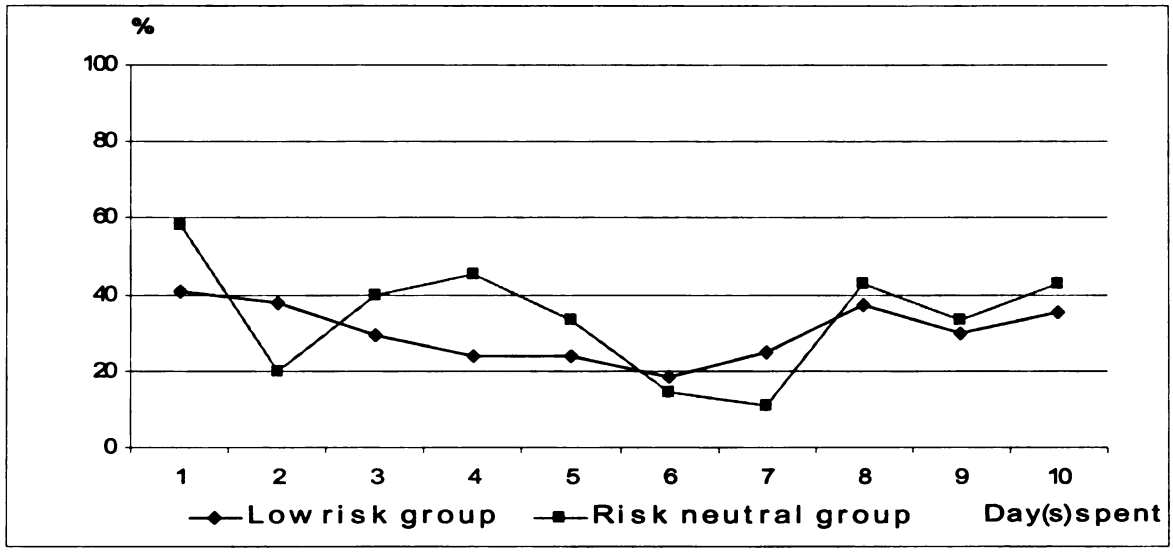
Information technology use on trips based on travel risk groups

Figures 3-4 through 3-14 exhibit daily use of information technology on the trips studied by the two travel risk groups for trips of up to 10 days. Analyses were conducted on each day of a trip between the two risk groups using Pearson Chi-square tests. The results showed that significant associations were observed in use of Personal Digital Assistance on the first day through sixth day trips and digital camera on the first and seventh day trips. The results of the information technology use during trip by the two groups are discussed in detail.

Use of cell phones on trips by travel risk groups

No significant association ($p > .05$) was found in the use of cell phones on each day of a trip by the two groups. As shown in Figure 3-4, the low risk group showed a decrease in use of cell phones from the first day through sixth day. For the risk neutral group more than half used cell phones on the first day of the trip, but only 10% on the seventh day appear to use cell phones. The two groups displayed similar patterns for the last three days of trips (increase-decrease-increase).

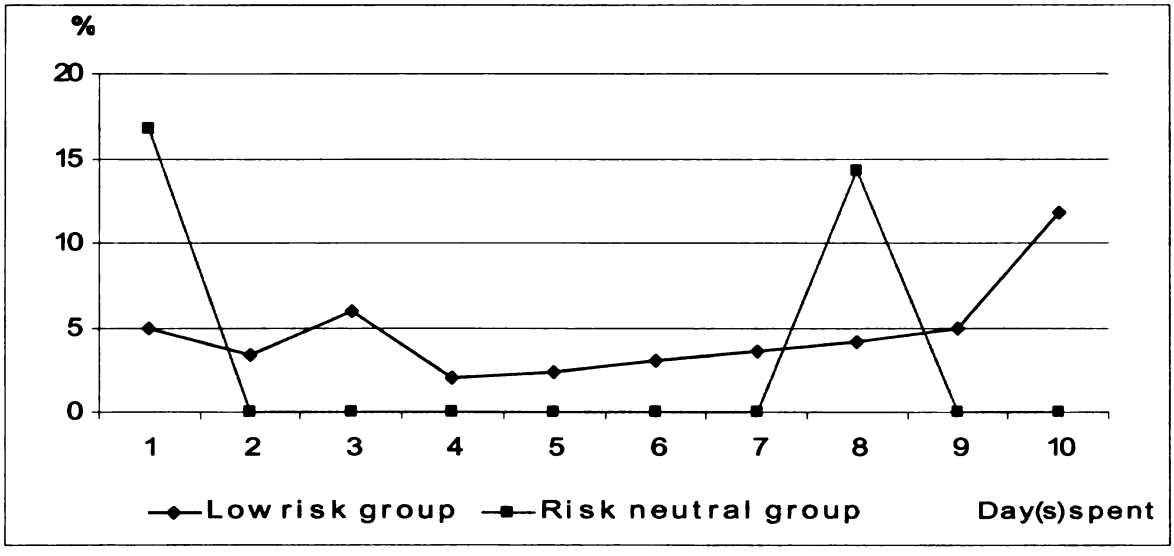
Figure 3-4. Use of cell phones on trips by travel risk groups



Use of cell phones with Internet access on trips by travel risk groups

No significant association was found in the use of cell phone with Internet access on each day of a trip by the two groups with $p > .05$. As shown in Figure 3-5, the low risk group showed a low level of cell phones with Internet access use during the trips and risk neutral group showed no use of cell phones with Internet access on most of their vacation days.

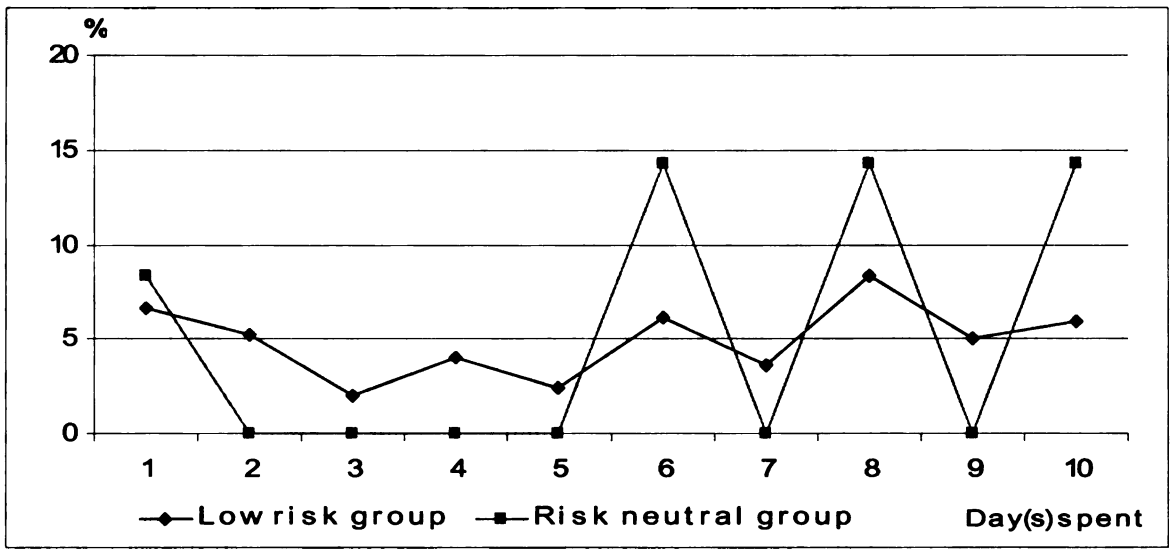
Figure 3-5. Use of cell phones with Internet access on trips by travel risk groups



Use of cell phones with camera on trips by travel risk groups

No significant association was found in use of cell phones with camera on each day of a trip between the two groups with $p > .05$. Overall, the two risk groups showed low levels of cell phones with camera uses during trips (Figure 3-6).

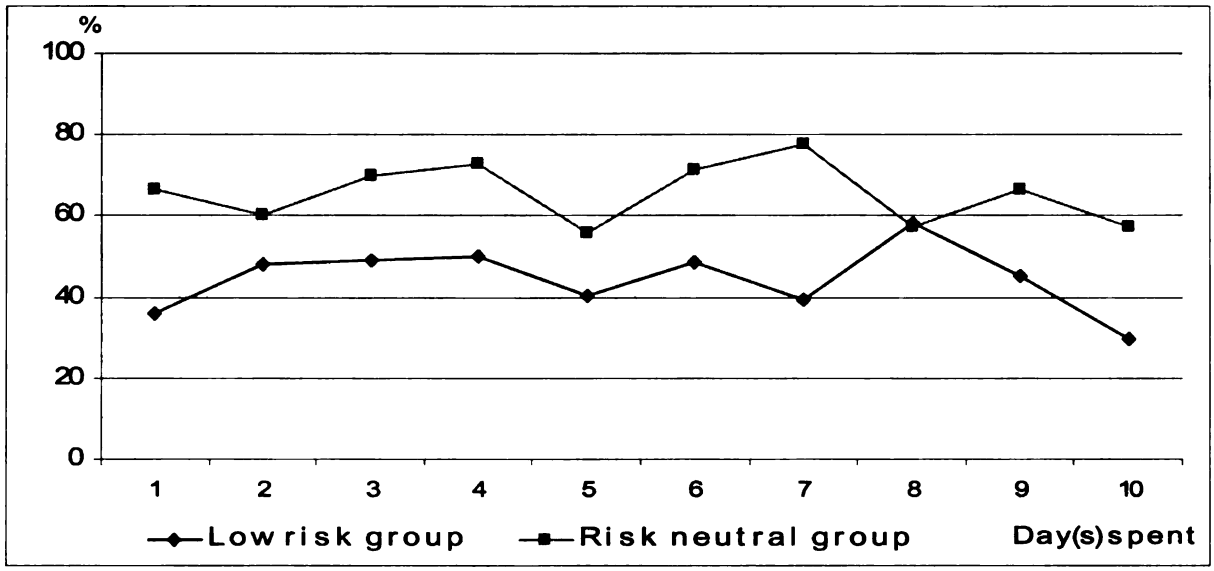
Figure 3-6. Use of cell phones with camera on trips by travel risk groups



Use of digital camera on trips by travel risk groups

A digital camera was the most popular technology for the two travel risk groups. Significant associations were found between the two groups on the first day trip ($X^2(df=1)=3.88, p<.05$), and on the seventh day ($X^2(df=1)=4.04, p<.05$). Overall, the risk neutral group was more likely to use digital cameras than the low risk group (Figure 3-7).

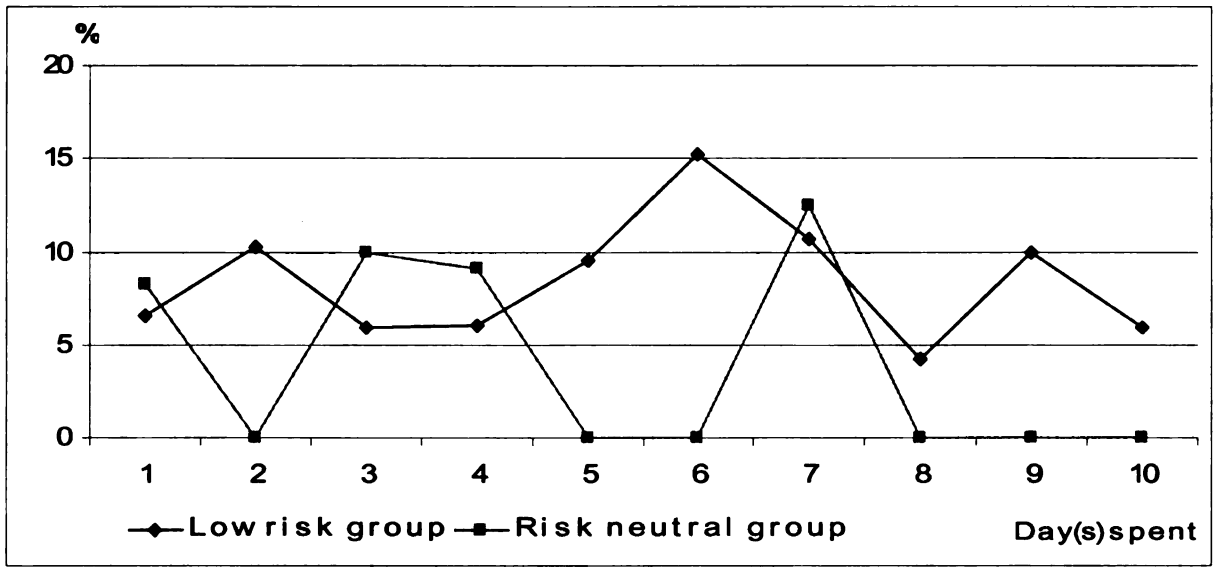
Figure 3-7. Use of digital camera on trips by travel risk groups



Use of laptop computer on trips by travel risk groups

No significant association was found in use of laptop computer on each day of a trip between the two groups with $p > .05$. Opposite patterns were found between the two groups; overall, the two groups showed low levels of laptop computer use during trips (Figure 3-8).

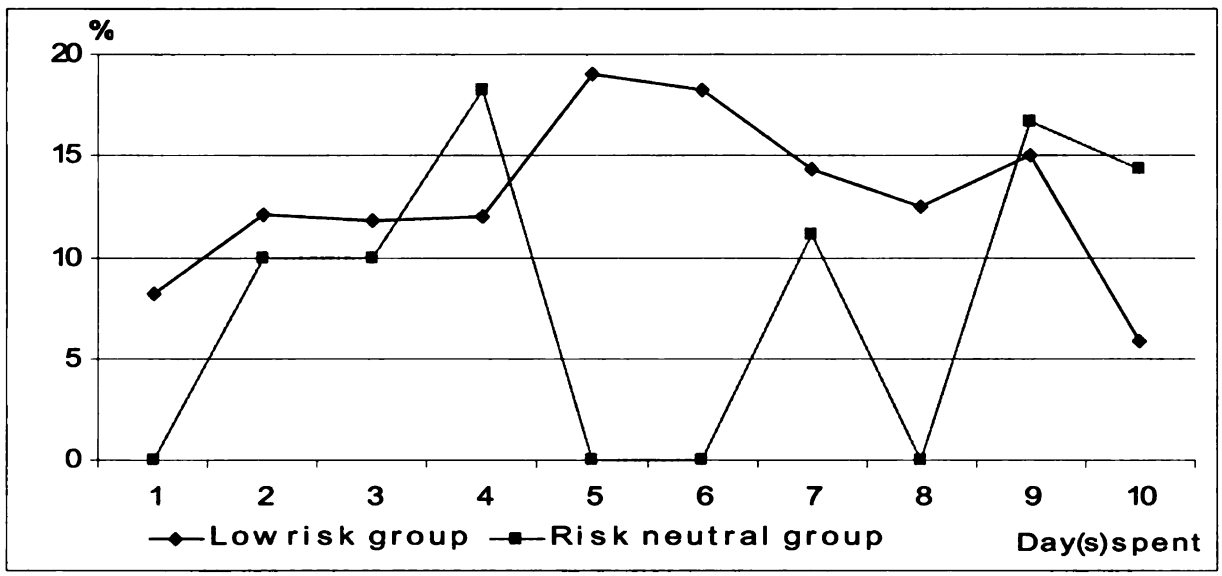
Figure 3-8. Use of laptop computer on trips by travel risk groups



Use of laptop computer with wireless Internet on trips by travel risk groups

No significant association was found in use of laptop computer with wireless Internet on each day of a trip between the two risk groups with $p > .05$. As shown in Figure 3-9, on the fourth day the highest percentage of the risk neutral group was found, while on the fifth day the highest percentage of the low risk group was found.

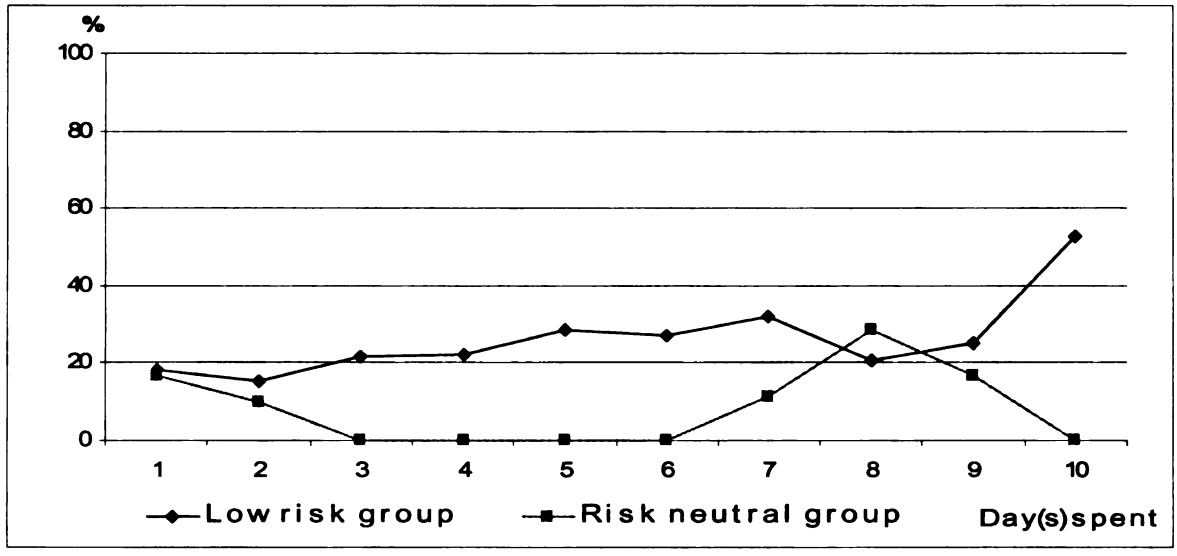
Figure 3-9. Use of laptop computer with wireless Internet on trips by travel risk groups



Use of desktop computers on trips by travel risk groups

No significant association was observed in use of desktop computers on each day of a trip between the travel risk groups with $p > .05$. Overall an opposite pattern was found (Figure 3-10). For example, use of desktop computers was increased by the low risk group on the third day of a trip, whereas decrease in use of desktop was made by the risk neutral group on the third day of a trip. Increase in use of desktop computers was made by the low risk group on the ninth day of a trip, while a decrease was made by risk neutral group on the eighth day of a trip.

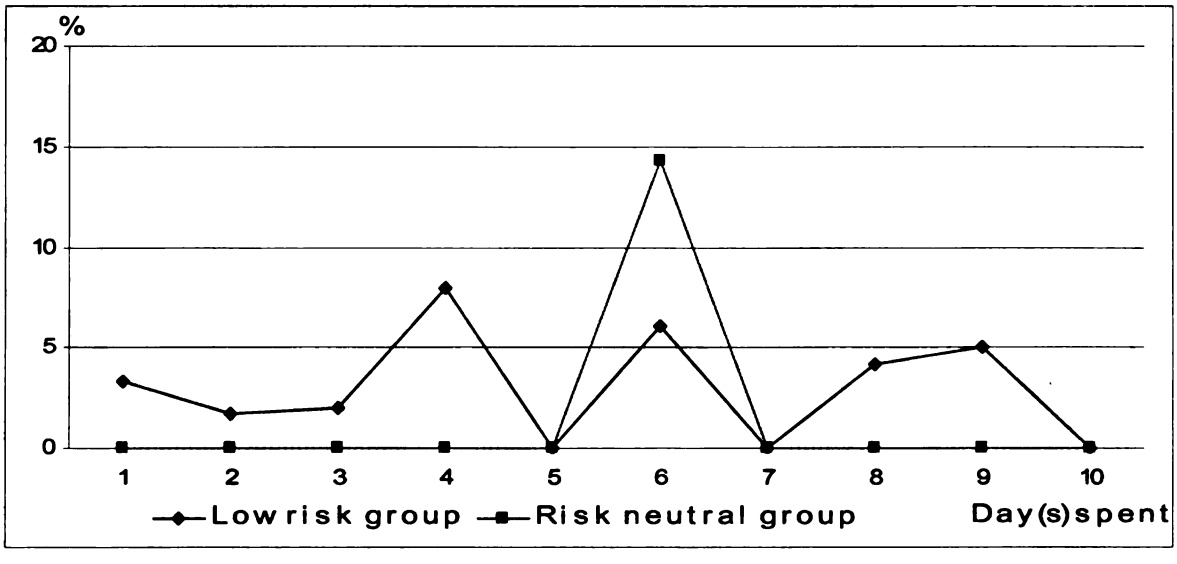
Figure 3-10. Use of desktop computers on trips by travel risk groups



Use of GPS/GPS in vehicle on trips by travel risk groups

No significant association was found in use of GPS/GPS in vehicle on each day of a trip between the two groups with $p > .05$. Overall, low levels of GPS/GPS in vehicles for the two groups were found during trips. Besides the sixth day trips, the risk neutral group did not use GPS/GPS in a vehicle at all during their trips (Figure 3-11).

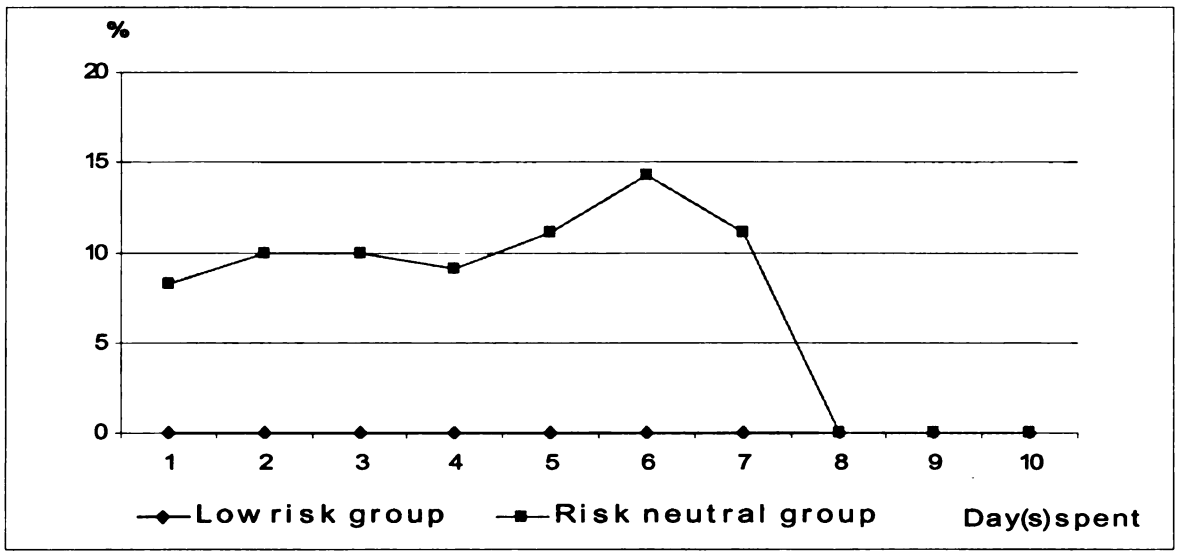
Figure 3-11. Use of GPS/GPS in vehicle on trips by travel risk groups



Use of Personal Digital Assistance on trips by travel risk groups

The two groups on the first through sixth day of a trip differed significantly in the use of a Personal Digital Assistance (X^2(df=1)=5.15, p<.05 for the first day of a trip), (X^2(df=1)=5.89, p<.05 for the second day of a trip), (X^2(df=1)=5.19, p<.05 for the third day of a trip), (X^2(df=1)=4.62, p<.05 for the fourth day of a trip), (X^2(df=1)=4.76, p<.05 for the fifth day of a trip), and (X^2(df=1)=4.84, p<.05 for the sixth day of a trip). However, due to too few or no cases, the results of the Chi tests may not be reliable. The low risk group showed no PDA use during the entire trips and the risk neutral group did not use PDA on the eighth through tenth day of a trip (Figure 3-12).

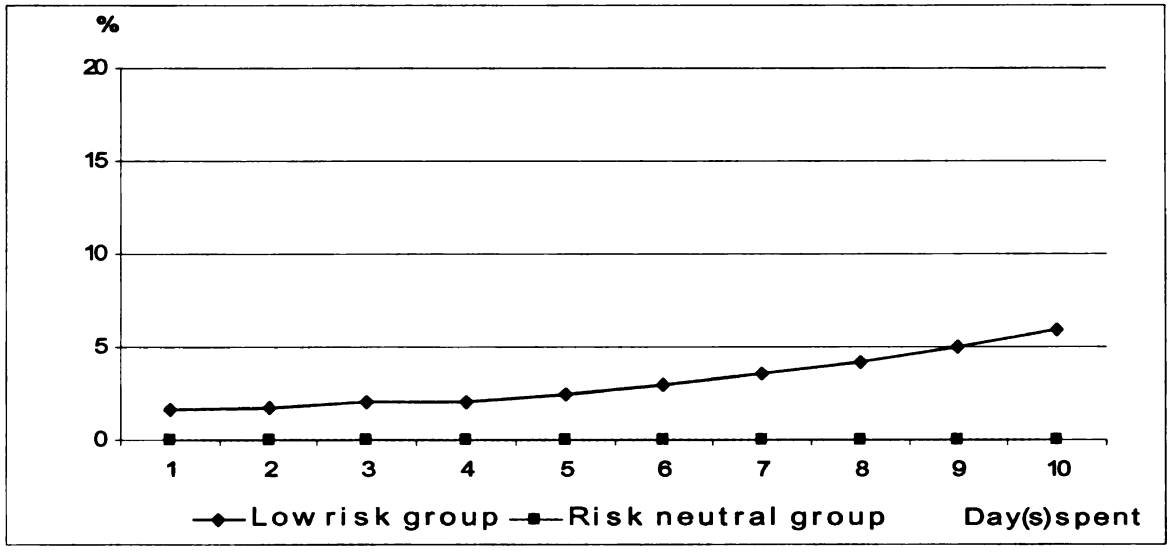
Figure 3-12. Use of Personal Digital Assistance by travel risk groups



Use of Personal Digital Assistance with Internet access on trips by travel risk groups

No significant association was found in use of Personal Digital Assistance with Internet access on each day of a trip between the two groups with p > .05. No use of PDA with Internet access was observed in the risk neutral group during trips (Figure 3-13).

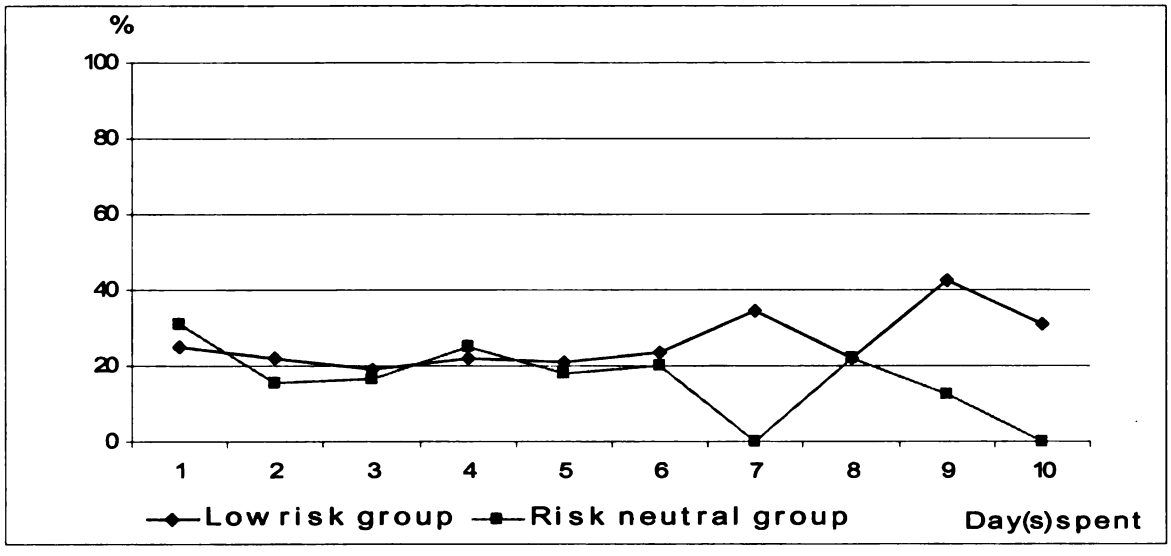
Figure 3-13. Use of Personal Digital Assistance with Internet access on trips by travel risk groups



Use of the Internet on trips by travel risk groups

No significant association was observed in Internet use on each day of a trip between the two risk groups with $p > .05$. The two groups on the seventh day of a trip showed different levels of Internet use (35% of the low risk group used the Internet while none of the risk neutral group used the Internet) (Figure 3-14). On the ninth day, the low risk group showed the highest level of Internet use.

Figure 3-14. Use of the Internet on trips by travel risk groups



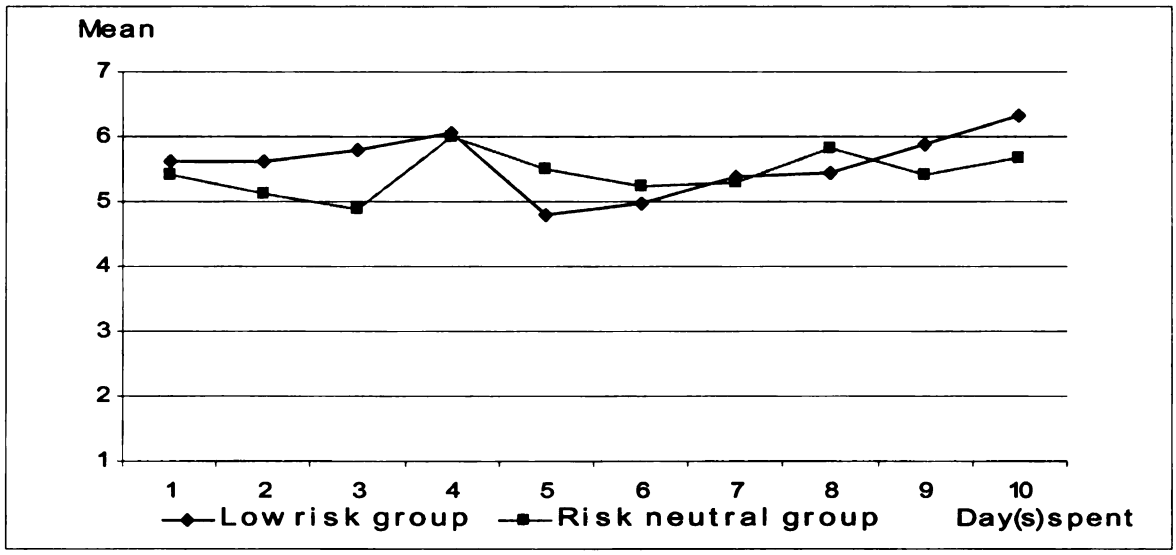
Effectiveness of information technology use on vacation activities

Affective and cognitive measures were employed in this study to examine how travel information technology affects each day's vacation activities. It is necessary to understand that mean scores were obtained based trip length. As shown in Figure 3-15 through 3-19, the overall results of effectiveness of information technology on vacation activities suggest that there were no significant differences between the two groups during trips. The results are discussed in detail based on each measurement. For four measurements, the low risk group on the first and tenth day of a trip indicated slightly higher mean scores compared to the risk neutral group. For enhancement of IT use, the mean score of the risk neutral group on the first day of a trip was higher compared to the low risk group's (the mean score of the low risk group on the tenth day trips was higher than the risk neutral group's).

Helpfulness of information technology use on vacation activities based on travel risk groups

On the first through third day of a trip, mean scores of the risk neutral group decreased, while mean scores of the low risk group increased slightly (Figure 3-15). On the fourth day of a trip, the two groups indicated similar levels of IT helpfulness (6 on a 7 pt scale) and on the fifth day of a trip , mean scores decreased to 5.5 (the risk neutral group) and 4.8 (the low risk group). On the tenth day of a trip, the mean score of the low risk group (6.3) was slightly higher than the risk neutral group's (5.7).

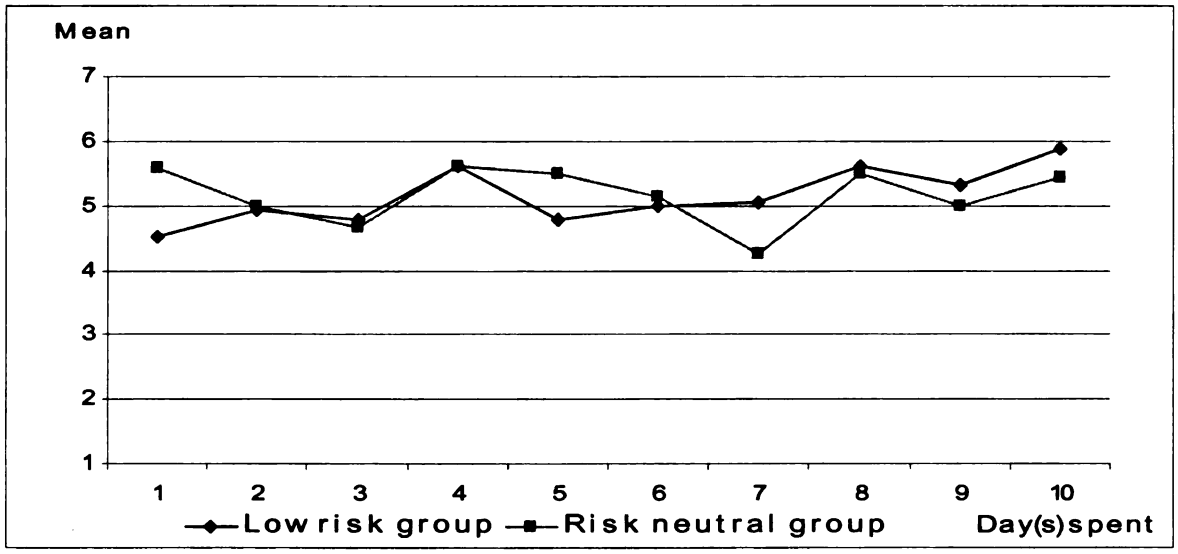
Figure 3-15. Helpfulness of IT use on vacation activities based on travel risk groups



Enhancement of trips using IT on vacation activities based on travel risk groups

As shown in Figure 3-16, on the first day of a trip, the risk neutral group held a higher mean score (5.6 on a 7 pt scale) than the low risk group (4.5). On trips of longer than six days, the mean scores of the risk neutral group were lower than the low risk group.

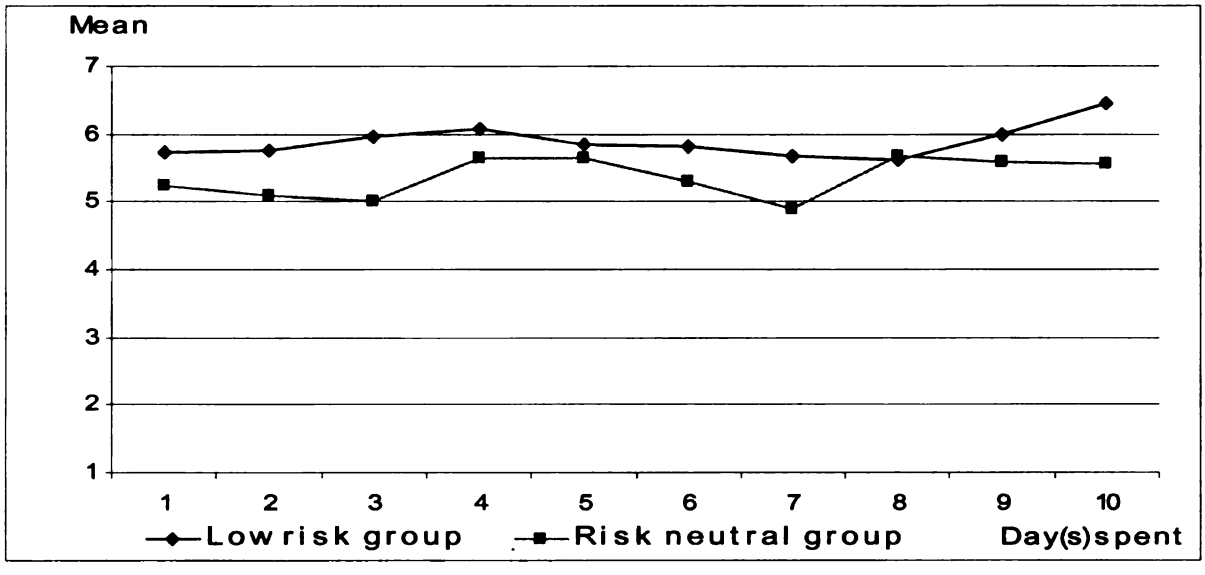
Figure 3-16. Enhancement of trips using IT on vacation activities based on travel risk groups



Skillfulness of using IT on vacation activities based on travel risk groups

On trips of shorter than eight days, mean scores of the low risk group were higher than the risk neutral group's (Figure 3-17). On the eighth day of a trip, the mean scores were almost identical (5.6 for the low risk group and 5.7 for the risk neutral group) and on the ninth and tenth days, mean scores of the low risk group improved, while mean scores of the risk neutral group did not.

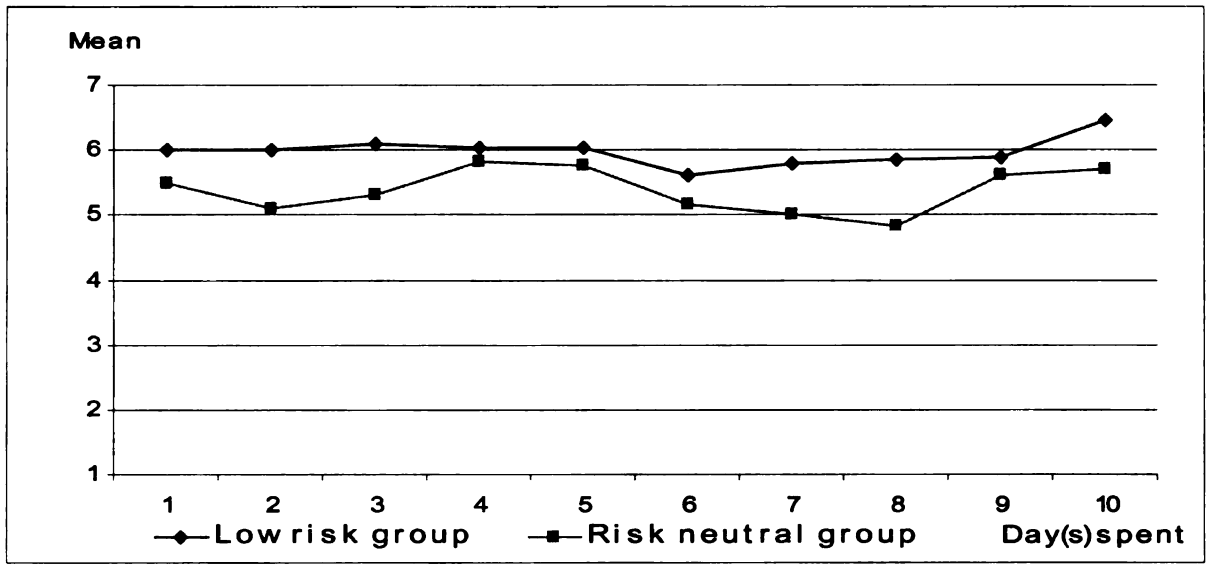
Figure 3-17. Skillfulness of using IT on vacation activities based on travel risk groups



Success of using IT on vacation activities based on travel risk groups

Overall, mean scores of the low risk group were slightly higher than ones of the risk neutral group (Figure 3-18). On the tenth day of a trip, the mean scores of both groups were improved slightly compared to the mean scores on the first day of a trip.

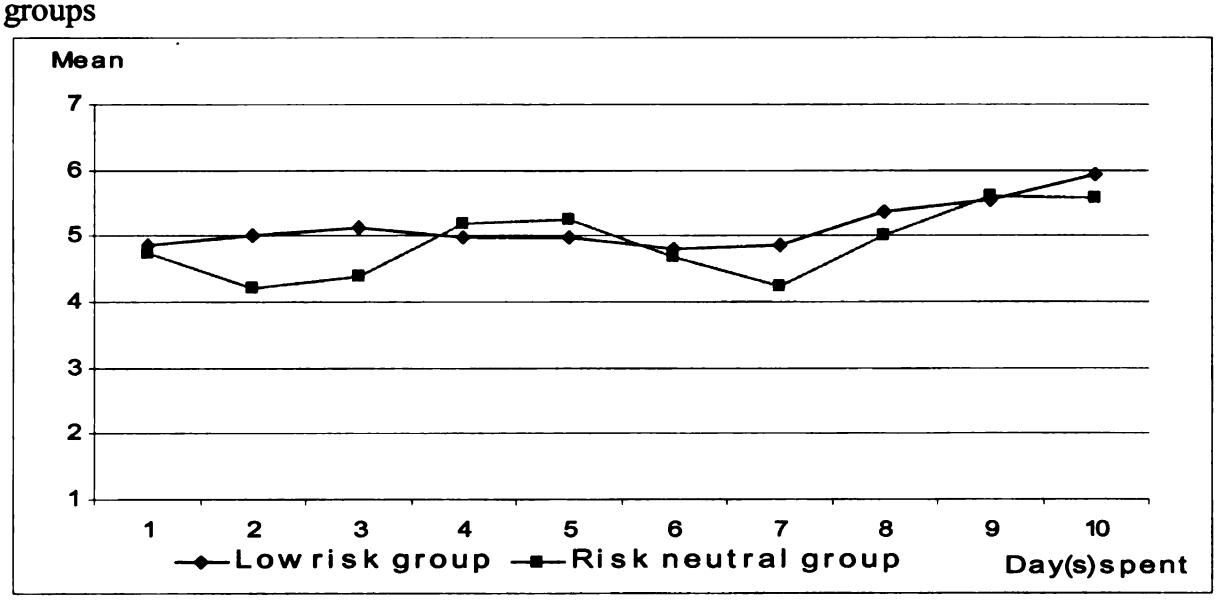
Figure 3-18. Success of using IT on vacation activities based on travel risk groups



Control of vacation using IT on vacation activities based on travel risk groups

Mean scores for the low risk group did not vary compared to the risk neutral group's (Figure 3-19). The mean scores for both groups on the tenth day trips slightly improved.

Figure 3-19. Control of vacation using IT on vacation activities based on travel risk groups



5. DISCUSSION AND IMPLICATIONS

An objective of this study was to examine the relationship between tourists' perceived risk and their use of information technology during trips. The results of this study generated some unique or inconsistent findings with previous research studies, but also provided insights into the implementation of new technology use for trips. In the discussion section, the findings are further overviewed in four sections; first, findings are reviewed, second, conclusions are made, third, applications for scholars and travel businesses are discussed, and lastly, limitations of this study and suggestions for future study are addressed.

Discussion of Findings

This study was conducted using in situ information technology application for specific vacation experiences. The expected results were that the travel risk perceptions would reflect different information technology use patterns.

Travel risk perceptions

Research question 1. What are the types and levels of travel risks experienced by travelers?

Based on the research of Roehl and Fesenmaier (1992), it was expected that travelers perceive different types and levels of risk about their vacations and destinations. Ten types of travel risk were examined in this study. The factor analysis of risk perceptions did not produce a satisfaction dimension. However, it was included in comparison of mean scores between two clusters because it was necessary to see if overall risk perception based on the original ten risk items differed between two clusters. Also, it is worthwhile to discuss that high levels of perceived satisfaction risk were found,

whereas previous studies have placed a great deal of weight on other types of risk such as physical, equipment, and safety risks.

This study employed Roehl's typology of risk attitudes. Roehl identified risk groups based on the types of risk such as a functional risk group, place risk group, and risk neutral group. This study formed risk groups based on the levels of risk (risk neutral and low risk groups). In general, a low level of travel risk perception was evident in the first cluster of trips as compared to the second cluster.

Research question 2. Is there a relationship between travel styles and perceived travel risks?

The low and risk neutral groups differed in marital status. Individuals in the low risk group were more likely to be married or cohabiting than were individuals in the risk neutral group. This difference in marital status caused a significant difference in whether trips were taken with spouses/partners. The low risk group was more likely to travel with the spouses/partners than the risk neutral group. A prominent finding by Roehl (1988) was those who travel with children age six or younger perceive a high level of physical and equipment risk, whereas this study showed those who travel with spouses/partners perceived a low level of travel risk for actual trips.

Research question 3. Is there a relationship between travel motivation and perceived travel risks?

The low risk group and risk neutral group differed in whether or not they visited friends/relatives. This difference indicates that those trips for visiting friends/relatives perceived a lower level of risk perception than trips without a purpose for visiting to friends/relatives. A majority of the low risk group indicated visiting friends/relatives and appeared to have relaxation motives, while the risk neutral group was more likely to

involve motive for socializing with other people. Overall, the low risk group appeared to be more motivated for relaxation, whereas the risk neutral group appeared to fulfill goals, social obligations, or educational experiences.

Travel experience with destinations was found to be significantly associated with travel risk perceptions. Half of the trips taken by the risk neutral group were to destinations for a first visit and the average number of previous trips to the destinations was one time. Trips taken by the low risk group averaged four previous trips to the destinations. These findings are consistent with higher levels of novelty seeking motivation found in the risk neutral group.

Use of information technology

Research question 4. Does perceived risk affect the use of information technology during a vacation?

Overall, few significant associations were found between travel risk perception and information technology use. Reasons for the findings may be (1) travelers held low levels of risk perceptions resulting in no need for external information search; and (2) even though the risk neutral group rated themselves as higher levels of technology and Internet users compared the low risk group, the low risk and risk neutral groups were primarily not different in whether information technology was available for their trips or brought with them on their trips.

Research question 5. Does perceived risk affect experiences with information technology used during a vacation?

Effectiveness of information technology use for vacation activities provides significant information. Overall, the two groups perceived relatively stable and high levels of effectiveness of information technology use on vacation activities. It could be

speculated that profiles of a well traveled person and skilled traveler reflect the effectiveness of IT use on vacation activities.

The risk neutral groups reported that they held higher levels of technology and Internet use compared to the low risk group. However, over the entire length of the trip, skill and success appear to be slightly more achieved by the low risk group than the risk neutral group. The low risk group indicated more previous visitation to the destination, while the risk neutral group indicated more first time visits to the destination. This may suggest that the low risk group evaluated the relevancy of information better.

In summary, the results of this study validate that the relation between level of risk perceptions and amount of information acquired is arguable and thus, no direct evidence is provided that consumers with high risk seek greater amounts of information (Arndt, 1967; Cox 1967; Gemunden, 1985). The influences of perceived risk on traditional information search are limited because searching, storing, and processing of information are time and energy consuming processes. Regarding use of information technology for travel, two issues emerged. Respondents commented that the Internet was more often used for pre-trip planning compared to use during vacations thus, demonstrating that only a few people used active web search during a trip. The first issue is that while Internet capability is 24 hours a day, 7 days a week a wired network connection may not facilitate access anytime and anywhere. Further, affordability to consumers due to the high price of the equipment is another factor influencing the use of information technology, particularly newer equipment or wireless services.

Conclusions

Unlike the expectation that travel risk perceptions would reflect differences in information technology use, this study found different levels of risk perceptions were not related to information technology use during trips. Reasons for these findings may be (1) overall, low levels of perceived travel risks were associated with the vacations studied; (2) respondents' low level of advanced high-tech device use in general; and (3) technical and non-technical issues which prohibit travelers from staying connected in destinations.

This study provided two important findings. First, a high risk group did not exist on actual trips. Second, the risk perceptions associated with the trips studied showed that half of respondents perceived a high level of satisfaction risk and a majority of respondents perceived very low levels of political, terrorism, physical, financial, psychological, social, money, and mechanical risks.

These two findings suggest three assumptions or conclusions. First, it is assumed that respondents to the travel diary avoided risky destinations. Second, a further assumption can be made that travelers predicted possibility for losses of vacation destinations, which confirmed the definition of risk. In other words, because the probabilities of all possible outcomes and specific undesirable concerns regarding the trip were known to the travelers (e.g., psychological risk or time risk), travelers could reduce those perceived risks by seeking the corresponding information. Lastly, even though travelers perceived low levels of other types of risk, they perceived high level of satisfaction risk. It is assumed that travelers questioned their decisions or the credibility of information they used for travel planning.

As a result, four conclusions can be made. First, before trip information seeking allows travelers to manage political, terrorism, health, financial, time, psychological, social, and mechanical risks and to prepare for possible negative outcomes or avoid high risky destinations. For example, a study found perceived risk of HIV infection on destination choice caused significant concern in countries with high HIV rates and avoidance of those destinations (Gossens & Gin, 1994).

Second, it is emphasized that the term uncertainty and risk are not equivalent concepts as clearly stated in the introduction based on two reasons. First, respondents in this study appear to avoid high risk destinations in which the negative consequences were known to decision makers (respondents), thus reflecting risk concept as defined in this study. The other reason is there is no significant association between tolerance for uncertainty and risk perception (see Table 3-19).

Third, consistent with Sonmez (1994), this study showed travelers on vacations to specific destinations appear to exhibit high levels of satisfaction risk. As addressed by Roehl and Fesenmaier (1992), risk perceptions are situation specific and when travelers evaluate vacation destinations, more attention is paid to some risk dimensions than others, according to their perceived importance.

Last, diffusion of information technology especially for travelers is still at an innovator stage. Even though it is known that the mobile phone market is moving toward maturity and thus, the emerging M-commerce marketplace is expected to change trends of information search, currently few travelers carry information technology with them on trips because the capability of information technology is still an issue for a majority of

travelers, especially those who traveled to destinations in which a wired network connection is not available.

In summary, risk may be related to various factors as discussed in previous research studies and this study identified four types of influential factors of perceived travel risk: past travel experience, the purpose of travel, travel party and travel motivations.

Applications to Travel Market

Satisfaction risk was identified as a main concern for travelers. Three marketing strategies are suggested concerning satisfaction risk, which are generally used for products in retail stores. First, comparative information for destinations including activities, accommodations, and transportations is provided to convince travelers to visit a destination. Second, noted by Assael (1998), since more information may increase consumer confusion and lead to less efficient choice, information is provided on a uniform basis. Lastly, warranties, money-back guarantees, or liberal cancellation policies for accommodations or airplanes could be offered to reduce satisfaction risk.

A vacation requires a traveler to carry a certain type of device which he or she does not own. For example, an international traveler desires to communicate with personnel of accommodation facilities in which he/she stays to get local information or direction to the hotel. Also, it is important for a traveler driving a car equipped with a location detector which allows a traveler to be found and rescued in emergency. IT providers should consider users' technology preferences or needs according to a situation. Since information technology has a goal of being used anywhere and anytime, it is

important for IT providers to make an effort to generalize use of information technology and globalize the function of information technology.

Limitations of this Study and Suggestions for Future Study

A limitation of this study resulted from a small number of trips taken during the time studied. A second limitation of this study resulted from a number of repeat visitors in this study. Seventy-five percent of the low risk group were repeat visitors to the destinations and thus, additional information besides their past experiences may not be necessary. Different results may have been found if the sample had included more first-time visitors to a destination. A third limitation resulted from the destinations studied. The respondents' destination(s) were mostly within Canada, 19 travelers reported they traveled within the USA and 10 travelers' destinations included Europe, Mexico, Thailand, Cuba, and Africa, therefore, this study may not represent risk perceptions of international travelers. A fourth limitation is that this study did not examine changes in travel risk perceptions which may occur due to changes in destinations. If risk perceptions had been measured on a daily basis, risk vacations across a trip would be more apparent. The last limitation is that a low level of information technology availability was found in the trip samples. Only digital cameras and cell phones were found to be highly available and other types of information technology were not available or carried on trips.

Since perceived risk is situational specific, previous studies have shown different results regarding types and levels of travel risks. For example, Hsu and Lin (2006) measured perceived risk in a destination with students aged from 17 to 23 in a destination and found financial and physical risks were of most concern. This dissertation showed

satisfaction risk was the most perceived risk en route. Therefore, it is recommended that future research measure perceived travel risk in different situations such as before trip, on trip, and after arriving at destination and grasp the changes in types and degree of perceived risks.

There is an inherent challenge with outbound travelers who visit a variety of places. Therefore, it is suggested that future research delimits destinations within inbound travelers to examine active use of information technology in a more controlled area.

CHAPTER IV

UNDERSTANDING INVOLVEMENT WITH AND USE OF INFORMATION TECHNOLOGY

1. INTRODUCTION

User involvement has been found as an effective segmentation tool to classify individuals and predict behaviors (Cai et al., 2004). In psychology and consumer behavior study, the general concept of involvement can be tracked back to a research study by Celsi and Olson (1988, p.211). According to Celsi and Olson (1998), involvement is defined as "perceived personal relevance", which refers to the degree of personal relevance of an object, situation, or action. Rapidly developing Internet capabilities have led research interests in Internet involvement. Based on the earlier definition of involvement, Salam (1998) defined *Internet involvement* as "an unobservable state of motivation of a person regarding the Internet or the World Wide Web and his/her perceived relevance related to the Internet based on inherent needs, values, interest goals and objectives" (p. 45). With Salam's work as the conceptual background, our focus moved to involvement with information technology to understand the explosive growth of mobile communications and its effects on vacation trips.

"The mobile phone market is reaching maturity in practically every country and the currently 8 out of 10 people have a mobile phone and the penetration rate is over 100% in some countries such as Sweden and Italy" (Bigne et al., 2005). Mobile commerce is the buying and selling of information, products, and services through wireless handheld devices such as cellular phones and personal digital assistants (PDAs). One of the advantages of mobile devices is that the user can stay connected on vacations.

The emerging M-commerce marketplace is expected to change information search and distribution which has generally focused on the pretrip stage. M-commerce allows travelers to obtain needed travel information while they are at destinations.

Wilson (1981) pointed out that the factors determining information seeking behavior and use must include environmental aspects such the work and physical environments. A vacation may require a traveler to carry a certain type of device which he or she does not own. For example, at airports in countries such as Bangkok and Korea, outbound travelers are able to rent mobile phones equipped with the international roaming services. Also, inbound travelers can rent mobile phones which they can use during their trips. During trips a traveler may also need a computer which enables access to the Internet and supports his or her device brought from home. This "cluster technology" (Rogers, 2003) has been found with iPods and personal computers or digital camera and personal computers. A traveler who brings a digital camera can share his/her experiences in the destination by sending photos via the Internet, instead of waiting until he/she returns from vacation. Therefore, it is critical for destination tourism organizations to understand information technology values and benefits and characterize the travelers who possess information technology and their needs.

This study measured involvement with information technology by asking respondents to indicate their perceived relevance of information technology based on three topics; Internet use, information technology use and ownership of information technology. A goal of the investigation was to determine how use of information technology for trip purposes differs everyday, and how use of information technology

differs among individuals with different levels of involvement with information technology.

Statement of the Problem

This study seeks to understand information technology uses by involvement in information technology. This study also discusses the differences in use of information technologies between general purposes and trip-specific applications.

It is expected that the remarkable growth in information technology use in daily living will spillover to trip purposes. As a variety of information technology has been adopted by travelers, acquisition of travel information technology which does not delimit time and space, may result in the proliferation of tourism businesses facilitating various modes of communication during trips.

Involvement is an important factor influencing consumer behavior. Depending on their level of involvement a consumer will differ in how they make purchase decisions or how they use products (Assael, 1983; Engel & Blackwell, 1982). As suggested by Kroeber-Riel and Weinberg (2003), an individual's propensity to use information technology is significantly related to involvement with technology and is important in understanding consumer behavior. However, despite significant growth in information technology, there is still a lack of research about travelers' information technology use and involvement (Bigne et al., 2005). In particular, differences in information technology use between general and trip specific purposes have not been found in published research.

Research Questions

This study addresses the following research questions:

1. What levels of involvement with information technology are experienced by travelers?

2. Do differences exist in information technology use for general purposes among different involvement groups?

3. Do differences exist in information technology use for trip purposes among different involvement groups?

4. Are there differences in use of information technology between a general purpose and trip purpose?

2. LITERATURE REVIEW

A growing number of Canadians are using mobile communication devices (e.g., mobile phones, Blackberry) and the explosive growth of the mobile communication population shows that information technology is becoming increasingly important (Telecomworldwire, 2005). Factors influencing consumer use of information technology have been investigated including socio-demographics (Bonn et al., 1999; Weber & Roehl, 1999), psychological characteristics (DeSanctis & Poole, 1994), and technology preferences (Korgaohnka & Moschis, 1987). In general, individual differences can be explained by the degree of involvement because of its multidimensional nature and various scholarly definitions (Assael, 1998). In social-psychological terms, *involvement* is "a person's perceived relevance of the object based on inherent needs, values, and interests" (Mittal, 1983). As a term for leisure study, *involvement* is the "state of identification existing between an individual and a recreational activity, at one point in time, characterized by some level of enjoyment and self-expression being achieved through the activity" (Selin & Howard, 1988). As a behavioral term, *involvement* is "time and/or intensity of effort expended in pursuing a particular activity" (Stone, 1984).

Early research on Internet involvement can be traced back to understanding user involvement in information systems (Barki & Hartwick, 1989; Baroudi et al., 1986; King

& Rodriguez, 1978). The focus on involvement with the Internet has shifted to information communication technology which supports M-commerce or M-Internet with the explosive development of wireless technologies.

Literature on user involvement with information technology is first reviewed to understand individuals' attitudes toward and behaviors in using information technology. Also, literature concerning information technology beyond the vacation context is reviewed with a focus on wireless mobile services.

User involvement with information technology

"User involvement" has frequently been used to explain user behavior in many areas such as organizational behavior (Kanungo, 1982; Stone, 1984), leisure study (Selin & Howard, 1988), and psychology (Celsi & Olson, 1988; Mittal, 1983) and thus, involvement has several scholarly definitions (Assael, 1998; Barki & Hartwick, 1994). Barki and Hartwick (1989) referred to user *involvement* as a set of behaviors or activities performed by users. The levels of behavioral involvement are determined by the time, intensity, money, energy spent, and the number of alternatives examined (Engel & Blackwell, 1982; Havitz & Dimanche, 1990; Kim et al., 1997; Stone, 1984). Therefore, user involvement in consumer behavior has most often been measured using frequency of participation in an activity (Barki & Hartwick, 1989). Involvement levels (e.g., low and high involvement) have been found to be an effective segmentation tool to classify individuals and predict behaviors (Cai et al., 2004) at different decision stages such as information searching, evaluation, and purchase stages (Jeng, 2000). Research interest in Internet use has to be further narrowed to information technology because of today's new

and dynamic forms of Internet access through the use of information technologies (Kanter, 2001).

Kroeber-Riel and Weinberg (2003) suggested an individual's propensity to use information technology is significantly related to involvement with technology and important in understanding consumer behavior. The use of technology was believed to be a male-oriented, thus males demonstrated a greater involvement with technology (Wilder et al., 1985). Later, surveys of technology users' attitudes discovered no differences between genders (Settle et al., 1999), whereas other research reported that different social norms and reduced access to the Internet caused women to have less favorable attitudes than men toward e-commerce technology (Bredin et al., 2001). In Bigne's study (2005), the profile of Spanish M-commerce users was described as men (53.7%) and women (46.3%), aged between 14 and 24 (61.9%), middle class (47.9%) and residents of provincial towns (64.1%). More than forty percent of those respondents reported to be everyday Internet users.

It has been argued that users' previous experiences with computers affect their perceptions of usefulness and ease of using specific systems (Ndubisi et al., 2003), while users' ability to use computers is a salient factor influencing perceptions, which lead to the adoption of online service (Guriting & Ndubisi, 2006). Bigne and colleagues (2005) found relationships between use of the Internet and M-commerce. First, they discovered that Internet exposure is not an indicator of a consumer's M-commerce purchase behavior. Because the Internet is used mainly for information search not for shopping, it is possible that exposure to the Internet and use of the mobile technology are positively related only when they are used as a tool for communication but not shopping. Bigne and colleagues

(2005) concluded that "Internet use is a necessary but not sufficient condition for shopping on Mobile technology." Second, Internet purchases have a significant influence on M-commerce purchases. Bigne and colleagues utilized a Rogers' (2003) "technology cluster concept." According to Rogers (2003), "the adoption of new communication technologies is best predicted by the adoption of functionally similar technologies and user perception toward them." Therefore, consumers who have purchased a product or service through the Internet are more likely to purchase through Mobile devices.

A consumer who has a high degree of innovativeness characteristics demonstrates a tendency to have new experiences (Leavitt & Walton, 1975). Considering information technology, an individual with a high level of innovativeness is likely to adopt mobile devices and information through mobile communications (Peter & Olson, 2002). Innovativeness was defined by Rogers (2003) as the speed to which individuals adopt new ideas compared to others. That is, based upon the relative time at which an innovation is adopted, members of a social system could be classified into different adopter categories. Individuals who adopt products and services earlier than others reflected different product use and involvement (Mahajan et al., 1990).

Mobile devices and services are often used in public and involve participation by others in mobile communication. Interpersonal influence is likely to be positively associated with the ownership of the device (Gillian & Drennan, 2005). Savolainen (1999) investigated the major factors influencing actual use of network services as people's preferences. His study concluded that people prefer: easy access to information, saving time and money, high quality information sources, and elimination of time and place concerns for information seeking.

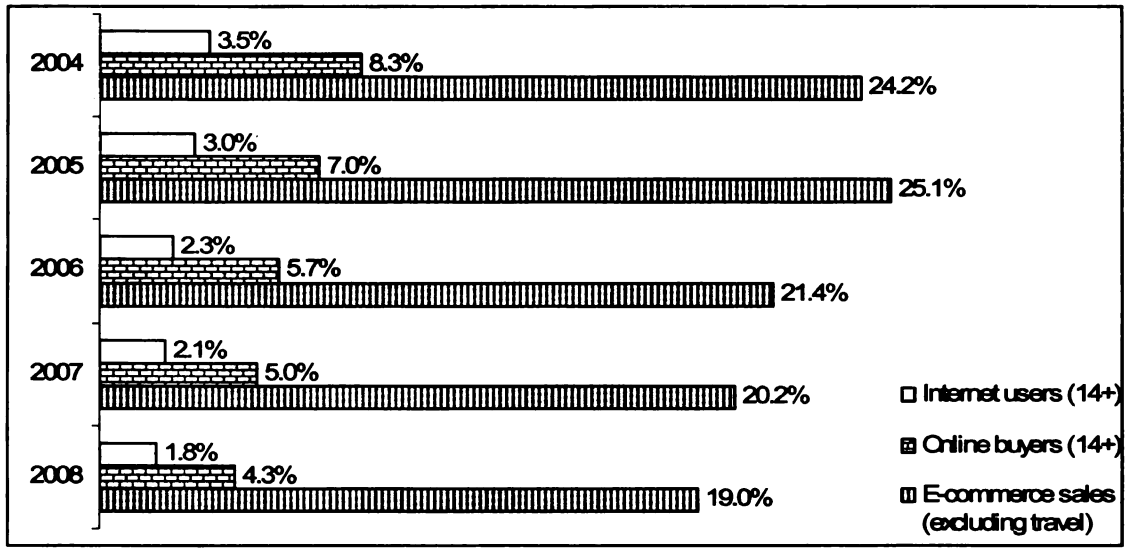
Dillon and Reif (2004) found that self-reported computer skills appeared to be a significant factor determining the use of electronic commerce for shopping. In their study, respondents who reported they were experienced or an expert had positive attitudes about using online information compared to did those who reported to be novices or average users.

Mobile technology

As the Internet has been integrated into everyday life, changes were induced into every aspect of society (Werthner & Klein, 1999). It was long expected that the Internet would play an important role not only with communications but also with marketing (Dreze & Zufryden, 1997). The Internet as a communication tool is as fundamental as the telephone by providing a means to connect with family and friends, as well as make a cyber community in which interactions with the members in different geographical locations in real time is possible (Beldona, 2003). The Internet brought retailing innovations which have allowed for the elimination of a consumer's physical visitation to retail stores. Instead, a consumer can purchase products in cyberspace.

Internet use has changed more drastically with the broad diffusion of mobile technology, particularly with cell phones (Hosoe, 2005). According to CRM Today (2006), the future trends of E–commerce released by eMarketer in 2005 showed US E-commerce sales are predicted to be significantly slowed as the growth rate in new Internet users' (aged older than 14) decreases (Figure 4-1). Growth in new Internet users whose ages are older than 14 has slowed from a four percent rate between 2001 and 2005 to a projected two percent rate between 2005 and 2008.

Figure 4-1. Expected growth rates of US Internet users, online buyers and e-commerce sales (excluding travel) 2004-2008 (as a % increase vs. prior year) (Source: eMarketer, December 2005)



The advancement of technology extends the wave of "electronic commerce (E-commerce)" to "a mobile commerce (M-commerce)" revolution (Mort & Drennan, 2005). Generally, M-commerce represents a "subset of all E-commerce" and implies a wireless device has the connectivity as any E-commerce includes. E-commerce uses electronic communications technology such as the Internet, e-mails, e-books, and e-catalogues to distribute information and sell products or services (Wikipedia, 2006), whereas M-commerce uses wireless handheld devices such as cellular phones and personal digital assistants (PDAs) (SearchMobilecomputing.com, 2003).

Wireless applications such as public wireless LANs, multifunction mobile phones, and Personal Digital Assistances (PDAs) have been developed to enable users to access the Internet ("mobile Internet or M-Internet") based on the 'Wireless Application Protocol (WAP)', which does not need a place to connect (Cheong & Park, 2005).

The mobile device, which was once considered a luxury good, has become the conventional communication tool. The total number of mobile phone subscribers reached

1.8 billion in early 2005 and is predicted to double in another five years (Mobiletracker, 2005). According to the report, developing nations such as China and India are adding the most new subscribers and many European countries are nearing 100% penetration.

As previous research on Internet use found Internet users are reported as being younger and male-dominated (e.g., Gefen & Straub, 1997; Katz & Aspden, 1997). Further, user demographics have an important relationship to use of M-commerce (Gillian & Drennan, 2005). For example, males are likely to adopt mobile technology earlier than females and those males who adopted mobile technology are more likely to fully use its applications than female adopters (Anckar & D'lncau, 2002). Age also affects mobile technology use; younger people are earlier to adopt technology and use it for a longer time and a wider variety of tasks than older users (Teo et al., 1999).

M-Internet has several benefits from WAP coverage including: (1) accessibility- mobile devices enable the users to be connected anytime and anyplace or contacted by particular persons or times; (2) convenience- it is easy to carry the portable wireless device; (3) personalization- the customized information can be stored according to the users' preferences; and (4) real-time information- information for airline schedules and stock quotes can be accessed (Moblieinfo.com, 2006).

As consumers become more immersed in the use of mobile devices, they have incorporated it into their daily lives and are creating a mobile life (Gillian & Drennan, 2005). Cheong and Park (2005) described the multifunction mobile device as including many tasks such as: phone ring sound download, game download, music download, character download, Global Positioning System (GPS), traffic information services, stock information service, and downloading motion pictures including movies and music video.

Gillian and Drennan (2005) provided a detailed description of the M-Internet services based on six categories (Table 4-1). All six categories (locator/information services, communication services, sports/entertainment services, mobile online 'chat' services, value-added shopping services, and financial services) have applications at home for everyday use and while traveling on a vacation away from home.

Table 4-1. M-service typology (Source: Gillian & Drennan, 2005)

Groups	Items
Locator/information services	Map location, personal locator, weather reports, news
Communication services	Pictures, Sigma multimedia station (SMS), calendar/reminder, Multi-message (MMS)
Sports/entertainment services	Sports information, adult entertainment, place bets online, play online games
Mobile online 'chat' services	Chat online, e-mail, search for and compare prices, listen to/download music
Value-added shopping services	Received shopping coupons, receive personal shopping alerts, search for and receive product information, book cinema/theater tickets online, use routine banking
Financial services	Advanced banking, insurance damage claims, take part in online auctions, trade stock, online purchases, book travel tickets, make micro-payments, remote activation of appliances, access and use transaction services, use online currency conversion services

3. METHODS

The problem of the study was to investigate the involvement with information technology which was measured by perceived level of use and ownership and its effect on use of information technology for trip purposes. This study also examined differences in use of information technologies between everyday and trip-specific purposes. The research proposed that three items measuring involvement with information technology are conceptually related and constitute three involvement groups. It is expected that involvement with information technology groups would predict the level of information technology use everyday as well as for trip purposes.

The methodology in this study included the two steps. First, data are reviewed briefly including the scales and measurement. Second, the data analysis strategy is briefly explained. Since this portion of the study included the panel sample which was described in Chapter 3, it is not necessary to describe the characteristics of the sample again.

Data

This study used three data sets titled "Panel study," which were drawn from the qualifying study, the monitoring (see chapter 2), and travel diary (see chapter 3). This panel study examined the effect of involvement with information technology on information technology use for general and trip specific purposes. Involvement with information technology was measured by self-reported use of the Internet, information technology, and ownership of technology compared to friends. Table 4-2 presents the constructs and associated scales for this study. Involvement with information technology was measured three times (qualifying, monitoring one and two).

Table 4-2. Constructs and associated scales

Constructs and associate scales	Number of items	Measurement	Data collection phases
Involvement with information technology	3 items	Ordinal	Qualifying, Monitoring 1&2
Every day's Internet use (general purposes)	1 item	Ordinal	Qualifying, Monitoring 1&2
Every day's information technology use (general purposes)	11 items	Ordinal	Qualifying, Monitoring 1&2,
Internet use for trip purposes	1 item	Ordinal	Travel diary
Information technology use for trip purposes	11 items	Ordinal	Travel diary

All three data sets (qualifying, monitoring, and travel diary) asked about the level of information technology use including desktop computer, laptop computer with/without wireless access, cell phone, cell phone with Internet access, cell phone with camera, digital camera, Personal Digital Assistant (PDA) with/without Internet access, Global Positioning System/GPS in vehicle, and Onstar service in vehicle for general use (qualifying and monitoring) and specific use for trips (travel diary).The time stage information technology use that was measured is described as general one (measured on September, 2005), general two (measured on January, 2006), and for trips (during trips between February and September, 2006).

As a postscript, two notes are made. First, it is important to keep in mind that this study tested information technology use for general (included in the qualifying and monitoring studies) and trip specific purposes (included in the travel diary). Hence, exclusion of subjects which did not respond to all three surveys: qualifying, monitoring,

and travel diary becomes crucial in understanding differences in information technology use between in general and a specific trip purpose. Therefore, reliable results can only be produced by testing perceptions of respondents who participated in all three surveys. After removing all unmatched cases, 103 cases remained to be used in the final sample (17 sent two vacation diaries based on their separate trips during the time period).

Second, profiles on the demographics and Internet experiences and use of the Internet and information technologies in general were tested for people (n=86) but travel experiences with the destinations and use of the Internet and information technologies for a trip purpose were tested based on trips (n=103).

Data analysis

After the selection of the variables was completed, this study used SPSS software (version 14.0) to analyze the data.

Step 1 displayed respondents' information technology use for general and trip purposes. **Step 2** selected the samples by obtaining the common samples in the records available in the qualifying, monitoring, and travel diary. The information on the three involvement items in the monitoring one and two were combined to produce one data set, titled "monitoring study", which was further identified as the general two phase. Because among 86 panel samples, 80 individuals provided responses to both monitoring one and two and it appeared that the monitoring one provided no missing data on the involvement items, while missing data were found in the monitoring two, which could be caused when the repeated surveys on the same individuals were conducted. Therefore, the monitoring one data set is selected over the monitoring two. Additionally, two panel members who failed to respond to the monitoring one were drawn from the monitoring two. Further,

comparison of responses on involvement variables between the monitoring one and two studies was conducted. **Steps 3** tested the reliability using a Cronbach alpha of the three involvement scales for both qualifying and monitoring. **Step 4** tested differences in the three items measuring involvement with information technology in the qualifying (**General 1**) and monitoring study (**General 2**) using paired sample *t* tests. As noted earlier, the involvement variable generated from the monitoring study was used because it provided more recent information on involvement. **Step 5** is comprised of two analyses. Chi-squares tests were employed with a significance level of $p<.05$ for identifying significant associations in information technology use between general one and two to examine the consistency of the participants' responses, which allowed to further support of the measurement. Chi-squares tests were also used with a significance level of $p<.05$ for identifying significant associations in information technology use between everyday (general two) and trip purposes conducted. The monitoring two (general two) was selected over the monitoring one (general one) to identify significant associations in information technology use between everyday and trip purposes because it is more recent to time for trips studied than the monitoring one (general one). Since the sample sizes for the monitoring two (general two, n=86) and travel diary (trip, n=103) were not identical as mentioned earlier, because of 17 participants who took multiple trips during the study periods, only one trip was randomly chosen for use in the Chi-square tests. **Step 6** clustered the factor scores derived from the factor analysis in the monitoring study using a Hierarchical approach with Ward's method and obtained three clusters. Since there is no standard of determining the number of clusters to be formed or "stopping rule" (Aldenderfer & Blashfield, 1984; Hair et al., 1998), the empirical judgment with the

number of clusters was used after different cluster solutions (e.g., two, three, four), which is suggested as a solution to determine the number of cluster (Hair et al, 1998). The respondents were clustered into three groups: High, middle, and low involvement groups. In **Step 7** ANOVAs analysis compared the means of three involvement items among three groups. **Step 8** used Chi-squares tests with a significance level of $p<.05$ for identifying significant associations between involvement and demographics, Internet use profile, destination familiarity, and use of information technology among three groups. A cross-tabulation method was used to present in figures the patterns of information technology use based on information technology involvement levels.

4. RESULTS

In this section, the results are shown to meet the data analysis strategy from step one through eight as explained earlier.

Information technology use

Respondents' information technology use everyday (General 1 & General 2) and for trip purposes (Trip) were shown in Figure 4-2 through 4-13. Information technology use for general purposes was indicated by 86 panel participants who reported whether they used information technology in everyday contexts, while information technology use for trip purposes was based on 103 trips taken during the study period.

The results of Chi-squares tests generally showed significant associations in information technology uses between general one and two, which were measured within a four month time interval. Moreover, the results of Chi-squares tests on information technology use between general (General 2) and trip purposes (Trip) showed significant

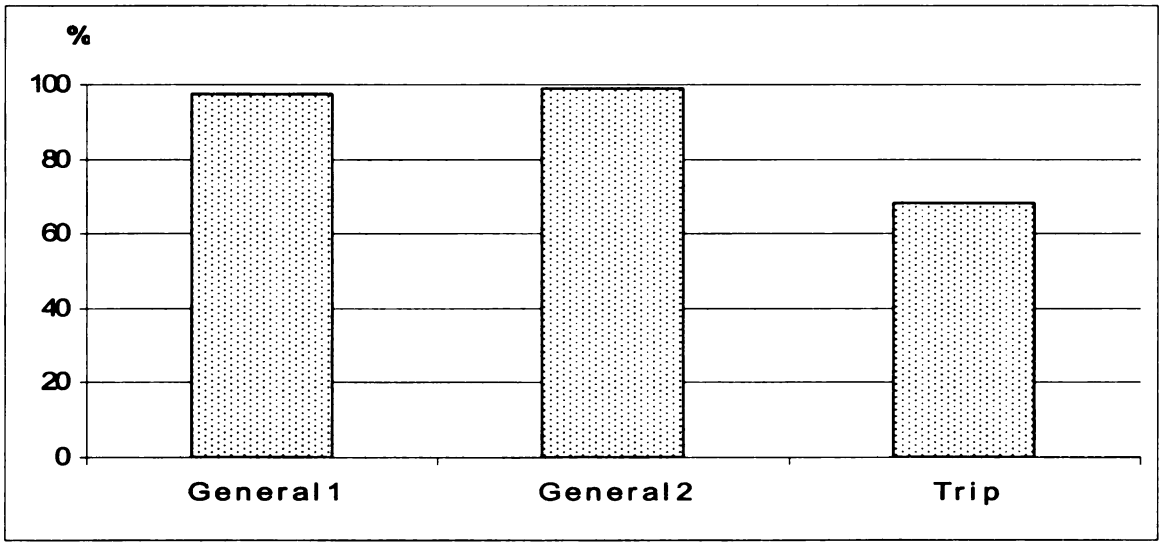
associations except for desktop use. It is advised that cautions are needed to interpret the results due to too few cases as indicated by * in each figure.

Overall, figures exhibit information technology is used more for general purposes (General 2) compared to trip purposes (Trip) and only cell phones with camera and Global Positioning System/GPS in vehicles appear to be used more for trip purposes (Trip) than general purposes (General 2).

Internet use

High levels of Internet use for general purposes were observed and for trip purposes use levels decreased (Figure 4-2). A significant association was observed in Internet use between general one and two ($X^2(df=1)=42.49, p<.001$) , which showed consistency in Internet uses for general purposes during the time periods. No significant association was found in Internet use between general purposes (General 2) and trip purposes (Trip) ($X^2(df=1)=2.10, p=.15$).

Figure 4-2. Internet use

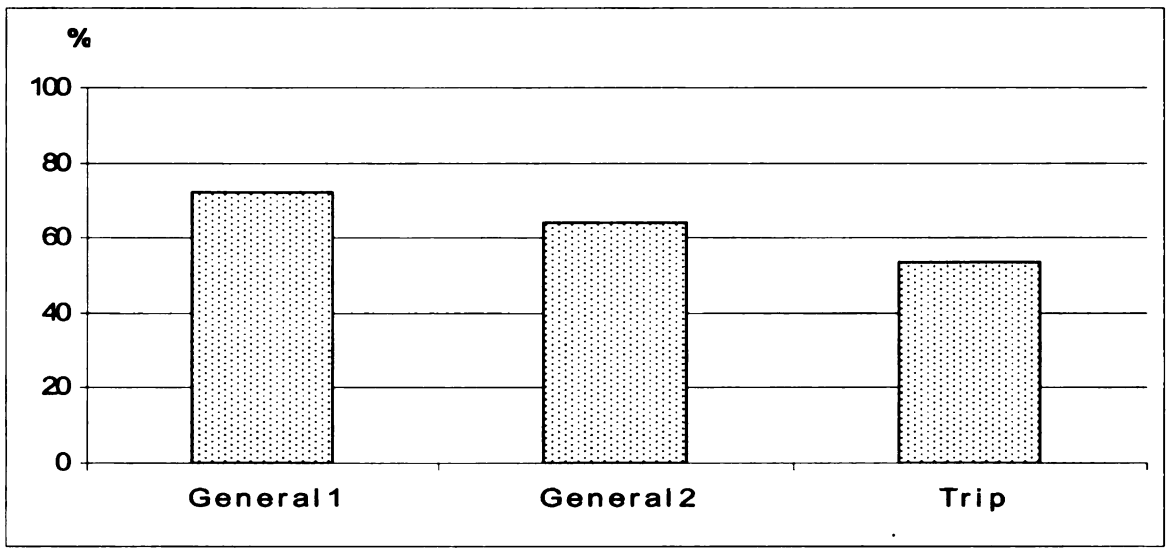


Chi-square test on G1 & G2: ($X^2(df=1)=42.49, p<.001$)*too few cases for the reliable result; Chi-square test on G2 & T: ($X^2(df=1)=.2.10, p=.15$)*too few cases for the reliable result.

Cell phone use

High levels of cell phone use for general purposes were observed and the level of cell phone use decreased on a trip (Figure 4-3). A significant association was observed in cell phone use between for general one and two (X^2(df=1)=26.85, p<.001). Further, a significant association was found in cell phone use between general purposes (General 2) and trip purposes (Trip) (X^2(df =1)=19.63, p<.001).

Figure 4-3. Cell phone use

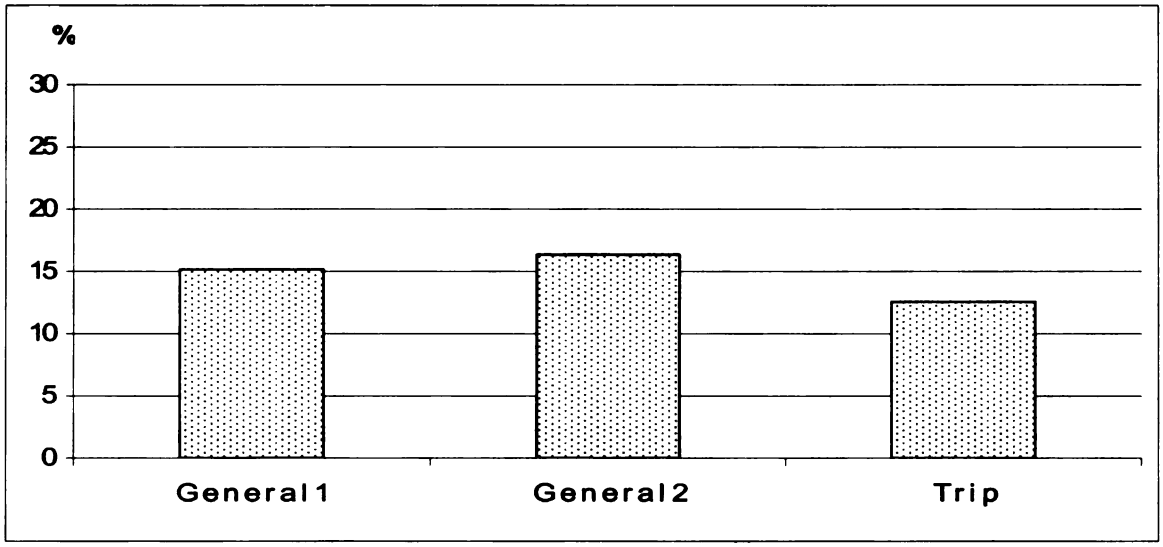


Chi-square test on G1 & G2: (X^2(df=1)=26.85, p<.001); Chi-square test on G2 & T: (X^2(df =1)=19.63, p<.001).

Cell phone with Internet access use

A slightly lower level of cell phone with Internet access use was observed for trip purposes compared to general purposes (Figure 4-4). A significant association was observed in cell phone use between general one and two (X^2(df=1)=10.03, p<.01). A significant association was also found between those who use a cell phone with Internet access for general purposes (General 2) and those who use for trip purposes (Trip) (X^2(df =1)=23.02, p<.001).

Figure 4-4. Cell phone with Internet access use

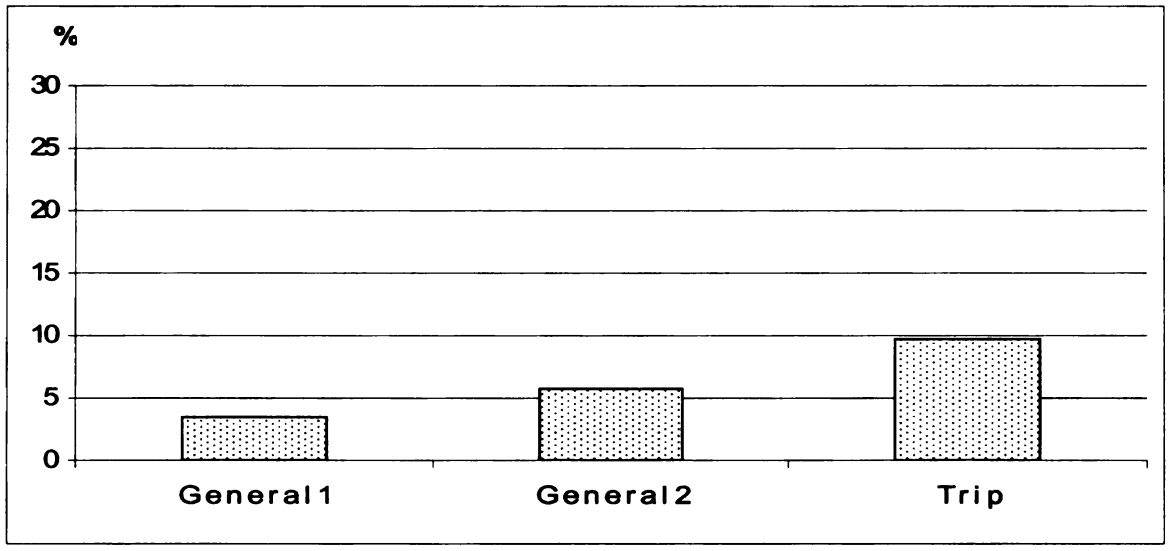


Chi-square test on G1 & G2: (X^2(df=1)=10.03, p<.01)*too few cases for the reliable result; Chi-square test on G2 & T: (X^2(df =1)=23.02, p<.001)*too few cases for the reliable result.

Cell phone with camera use

Overall, low levels of cell phone with camera use were observed (Figure 4-5). As compare to general purposes, a cell phone with camera appears to be used slightly more for trip purposes. A significant association was observed in cell phone use between general one and two (X^2(df=1)=50.36, p<.001). A significant association was also found between those who use cell phones with camera for general purposes (General 2) and those who use for trip purposes (Trip) (X^2(df =1)=24.15, p<.001).

Figure 4-5. Cell phone with camera use

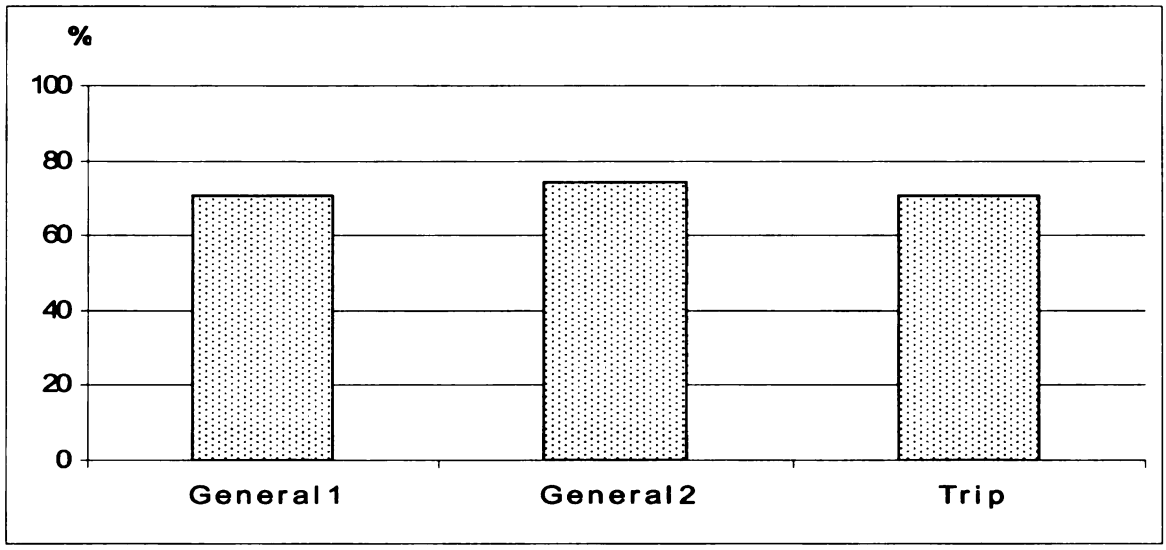


Chi-square test on G1 & G2: (X^2(df=1)=50.36, p<.001)*too few cases for the reliable result; Chi-square test on G2 & T: (X^2(df =1)=24.15, p<.001)*too few cases for the reliable result.

Digital camera use

Overall, a digital camera was highly used both for general and trip purposes (Figure 4-6). Significant associations were observed in digital camera use both between general one and two (X^2(df=1)=33.31, p<.001) and between general purposes (General 2) and trip purposes (Trip) (X^2(df =1)=28.89, p<.001).

Figure 4-6. Digital camera use

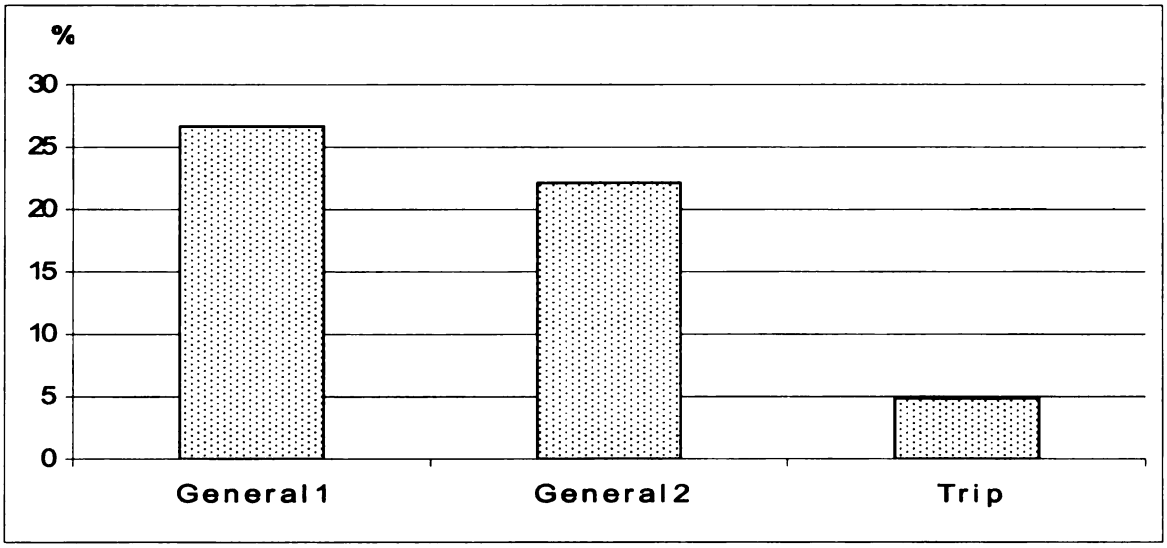


Chi-square test on G1 & G2: (X^2(df=1)=33.31, p<.001); Chi-square test on G2 & T: (X^2(df =1)=28.89, p<.001).

Laptop computer use

A laptop computer appears to be used more for general purposes as compared to trip purposes (Figure 4-7). Significant associations were observed in laptop computer use both between general one and two (X^2(df=1)=12.08, p<.01) and between general purposes (General 2) and trip purposes (Trip) (X^2(df =1)=6.82, p<.05).

Figure 4-7. Laptop computer use

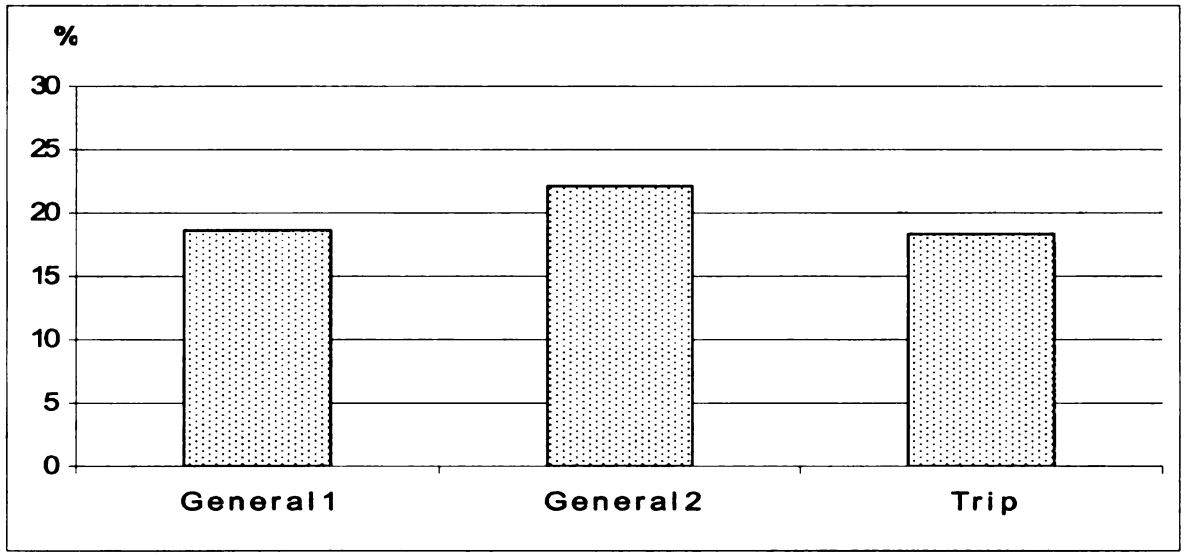


Chi-square test on G1 & G2: (X^2(df=1)=12.08, p<.01); Chi-square test on G2 & T: (X^2(df =1)=6.82, p<.05) *too few cases for the reliable result.

Laptop computer with wireless Internet use

Similar levels of laptop computer with wireless Internet use were observed for general and trip purpose (Figure 4-8). Significant associations were observed in laptop computer with wireless Internet use both between general one and two (X^2(df=1)=39.97, p<.001) and between general purposes (General 2) and trip purposes (Trip) (X^2(df =1)=16.61, p<.001).

Figure 4-8. Laptop computer with wireless Internet use

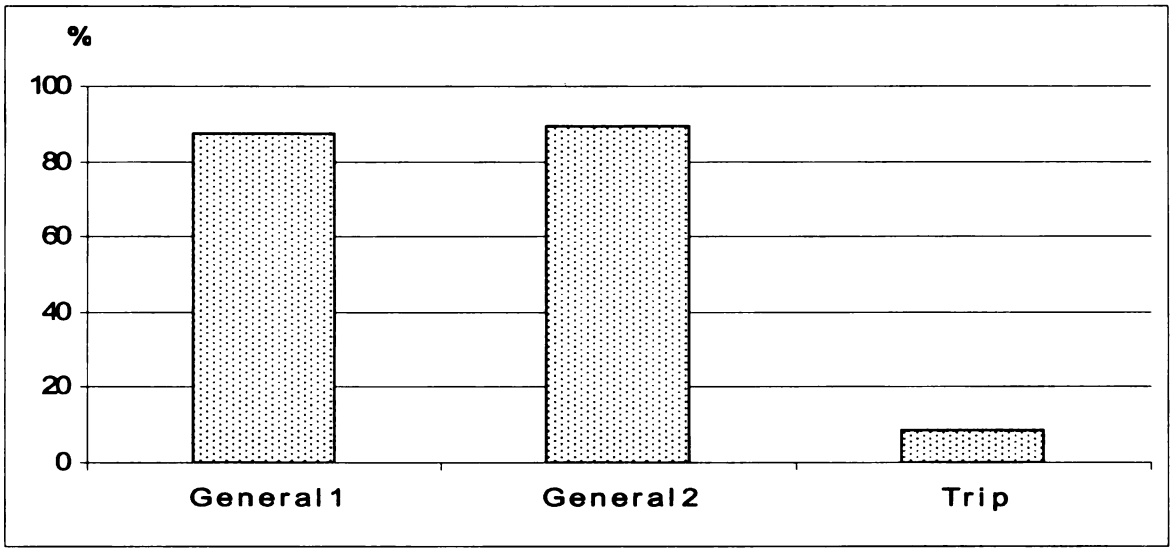


Chi-square test on G1 & G2: (X^2(df=1)=39.97, p<.001)*too few cases for the reliable result; Chi-square test on G2 & T: (X^2(df =1)=16.61, p<.001)*too few cases for the reliable result.

Desktop computer use

In general, a desktop computer is highly used in everyday contexts but for trip purposes, few respondents reported using (Figure 4-9). A significant association was observed in desktop computer use between general one and two (X^2(df=1)=26.16, p<.001).

Figure 4-9. Desktop computer use

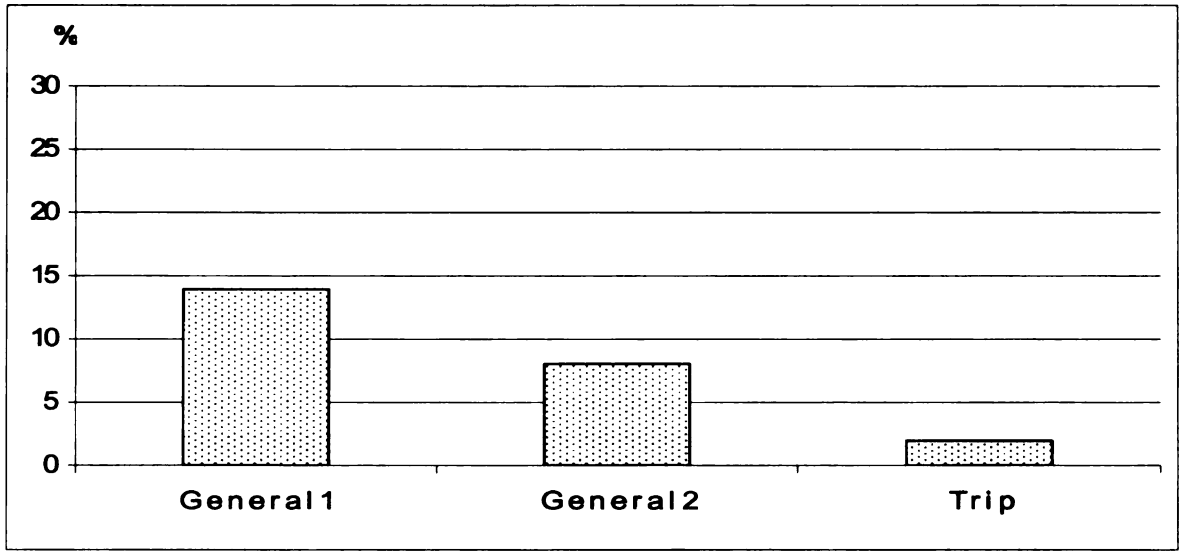


Chi-square test on G1 & G2: (X^2(df=1)=26.16, p<.001)*too few cases for the reliable result; Chi-square test on G2 & T: (X^2(df =1)=.12, p=.73)*too few cases for the reliable result.

Personal Digital Assistance (PDA) use

In general, a low percentage of respondents reported using a PDA and even fewer used a PDA for trips purposes (Figure 4-10). Significant associations were observed in Personal Digital Assistance use both between general one and two (X^2(df=1)=32.68, p<.001) and between general purposes (General 2) and trip purposes (Trip) (X^2(df =1)=23.11, p<.001).

Figure 4-10. Personal Digital Assistance use

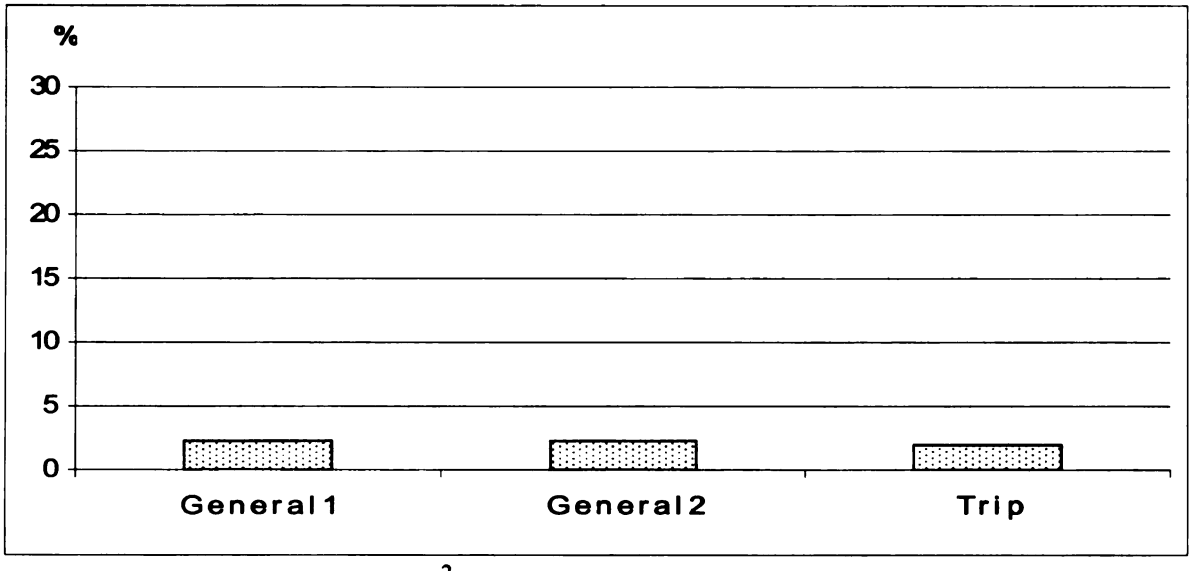


Chi-square test on G1 & G2: (X^2(df=1)=32.68, p<.001)* too few cases for the reliable result; Chi-square test on G2 & T: (X^2(df =1)=23.11, p<.001)*too few cases for the reliable result.

PDA with Internet access use

Less than three percentage of respondents reported using a PDA with Internet access for general or trip purposes (Figure 4-11). No significant association was observed between general one and two (X^2(df=1)=.05, p=.83), while a significant association was observed between general purposes (General 2) and trip purposes (Trip) (X^2(df =1)=20.49, p<.001).

Figure 4-11. PDA with Internet access use

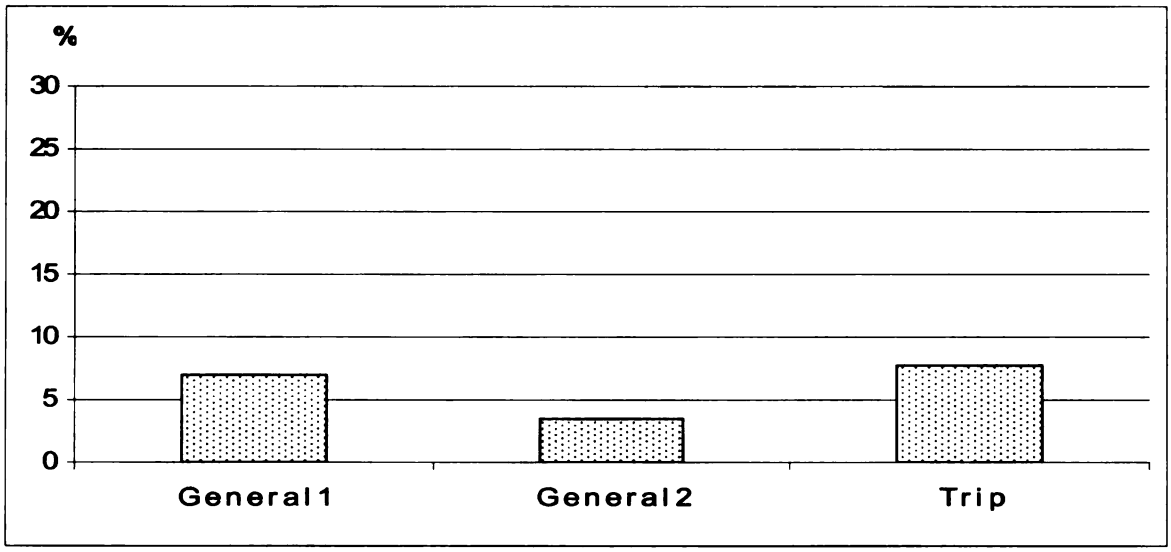


Chi-square test on G1 & G2: (X^2(df=1)=.05, p=.83)* too few cases for the reliable result; Chi-square test on G2 & T: (X^2(df =1)=20.49, p<.001)*too few cases for the reliable result.

Global Positioning System (GPS)/GPS in vehicle use

A GPS/GPS in vehicle appears to be used slightly more for trip purposes than general purposes (Figure 4-12). Overall, a low percentage of respondents used a GPS/GPS in a vehicle. Significant associations were observed in GPS/GPS in vehicle use both between general one and two (X^2(df=1)= 17.07, p<.001) and between general purposes (General 2) and trip purposes (Trip) (X^2(df =1)=50.36, p<.001).

Figure 4-12. GPS/GPS in vehicle use

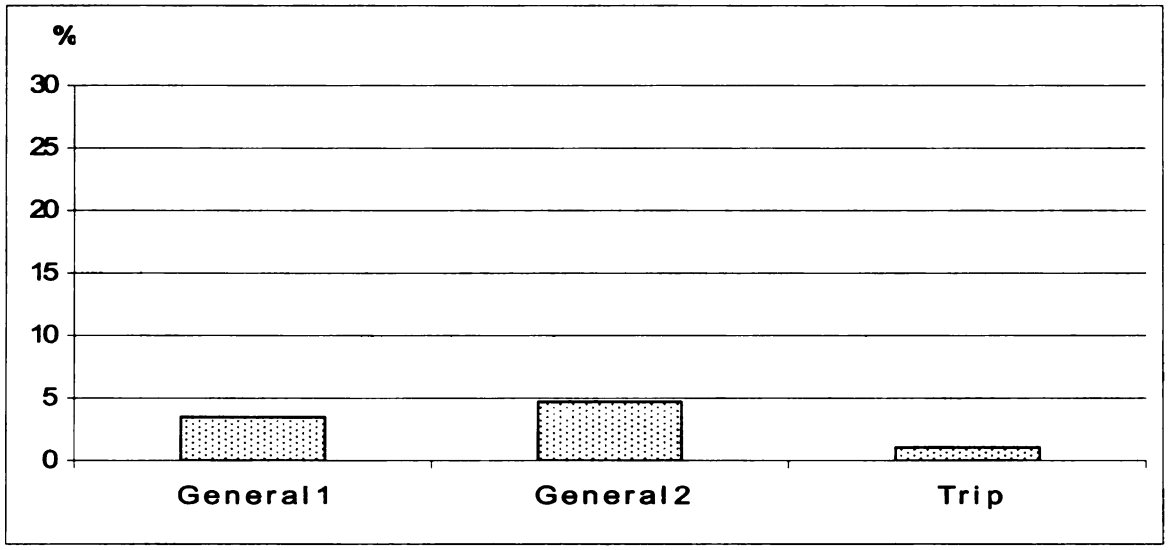


Chi-square test on G1 & G2: (X^2(df=1)=17.07, p<.001)* too few cases for the reliable result; Chi-square test on G2 & T: (X^2(df =1)=50.36, p<.001) *too few cases for the reliable result.

Onstar Service use

An Onstar Service appears to be used slightly more for general purposes than trip purposes. Overall, a low percentage of respondents used an Onstar Service (Figure 4-13). Significant associations were observed in Onstar Service use both between general one and two (X^2(df=1)= 63.72, p<.001) and between general purposes (General 2) and trip purposes (Trip) (X^2(df =1)=20.74, p<.001).

Figure 4-13. Onstar Service use



Chi-square test on G1 & G2: (X^2(df=1)=63.72, p<.001)* too few cases for the reliable result; Chi-square test on G2 & T: (X^2(df =1)=20.74, p<.001)* too few cases for the reliable result.

Comparison of mean scores of involvement items between monitoring one and two

Next, a paired-samples *t* test was employed to examine the differences in mean scores of the three involvement items between monitoring one and two. Table 4-3 presents no significance differences in mean scores of the three involvement items between monitoring one and two.

Table 4-3. Comparison of involvement items between monitoring one and two

Involvement items	Monitoring1 (Mean)	Monitoring2 (Mean)	Paired sample *t* test	df	*p*
Use of the Internet (n=74)	4.78 [a]	4.69	1.10	73	.27
Use of technology (n=75)	4.32	4.20	.88	74	.38
Ownership of technology (n=75)	4.20	4.27	-.53	74	.60

a. Scale: from 1=strongly disagree, 7=strongly agree.

Scale reliability

Reliability indicates that a scale consistently reflects the results obtained through measurement (Field, 2005). The most common measure of scale reliability is Cronbach's

coefficient alpha, which measures internal consistency based on the correlation among the variables comprising the set. As shown in Table 4-4, both qualifying and monitoring provided an α score of higher than 0.8 (α of the qualifying=.85 and α of the monitoring=.87). For both studies, the values of the corrected item-total correlation are higher than .5, which indicates good internal consistency.

Table 4-4. Scale reliability

	Mean	Standard Deviation	Corrected item-total correlation	Squared multiple correlation
G1: Qualifying (Cronbach's coefficient alpha for the three items scale = .85; n=83)				
Use of technology	4.43 [a]	1.75	.81	.67
Use of the Internet	5.11	1.55	.70	.57
Ownership of technology	4.20	1.58	.64	.44
G2: Monitoring (Cronbach's coefficient alpha for the three items scale = .87; n=86)				
Use of technology	4.35	1.56	.82	.67
Use of the Internet	4.85	1.58	.75	.61
Ownership of technology	4.27	1.63	.70	.50

a. Scale: from 1=strongly disagree, 7=strongly agree.

Comparison of mean scores of the three involvement items between the qualifying and monitoring study

Another paired sample *t* test was employed to examine the difference in involvement with information technology between the qualifying and monitoring studies. Table 4-5 presents there was a significant difference in mean scores of use of the Internet between the two studies (t=2.18, p <.05), whereas no significant difference in mean scores of technology use and ownership. It appears there was a considerable change in respondents' Internet use within a four month time interval.

Table 4-5. Comparison of mean scores of the three involvement items between the qualifying and monitoring study

	G1: Qualifying (Mean)	G2: Monitoring (Mean)	Paired *t* test	df	*p*
Use of technology (n=86)	4.42 [a]	4.35	.53	85	.60
Use of the Internet (n=85)	5.11	4.85	2.18	84	**.03**
Ownership of technology (n=83)	4.20	4.30	-.73	82	.47

a. Scale: from 1=strongly disagree, 7=strongly agree.

Clustering the involvement with information technology

To segment respondent into groups, a hierarchical cluster analysis applying Ward's method with Squared Euclidean Distance was used on the factor scores for the three involvement items (use of the Internet, information technology and ownership of information technology) and three clusters were obtained. The first cluster included 29.1% of the respondents, the second and third accounted for 38.4% and 32.6% each. A significant contribution to differentiating three clusters was found (F (2, 83)=208.67, p<.001) as shown in Table 4-6.

Table 4-6. Differences in mean factor scores across clusters [a]

	n	Mean [c]	F [b]	*p*
Cluster 1	25 (29.1%)	-1.27 [A]	208.67	**.00**
Cluster 2	33 (38.4%)	.97 [B]		
Cluster 3	28 (32.6%)	-.01 [C]		
Total	86 (100.0%)	.00		

a. Clustering on the monitoring data.
b. Analyses were conducting using ANOVA at 2 degrees of freedom.
c. Different letters represent significant group differences at $p < .05$ or less using Bonferroni Multiple Range Test.

Comparison of clusters based on the original involvement items

To evaluate whether the cluster analysis properly classifies respondents significantly (Roehl, 1988), a multiple analysis of variance (MANOVA) was used to

examine the involvement items based on the three clusters (Table 4-7). The results of the MANOVA showed overall significance. Once the significance of the overall solution has been established each of the individual items was examined using ANOVA analyses to compare mean scores of the three clusters. Mean scores were significantly different in the three involvement items. In using these mean scores to characterize the three clusters it appeared that the lowest mean score of involvement with information technology was found in the first cluster and the highest mean score of involvement was found in the second cluster. Therefore, the first cluster is identified the "low involvement" group, and the second and third cluster is "high involvement" group and "middle involvement" group, respectively.

Table 4-7. Differences in mean factor scores across involvement clusters

Involvement with information technology variables	Clusters			Univariate	
	1 n=25	2 n=33	3 n=28	F	*p*
	a	*b*			
Use of the Internet	2.52 [A]	5.79 [B]	4.29 [C]	113.77	**.00**
Use of information technology	2.92 [A]	6.15 [B]	4.85 [C]	98.73	**.00**
Ownership of technology	2.64 [A]	5.64 [B]	4.11 [C]	55.62	**.00**

* MANOVA: $F(6, 162)=41.31$, $p<.001$ based on Wilks'criterion.
* All F tests for one way ANOVA were statistically significant at the .001 level.
a. Scale: from 1=strongly disagree, 7=strongly agree.
b. Different letters represent significant group differences at $p< .05$ or less using Bonferroni Multiple Range Test.

Demographic characteristics on involvement groups

As shown in Table 4-8, the demographic profiles showed that age was significantly different among the three involvement groups ($F(2, 83)=9.10$, $p<.001$). The mean age of the high involvement group was 45 years old and the mean ages of the middle and low groups were 55 and 58. Nonsignificance of other demographic variables

such as gender, income, education, and marital status were observed among the involvement groups.

Table 4-8. Demographic characteristics on involvement groups

	Involvement groups				
	High n=33	Middle n=28	Low n=25	F [a]	*p*
Age (mean)	44.7 [A] [b]	55.2 [B]	57.9 [B]	9.10	**.00**
	Involvement groups				
	High	Middle	Low	X^2 [c]	*p*
Gender	n=33	n=28	n=25		
male	57.6%	57.1%	52.0%	.21	.90
female	42.4	42.9	48.0		
Income	n=31	n=27	n=22		
less than C$40,000	9.7%	3.7%	13.6%	4.45	.35
C$40,000 ~ C$79,999	45.2	29.6	45.5		
C$80,000 or more	45.2	66.7	40.9		
Education	n=33	n=27	n=25		
no bachelor degree	42.4%	44.4%	40.0%	.11	.95
bachelor degree	57.6	55.6	60.0		
Marital status	n=33	n=27	n=25		
single	27.3%	7.4%	12.0%	4.77	.09
married/living- common law	72.7	92.6	88.0		

a. Analyses were conducting using ANOVA at 2 degrees of freedom.
b. Different letters represent significant group differences at $p < .05$ or less using Bonferroni Multiple Range Test.
c. Analyses were conducted using Pearson chi-square tests at 2 degrees of freedom.

Internet use profiles for involvement groups

As shown in Table 4-9, a significant difference was found in years of Internet use among the involvement groups ($F(2, 76)=9.86$, $p<.001$). The average number of years the high involvement group had used the Internet was ten and the middle and low group were

eight and six years. Frequency of Internet use did not differ among the three involvement groups.

Table 4-9. Internet use profile on involvement groups

	Involvement groups				
	High n=29	Middle n=28	Low n=22	F [a]	*p*
Years of using the Internet (mean)	9.6 [A b]	8.1 [A]	6.1 [B]	9.86	**.00**
	Involvement groups				
	High n=32	Middle n=27	Low n=22	X^2 [c]	*p*
Frequency of using the Internet					
less frequent users (less than seven days a week)	15.6%	14.8%	36.4%	5.56	.24
frequent users (everyday)	15.6	11.1	18.2		
more frequent users (several times a day)	68.8	74.1	45.5		

a. Analyses were conducting using ANOVA at 2 degrees of freedom.
b. Different letters represent significant group differences at $p < .05$ or less using Bonferroni Multiple Range Test.
c. Analyses were conducted using Pearson chi-square tests at 2 degrees of freedom.

Travel experience with the destinations based on involvement groups

The results of the travel experience with the destinations are presented in Table 4-10. The sample size of each group increased in the travel experience variables from 86 to 103 because the tests on travel experiences were conducted for trips (17 respondents completed two diaries based on their separate trips). A slight different association was found in whether or not the trip to the destination was a first visit ($X^2(df=2) = 6.57, p<.05$). A majority of the low group (87.1%) had visited the destinations. Seventy-three percent of respondents in the high group and 59% of respondents in the middle group indicated they had been to the destination. The number of times each group had visited the destination was compared using ANOVAs and no significant difference was found.

Table 4-10.Travel experience with the destination based on involvement groups

	Involvement groups				
	High	Middle	Low	$X^{2\,a}$	*p*
First trip to the destination	n=38	n=34	n=31	6.57	**.04**
yes	26.3%	41.2%	12.9%		
no	73.7	58.8	87.1		
	Involvement groups				
	High	Middle	Low	F^{b}	*p*
	n=37	n=33	n=28	1.90	.16
Number of previous trips	2.3 [c]	3.1 [c]	5.0 [c]		

a. Analyses were conducted using Pearson chi-square tests at 2 degree of freedom.
b. Analyses were conducting using ANOVA at 2 degree of freedom.
c. "0" was included in average number of previous trips.

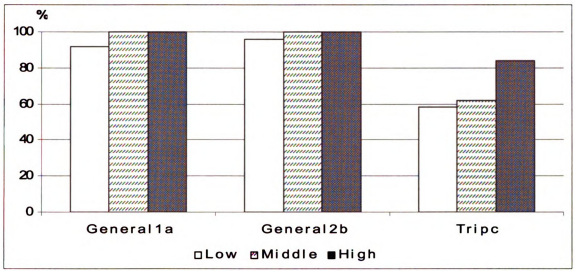
Information technology use based on involvement groups

Figure 4-14 through 4-25 exhibit use of information technology by the three involvement groups at three time phases, two general purposes and a specific trip context. Overall, it appears the use levels of several information technologies for general purposes were higher than for trip purposes. The high involvement group tended to use more technologies than the middle or low involvement groups. Significant differences in use of information technology were found for the Internet, digital cameras, and laptop computers.

Use of the Internet based on involvement groups

A significant association between levels of involvement and Internet use for trip purposes was found ($X^2(df=2)=6.67, p<.05$). As shown in Figure 4-14, for the high and middle involvement groups for general purposes, all respondents reported the Internet was used. Lower levels in use of the Internet for trip purposes than general purposes were observed among the three involvement groups.

Figure 4-14. Use of the Internet based on involvement groups

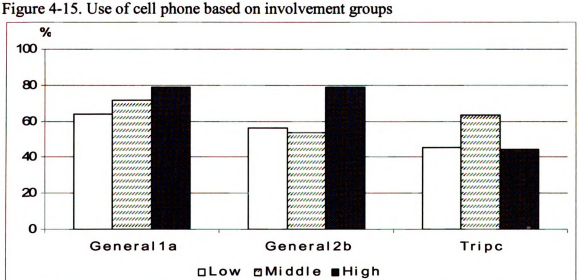


a. (X^2(df=2)=5.00, p=.08); b. (X^2(df=2)=2.47, p=.29); c. (X^2(df=2)=6.67, p<.05)

Use of cell phone based on involvement groups

No associations were found in use of cell phones between levels of involvement. However, as shown in Figure 4-3, cell phones appear to be more used by the high involvement group than the middle and low involvement groups at all three phases (Figure 4-15).

Figure 4-15. Use of cell phone based on involvement groups

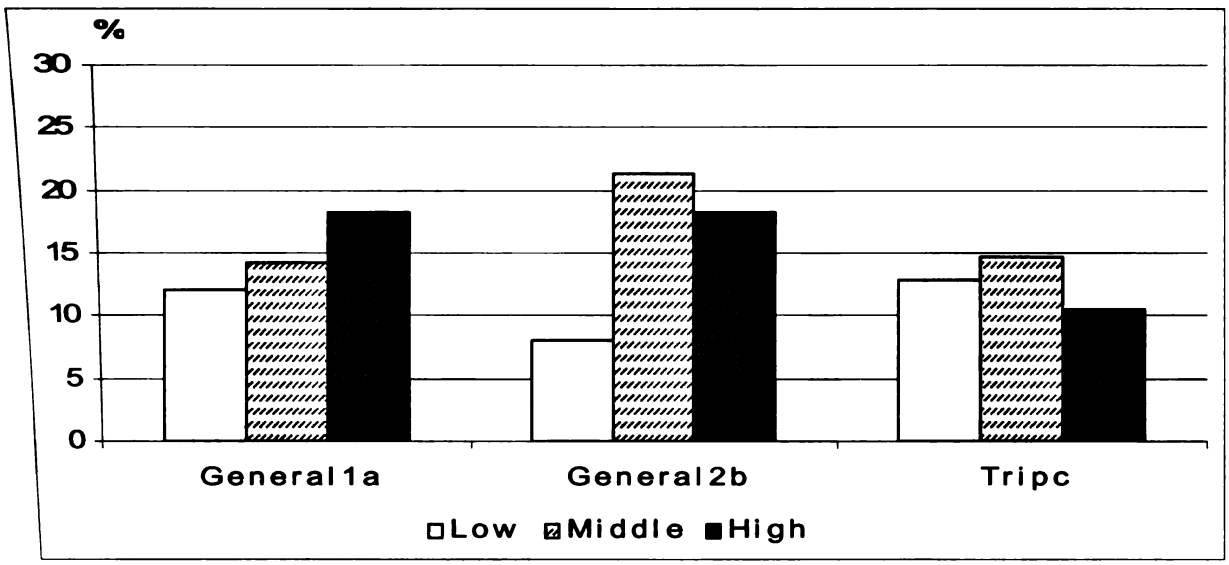


a. (X^2(df=2)=1.56, p=.46); b. (X^2(df =2)=5.15, p=.08); c. (X^2(df=2)=3.31, p=.19)

Use of cell phone with Internet access based on involvement groups

No associations were found in the use of a cell phone with Internet access. For a trip, the low involvement group appears to increase their use of a cell phone with Internet access, whereas the middle and high involvement groups decreased their use (Figure 4-16).

Figure 4-16. Use of cell phone with Internet access based on involvement groups

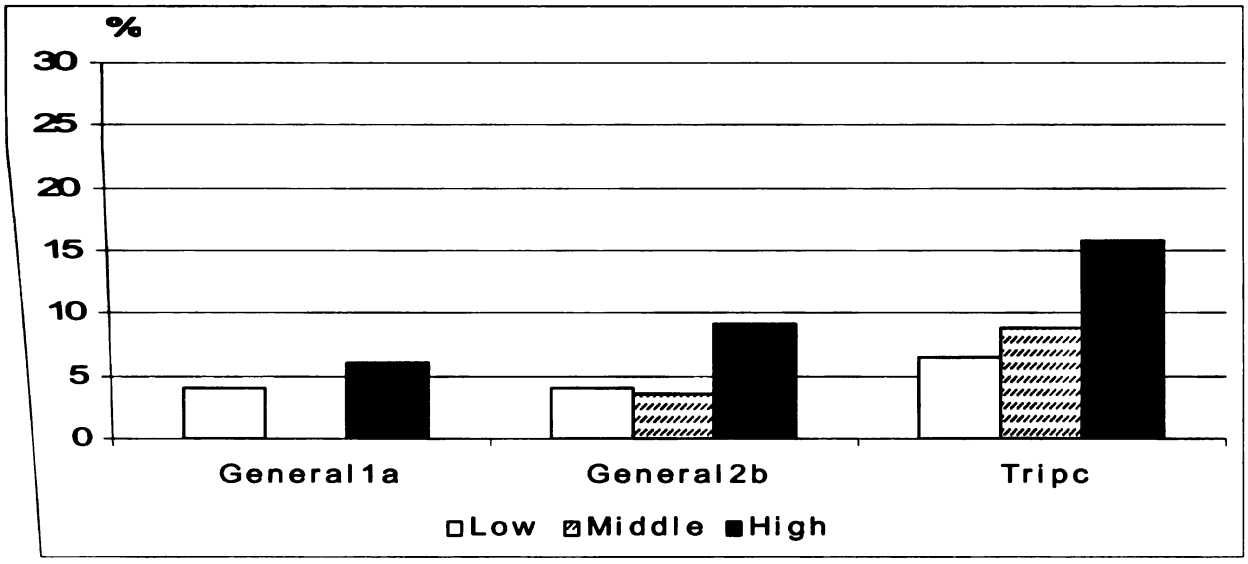


a. (X^2(df=2)=.45, p=.80); b. (X^2(df=2)=1.89, p=.39); c. (X^2(df=2)=.29, p=.87)

Use of cell phone with camera based on involvement groups

No associations were found in the use of a cell phone with camera. For the three involvement groups, use levels of cell phone with digital camera were higher for trip purposes than for general purposes (Figure 4-17).

Figure 4-17. Use of cell phone with camera based on involvement groups

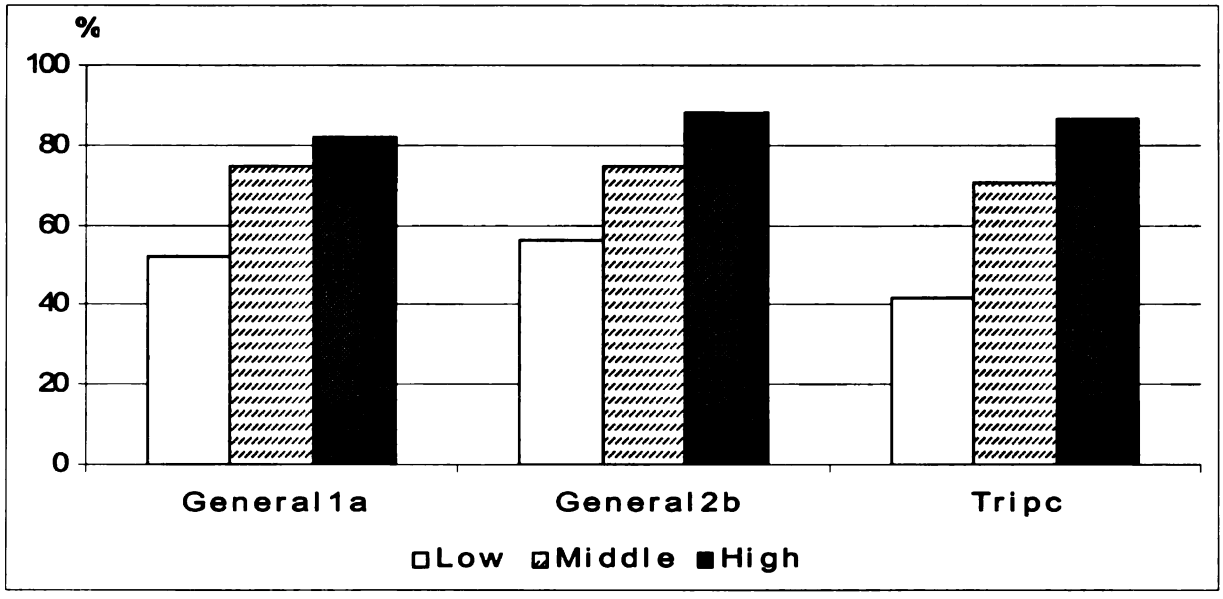


a. (X^2(df=2)=1.68, p=.43); b. (X^2(df=2)=1.06, p=.59); c. (X^2(df=2)=1.74, p=.42)

Use of digital camera based on involvement groups

Significant associations were found in use of digital camera at all three phases. (General 1: (X^2(df=2)=6.47, p<.05); General 2:(X^2(df =2)=7.60, p<.05); Trip: X^2(df=2)=16.0, p<.001). Use levels of a digital camera were accordance with levels of involvement with information technology. Respondents with higher levels of involvement showed higher levels of digital camera use (Figure 4-18).

Figure 4-18. Use of digital camera based on involvement

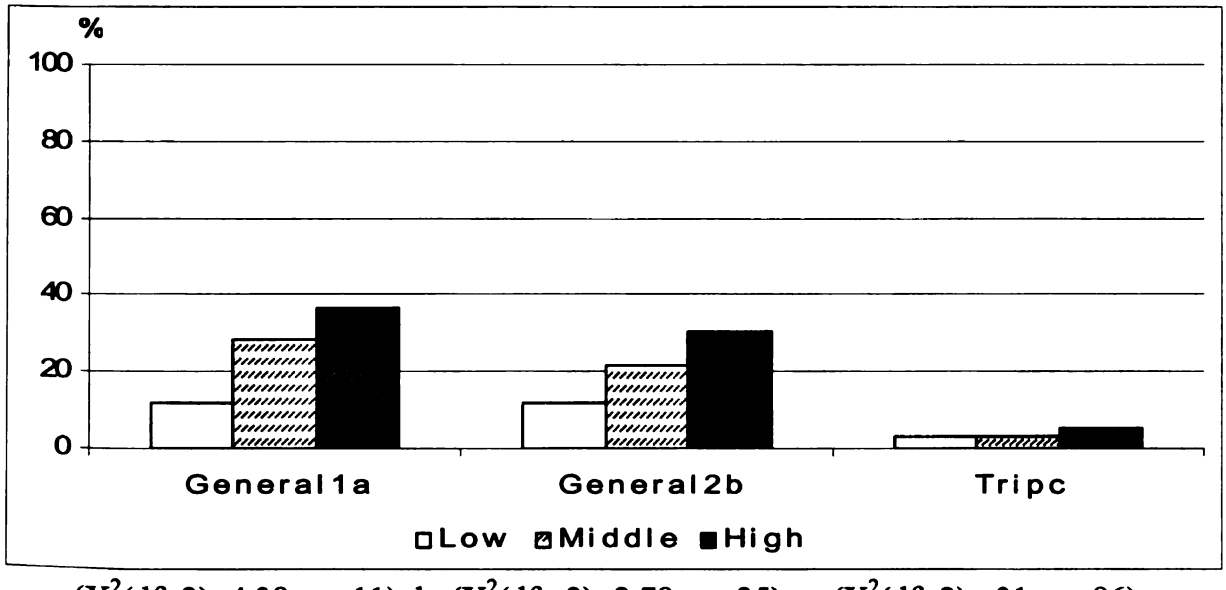


a. (X^2(df=2)=6.47, p<.05); b. (X^2(df =2)=7.60, p<.05); c. (X^2(df=2)=16.0, p<.001)

Use of laptop computer based on involvement groups

No significant associations were found in laptop computer use. Despite nonsignificances in laptop computer use, as shown in Figure 4-19, laptop computer tended to be used more for general purposes than for trip purposes.

Figure 4-19. Use of laptop computer based on involvement groups

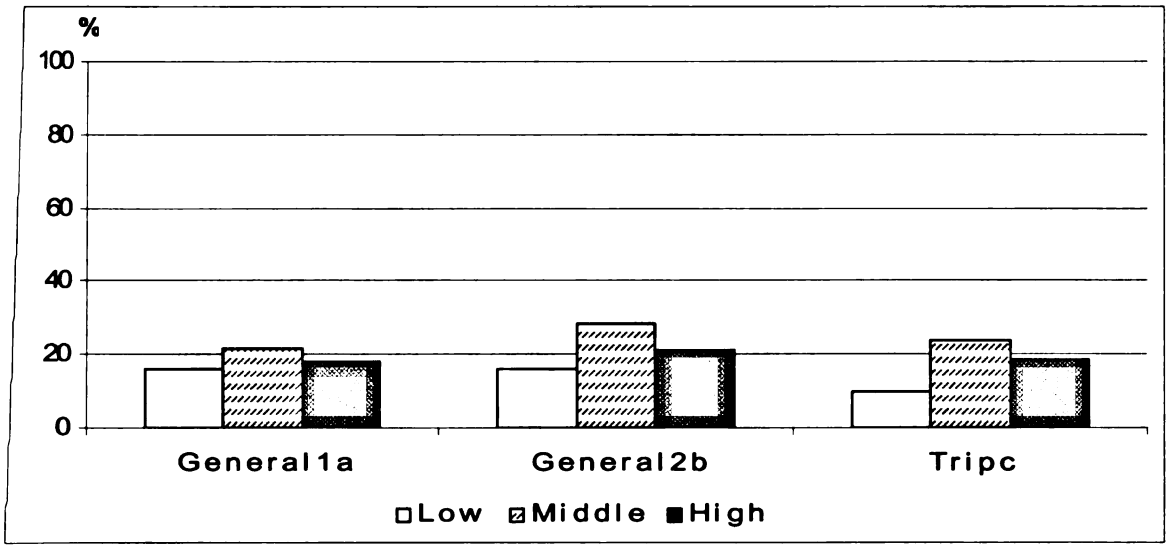


a. (X^2(df=2)=4.38, p=.11); b. (X^2(df =2)=2.78, p=.25); c. (X^2(df=2)=.31, p=.86)

Use of laptop computer with wireless Internet based on involvement groups

Despite nonsignificances in use of laptop computer with wireless Internet, the middle involvement group appears higher levels of use laptop computer with wireless Internet than the high and middle involvement groups for both general and trip purposes (Figure 4-20).

Figure 4-20. Use of laptop computer with wireless Internet based on involvement groups

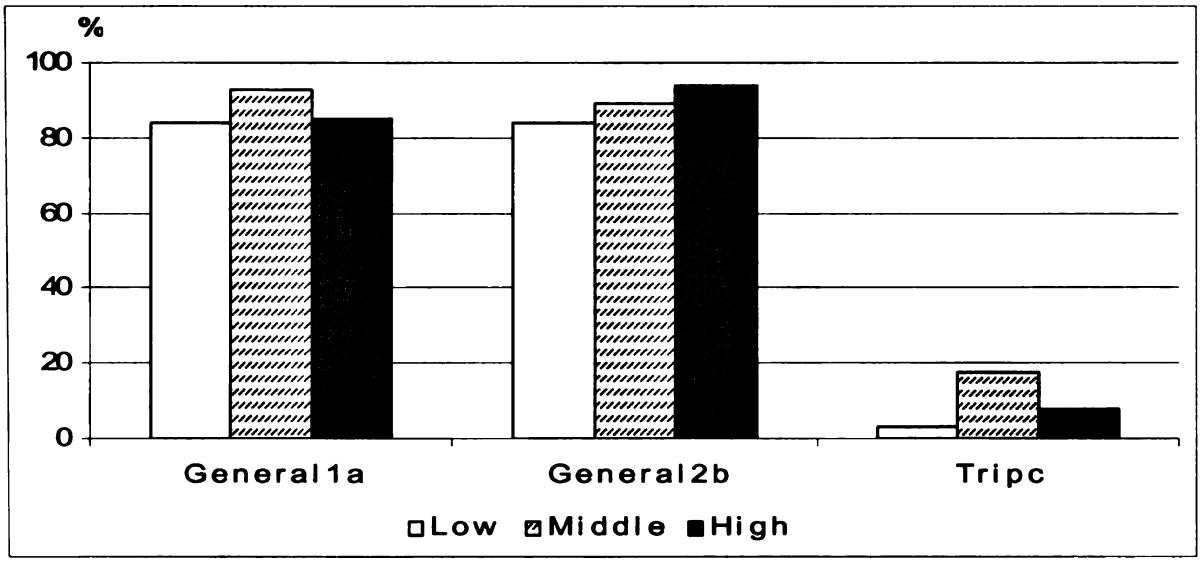


a. (X^2(df=2)=.26, p=.88); b. (X^2(df =2)=1.24, p=.54); c. (X^2(df=2)=2.20, p=.33)

Use of desk top based on involvement groups

No significant associations were found in the use of a desktop. A desk top appears to be more used for general purposes than trip purposes (Figure 4-21).

Figure 4-21. Use of desktop computer based on involvement groups

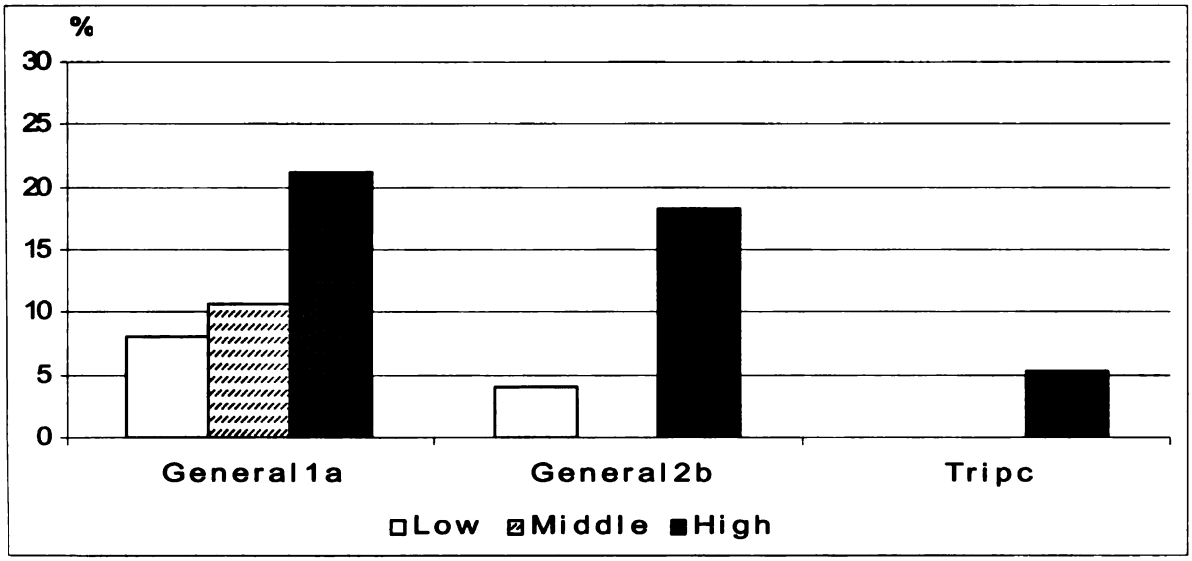


a. (X^2(df=2)=1.20, p=.55); b. (X^2(df =2)=1.50, p=.47); c. (X^2(df=2)=4.10, p=.13)

Use of Personal Digital Assistance (PDA) based on involvement groups

A significant association was observed at general two (X^2(df =2)=7.51, p<0.05) but because of too few cases, the result of chi-square is not reliable. A PDA appears to be used more by the high involvement group than the middle and low involvement groups at all three phases (Figure 4-22). In particular, for trip purposes, none of the middle and low involvement group reported that they brought PDAs with them on trips.

Figure 4-22. Use of Personal Digital Assistance based on involvement group

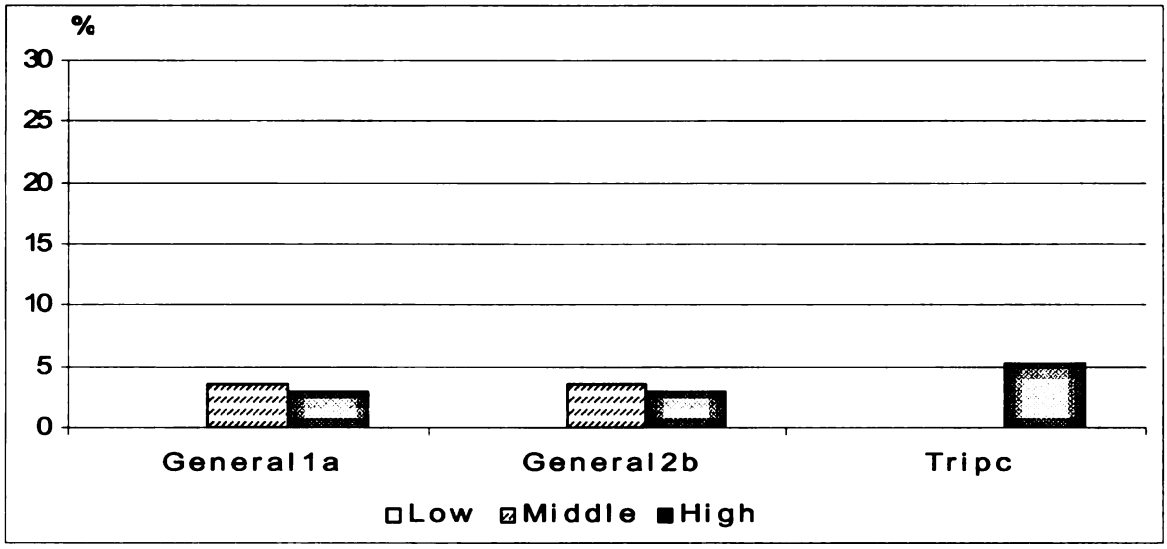


a. (X^2(df=2)=2.43, p=.30); b. (X^2(df =2)=7.51, p<.05); c. (X^2(df=2)=3.50, p=.18)

Use of PDA with Internet access based on involvement groups

No significant associations were found. As shown in Figure 4-23, none of the low involvement group reported a PDA with Internet access was available at all three phases and none of the middle involvement reported that they brought a PDA with Internet access on their trips.

Figure 4-23. Use of PDA with Internet access based on involvement groups

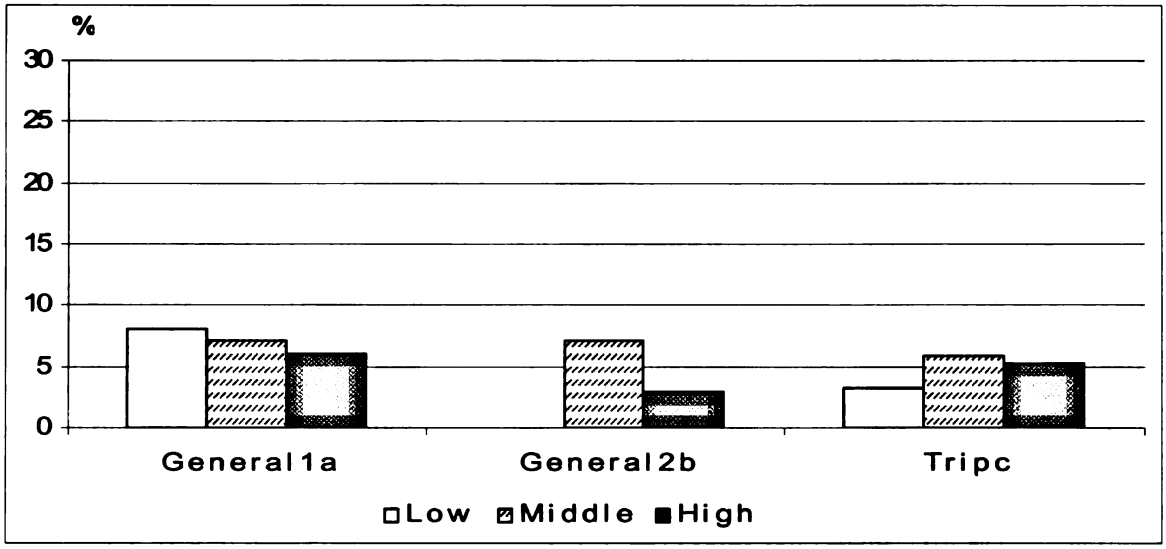


a. (X^2(df=2)=.86, p=.65); b. (X^2(df=2)=.86, p=.65); c. (X^2(df=2)=3.49, p=.18)

Use of Global Positioning System(GPS)/GPS in vehicle based on involvement groups

No associations were observed in use of GPS/GPS in vehicle (Figure 4-24). Overall, low levels of GPS/GPS in vehicle use were observed (less than 10% of each group).

Figure 4-24. Use of GPS/GPS in vehicle based on involvement groups

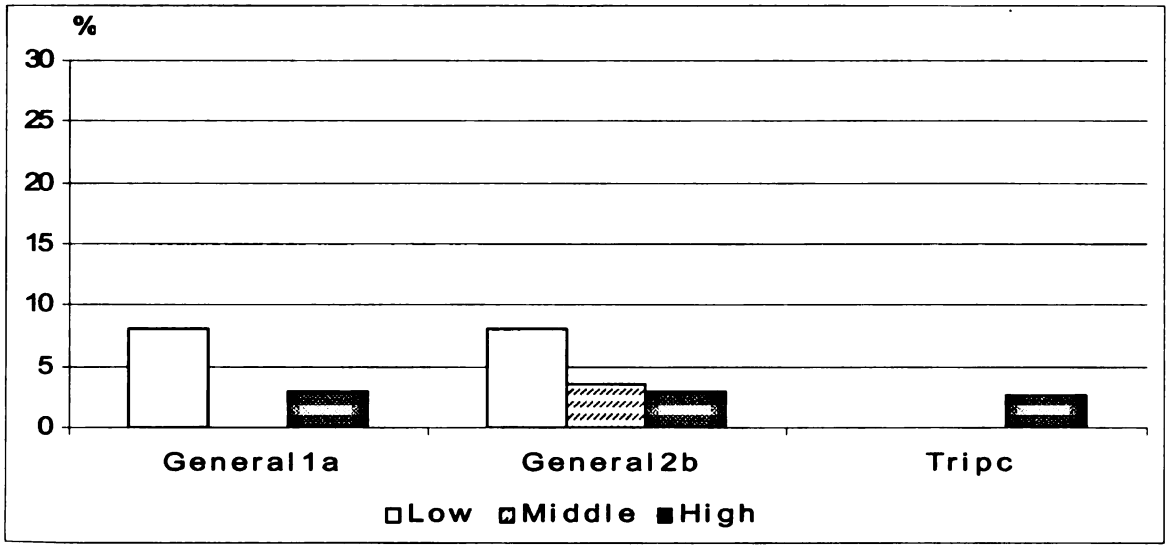


a. (X^2(df=2)=.08, p=.96); b. (X^2(df =2)=2.04, p=.36); c. (X^2(df=2)=.27, p=.87)

Use of Onstar services based on involvement groups

No significant associations were found. In general, Onstar services appear to be used by few people in each group (less than 10%). For a trip purpose none of respondents in the low and middle involvement used Onstar services (Figure 4-25).

Figure 4-25. Use of Onstar services based on involvement groups



a. (X^2(df=2)=2.54, p=.28); b. (X^2(df =2)=.90, p=.64); c. (X^2(df=2)=1.73, p=.42)

5. DISCUSSION AND IMPLICATIONS

An objective of this study was to examine the relationship between involvement with information technology and use of information technology at three time phases. This study focused whether or not any differences existed in information technology use between general and trip specific purposes. It was expected that levels of information technology use were accordance with the levels of involvement with information technology but the results appear that only the use of a digital camera at all three phases and the Internet for trip purposes were significantly associated with involvement in information technology. Therefore, it is concluded that involvement with information technology does not effectively predict information technology use.

An additional expectation of this study was that information technology would be used dynamically for a trip purpose because information technology is projected to bring more information and purchase opportunities to travelers. However, the results showed low levels of information technology use during trips. In the discussion section, the findings will be further overviewed based on four topics. First, findings are reviewed. Second, conclusions are drawn. Third, applications for travel businesses are discussed. Lastly, limitations of this study and suggestions for future study are addressed.

Discussion of Findings

This study was conducted to understand information technology use for general and trip purposes based on involvement with information technology. The expectation was that different levels of involvement with information technology would reflect differences in information technology use.

Involvement with information technology

Research question 1. What levels of involvement with information technology are experienced by travelers?

Involvement with information technology was measured with self-rated Internet use, information technology use and ownership of information technology, and obtained three involvement groups (high, middle, and low). Clustering on respondents was conducted using the factor scores derived from the three involvement items. The three groups differed significantly in the mean factor score. Additionally, comparison of mean scores of the three involvement items displayed significant differences among the three clusters. Commonly for the three involvement groups, level of Internet use was slightly higher than level of information technology use.

Additional information of the involvement groups was provided. Average age differed among the three involvement groups. Younger respondents were included in the high level of involvement group (45 years old) as compared to the middle (55 years old) and low groups (58 years old). No further significances were observed in the demographic profiles such as gender income, education, and marital status of the clusters.

A significant difference was observed in the number of years the Internet had been used, but the frequency of Internet use did not reveal any significant association with the involvement groups. The high involvement group used the Internet on average for ten years, the middle involvement groups used for eight years and the low involvement group used the Internet on average for six years. Even though the high involvement group included younger respondents as compared to the middle and low involvement groups, the number of years using the Internet for the high group was longer than years by the middle and low involvement groups. The results show that considering

information technology, an individual with a high level of innovativeness in Internet adoption is likely to be more involved with other types of information technology.

A higher percentage of the middle involvement group (than the high and low involvement groups) reported visiting the destination for the first time. The destination familiarity may influence the use of information technology and members of the middle involvement group relied more heavily on information technology during their trip.

Use of information technology based on involvement groups

Research question 2. Do differences exist in information technology use for general purposes among different involvement groups?

Research question 3. Do differences exist in information technology use for trip purposes among different involvement groups?

As noted earlier, involvement levels (e.g., low and high involvement) have been found to be a segmentation tool to classify individuals and predict behaviors (Cai et al., 2004). However, the results of this study presented significant associations only in the use of a digital camera for general and trip purposes (general one, two and during trips) and the Internet use for trip purposes among the involvement groups.

Research question 4. Are there differences in use of information technology between a general purpose and trip purpose?

The results of Chi-square tests showed significant associations of information technology use between general and trips purposes. Those who use information technology everyday tend to use it for trip purposes. Overall, Figures 4-2 through 4-13 exhibit information technology is used more for general purposes (General 2) compared to trip purposes (Trip) and only cell phones with camera and Global Positioning System/GPS in vehicles appear to be used more for trip purposes (Trip) than general purposes (General 2).

Conclusions

Because this research study was guided by two main focuses: "whether or not involvement is an efficient predictor of use" and "if there is any difference in use of information technology for travel purposes from use of information technology in everyday contexts", conclusions are made regarding two issues. First, involvement with information technology did not prove to be an effective tool to predict information technology use.

Second, as noted by Wilson (1981) that information seeking is influenced by environmental factors, use of information technology for a trip purpose appears to be influenced by environmental factors in destinations. Despite the capability of information technology to enhance a traveler's experience, the results indicate that people at home relied on information technology more extensively in pursuing a variety of goals than during a trip. The reason can be found with concerns about functional capacities of information technology in destinations, which can inhibit travelers from bringing information technology along on their trips. For example, Internet connection on a mountain is neither constant nor consistent. Another example is that it is expensive or not possible to enable roaming mobile service to international destinations. Also, travelers have a lack of knowledge about specialized devices or services which provide access to a new coverage area such as a remote island or camping area. For example, Onstar services benefit a traveler in a remote area because Onstar services which are safety information services using Global Positioning System (GPS) satellite and cellular technology enable a traveler to link to the OnStar center where real-time advisors and personalized help are available for 24 hours a day, 365 days a year (Onstar by GM, 2007).

It is worthwhile emphasizing that diffusion of information technology for a trip purpose is still at the innovator stage. Use of mobile devices/services in general may be reaching maturity, however still few travelers carry information technology with them on trips due to technical or non-technical issues mentioned above.

In summary, involvement may be an efficient segmentation tool to understand consumer behaviors for general goods or places which are well known and studied in consumer behavior. Information technology use may be better predicted by perceived benefits.

Applications to Travel Market

The results of this research offer several implications for both the information technology industry and travel market. More efforts need to be exercised to remove impediments to information technology use for trip purposes. First, globally complied rules and standards for information technology utilization are needed to transport a home mobile device into vacation destinations.

Second, in many areas telecommunications bandwidths or software tools are inadequate for outbound travelers. Therefore, travel business sectors should ensure that they are able to acquire the technical skills and resources to support travelers' information technology use for better travel experiences.

Last, both utilitarian and hedonic values of information technology should be considered for travelers. Traveling to a destination can sometimes take several days and lots of strenuous moments. Information technologies, which install music, movie or games brought from home, may enhance the quality of the travel experience without concerns about the technical issues.

Limitations of this Study and Suggestions for Future Study

A limitation of this resulted from a small number of panel sample because this study used only eighty-six panel participants who completed all three surveys (qualifying, monitoring, and vacation diary). A second limitation resulted from the classification of involvement group which was measured based on the personal relevance to information technology. This classification did not account for actual time or money spent. It is possible that personal relevance which was rated by respondents is not always parallel to the absolute amount of money or time spent on using information technology. Future research should also incorporate perceived relevance with measurable variables in terms of time and money when examining the effect of involvement with information technology on the use.

CHAPTER V

SUMMARY, DISCUSSION, AND IMPLICATIONS

All three studies (featured in Chapter 2, 3, and 4) provide insights into travelers information source or technology use by adapting concepts introduced in communication and consumer behavior research. The three concepts, tolerance for travel uncertainty, perceived travel risk, and involvement with information technology, were expected to determine types and levels of information source or technology used. The results from the three studies showed few significant associations between traveler trait factors (tolerance for travel uncertainty, perceived travel risk, involvement with information technology) and information source or technology use. Differences between the findings of this dissertation and other studies may be due in part to the specific circumstances being investigated. For example, each proposed model was tested for a situation: (1) when individuals searched for general travel information, (2) when individuals actually used information technology each day during their trips, and (3) when information technology is available in everyday contexts and more specifically for trip purposes.

A discussion encompassing the findings from the three studies within one context is imperative to provide important implications for future information technology design and management for travelers and the travel industry. This chapter provides a summary of findings that the individual studies presented as a milieu for the overall discussion. The limitations of the study and recommendations for future study are also presented.

Summary of Findings

Tolerance for travel uncertainty and travel information sources in nonweb and web formats (Chapter 2)

The findings in chapter 2 suggest that individuals believe it is important to reduce travel uncertainty and at some point before an actual vacation experience a traveler reaches more certainty about travel decisions.

Consistent with Roehl's finding that showed attitudes toward general travel risk perceptions (referred as "travel uncertainty" in this study) display little relationship to decision making behaviors, we also found no significant affect of tolerance for travel uncertainty on information search behaviors. To examine patterns of information source uses by the three tolerance groups (Low-Importance, Low-Need, and High), descriptive analysis using cross tabulation methods showed minimal support for the suggested model by Kellerman and Reynolds (1990). Specifically, the two low tolerance for travel uncertainty groups held higher levels of traditional and web-based information source use compared to the high tolerance for travel uncertainty group. In particular, tolerance for travel uncertainty was positively related to three types of information sources; (1) TV programs, TV commercials, and travel maps in traditional formats; (2) online information provided by destination organizations and (3) travel maps in web formats. The results of the study suggest that those who are more tolerant are more likely to use broadcasted media, travel maps and destination organization websites.

Most information sources showed weak associations in traditional and web formats by the three tolerance for travel uncertainty groups. The weak associations of information sources in traditional and web formats indicate that web-based information sources appear not to be replacing but instead complementing traditional information

sources. For example, mass media or past experiences were preferred in traditional formats, while business travel information was preferred in web formats.

Perceived travel risks and actual use of information technology during trips (Chapter 3)

This study identified the influential factors on perceived travel risks: past travel experience, purpose of travel, travel party and travel motivations. The data failed to support the proposed model, which suggested that perceived travel risks would be reflected in different information technology uses during trips. Possible reasons for these results are (1) overall, low levels of travel risks associated with the vacation destinations were perceived by the respondent; (2) respondents exhibited low levels of advanced high-tech device uses; and (3) technical and non-technical issues were evident during the vacation studied, which prohibited travelers from staying electronically connected in destinations.

Five significant findings were provided by this study. First, a high perceived travel risk group did not exist on actual trips. Second, while half of the respondents perceived high levels of satisfaction risk the majority of respondents perceived very low levels of political, terrorism, physical, financial, psychological, social, money, and mechanical risks. Third, the finding that travelers en route to destinations hold high levels of satisfaction risk indicates that travelers cognitively question their travel decisions or the credibility and usefulness of information they used for travel planning. Fourth, an insignificant association between tolerance for travel uncertainty and perceived travel risk showed that uncertainty and risk are not equivalent concepts amongst these respondents. Last, traveler adoption of advanced high-tech devices or services is placed at the

innovator stage and few travelers used or carried information technology with them on the trips studied (taken in 2006).

Information technology involvement and use in everyday contexts and for specific trips purposes (Chapter 4)

The results of this study suggested involvement with information technology was not an effective tool to predict information technology use, particularly use for trip purposes. As noted by Wilson (1981), information seeking is influenced by environmental factors, our results support that the use of information technology for trip purposes appears to be influenced by environmental factors and technology connectivity in destinations. Despite the capability of information technology to enhance a traveler's experience, the results indicate that individuals rely on information technology more extensively at home in pursuing a variety of goals, than on vacations. This use distinction suggests concerns about functional capacities of information technology in destinations or places away from home or work environments, which inhibit individuals from bringing information technology on vacations or that individuals choose to leave technology at home while they vacation.

Discussion

Based on the theoretical frameworks introduced in communication and consumer behavior research, the proposed models suggest that information source use for general trip planning, actual use of information technology during a trip, and information technologies available at home and on vacation can be somewhat influenced by three constructs: tolerance for travel uncertainty, perceived traveler risks, and involvement with information technology. Results from the three studies illustrate, however, that these

travelers' information source or technology uses are directed by trip purposes and environmental factors.

Several observations are made based on the findings of each study.

1. **Travel uncertainty which is experienced before a set of core trip decisions was found unrelated to information search behaviors.**

According to Jeng (1997), travelers exhibit three sets of decisions based on the timing of travel decisions: (1) "a set of core decisions" made before a trip, including when and where to travel, where to stay overnight and a travel route; (2) "a set of secondary decisions" made before departure including choice of attractions and activities; and (3) "a set of en route decisions such as where to eat, shop and stop for rest." Decisions also continue during a trip.

The first study of this dissertation (Chapter 2) focused on travel decisions, which is a premise for Jeng's three sets of decisions. In other words, before individuals make "a set of core trip decisions", individuals first face a decision about traveling (whether to go somewhere). Travel uncertainty was defined in this study is being experienced before a travel decision is made or when a travel decision is made but specific core decisions have not made.

2. **Information search is a continuous process, even when the purchase is not foreseen.**

Inconsistent with interpersonal communication research, this study found that tolerance for travel uncertainty displayed little relationship to decision making behaviors. Andereck and Caldwell (1993) suggested that those who are highly motivated to travel are more likely to perceive an importance in searching for travel information. Therefore, a strong need for information use for future trip planning may be more dominant than an

individual's disposition (tolerance for uncertainty). Even though a positive relationship between tolerance for travel uncertainty and information search was not observed, the findings of this research confirm that information search is a continuous process, even when the purchase is not foreseen as suggested by Claxton and colleagues (1974).

3. Respondents appeared to reduce travel risks by decreasing the purchase risk or by shifting to a type of perceived risk which is more tolerable.

A majority of studies on perceived risks stress that information search is a risk reliever (e.g., Hugstad et al., 1987; Murray,1991; Locander & Hermann, 1979; Lutz & Reilly, 1973), however, several studies also suggest that the relationship between perceived risk and the amount of information acquired is arguable and there is no direct evidence showing that high perceived risk consumers seek greater amounts of information (e.g., Arndt, 1967; Cox 1967; Gemunden, 1985; Mitchell & Greatorex, 1993).

Popielarz (1967) provided four types of risk reduction approaches: (1) decreasing the probability of failure for a purchase; (2) shifting to a type of perceived risk which is more tolerable; (3) postponing or canceling the purchase; and (4) making a decision and committing to somehow managing the unresolved risk. Roselius (1971) examined consumers' losses (i.e., time loss, hazard loss, ego loss, money loss) and found that brand loyalty and the purchase of a well known brand, which represent Popielarz's first two risk reduction strategies were found to be the most common types of risk relievers used by consumers. Consistent with Roselius' finding, the results of the study discussed in Chapter 3 show that travelers used Popielarz's first two risk reduction strategies (decreasing the probability of failure for a purchase, shifting to a type of perceived risk which is more tolerable). The respondents' traveled mostly within their own country, 19 travelers reported they traveled within the USA and 10 travelers' destinations included

Europe, Mexico, Thailand, Cuba, and Africa. The result also showed three-fourths of the low risk and half of the risk neutral groups were repeat travelers to the destinations. Respondents appeared to avoid risky destinations to decrease the probability of purchase failure and respondents also held high levels of satisfaction risk, which may be more tolerable risk than other types of risk. Based on Andereck and Caldwell's finding (1993), it can be assumed that during a trip, repeat visitors would be more likely to rely on internal search of information, rather than external information using information technologies.

4. Low levels of perceived risks did not entail external information search using information technology during trips.

Another discussion point is the cost-benefit relationship in information search as a risk reduction strategy. Roehl (1988) mentioned that "in situations viewed as having low levels of perceived risk, the cost of information search relative to the benefits to be accrued from that search is high. In such situations information search will likely be limited. Conversely, the benefits to be gained through information search in high risk situations make the cost of such search worthwhile" (p. 17). From the two reasons discussed, no further external information search using information technology may be necessary during trips on which low levels of travel risks were perceived.

Portable information devices seem to be pervasive in the 'tourist's flexibility' (Perkins & Thorns, 2001) and 'tourist's mobility' (Hoffman et al., 2004). Information technology allows for the enhancement of daily travel plans including learning about a local festival, changing subdestinations, or finding dining in independent restaurants. Also, information technology is economical and essential for travelers who are concerned about excessive phone charges when travelers make phone calls from hotels.

5. Despite the well known benefits that information technology provides to travelers, information technology appeared not to be actively used on vacation trips.

Chapter 4 results presented that involvement with information technology was not an effective predictor of information technology use for trip purposes. The first explanation can be that adoption of advanced information technology is at an innovator stage. For example, in everyday contexts, high percentages of respondents were observed using desktop computers, cell phones and digital cameras, but advanced high-tech devices such as cell phones with Internet access or camera, PDA with/out Internet access, Onstar Services, and GPS/GPS in vehicles were used by fewer respondents.

The second explanation can be that technological problems in using information technology on vacations occurred. The results of study discussed in Chapter 4 demonstrates that Internet use and information technology, besides a cell phone with camera, appears to be used more at home or work than for trip purposes. This finding also suggests that large consumer segments are not using information technology, in particular the advanced high-tech products such as Onstar Services, GPS/GPS in vehicles and cellular phones with Internet access.

In general, the reliability of information technology has been improved and these technology improvements positively affect consumers' satisfaction with information technology (Hoffman et al., 2004). Travelers' comments offered in open-ended questions in the surveys illustrate that the travelers' interface with information technology must be improved to make the devices/services more reliable across geographic areas. Selected traveler's comments are discussed according to seven dimensions.

1) Accessibility

"The location we stayed at did not have Internet access. Had there been access I am

sure we would have used it daily"; "There was no service for cell phones."

These comments from travelers are illustrative of poor or missing accessibility of the Internet or phone services in destinations visited.

2) Currency of available information

"Internet access was available at some commercial campsites. But some websites for tourist information were not regularly updated."

One benefit of Internet services is to obtain up-to-date information on construction and detours, accommodations, local events or attractions. Also, travelers want to take advantage of last-minute travel opportunities with lower prices offers for airline tickets and hotel rooms. However, this comment demonstrates that some travel businesses do not manage their websites efficiently as an information tool.

3) Promotion of Internet access/wireless

"In retrospect, we decided we should have taken our laptop computer. We didn't know in advance there would be high speed Internet service available in our hotel room in Waikiki. We also could have taken advantage of business centers in our hotels in Calgary."

This comment indicates the lack of promotion of Internet services in destination or businesses. This comment indicates that Internet services can be an amenity that may influence traveler's decisions about accommodation choices and enhance traveler experiences.

4) Information about local events

"The Internet was invaluable in gathering information on what tours to take, what restaurants to eat in, when to do certain activities, to get the most out of an

experience."

This comment emphasizes that websites designed with detailed information on destinations will result in greater benefits to travelers and more e-commerce.

5) Relative advantage

"We didn't use the Internet much because we found brochures and pamphlets of attractions very helpful."

This comment indicates the lack of awareness of the relative advantage of Internet services for travel products/services such as personalized information and multi-tasking functions, which allows travelers to enter personal interests and demand all the components of travel within a single website including booking flights, renting cars, and reservation of hotel rooms.

6) Technological problems

"Accessing Internet sites via Blackberry still not satisfactory - too long to download, too small screen, too time consuming and inflexible."

Travelers express difficulties in using the information technology devices and services. These technological issues prevent traveler from using information technology.

7) Lack of need for various services

"We have a cell phone but use it for mostly emergencies."

Information technology is a multi-tasking source which provides rich information contexts, interactive communication options, and customized information. However, for a trip purpose, people do not appear to use the multi-tasking sources of the technology.

In conclusion, no other study has tested the influences of individuals' dispositions toward travel or information technology on the extent to which sources or technologies

are used at multi-stages of a trip. This study was inspired by studies which have examined personal trait factors and information source use. In general, the results of this dissertation differed from the findings of other studies. For example, the results of study discussed in Chapter 2 showed two factors of tolerance for travel uncertainty, which is inconsistent with findings by Kellerman and Ryenolds (1990) and Daniel and Norman (2001). Also, while Kellerman and Reynolds (1990) found that tolerance for uncertainty was negatively related to information search, this study did not fully support the negative relationship with information search.

Roehl and Fesenmaier (1992) measured perceived travel risk on recent trips without distinguishing travel uncertainty and risk. They presented three travel risk groups, the risk-neutral group, the functional-risk group and the place-risk group and the uses of traditional information sources, while this dissertation investigated information technology use based on the two travel risk groups (the low risk and risk neutral groups). Also, a clear distinction between uncertainty and risk was shown in Chapter 3.

A number of studies have shown explosive growth of information technology use however, the results of study discussed in Chapter 4 illustrated that information technology use especially for a trip purpose is facing challenges and suggested efforts that should be made to remove technical and non-technical problems in using information technology in vacation destinations.

Implications

In addition to determining statistical significances in the study results, researchers should also consider the utility of findings (Fall, 2000). The findings from the three studies did not meet the expectations based on the suggested models and theories and

thus, predicting information source and technology uses for trips was not as fruitful as expected. However, the panel sample that shared information and technology uses over time provides interesting and useful insights. This study is one of very few that examines decision making and information uses over multiple phases of a vacation, provides important findings to understanding travelers' needs, and offers direction on information strategies for the tourism industry. Next, theoretical implications explain the contributions of this study to related studies, followed by managerial implications for the travel and tourism industry, as well as technology and communication firms.

Theoretical implications

Previous research studies carefully examined the various effects of uncertainty (Daniels & Norman, 2001) and risk (e.g., Han, 2005; Maser & Weiermair, 1998; Mitchell et al., 1999; Reisinger & Mavondo, 2005; Roehl & Fesenmaier, 1992. Sonmez & Graefe, 1998a; 1998b; Sonmez et al., 1999) on travelers' behaviors. However, outcomes of the research differ from the results of this study possibly due to several differences in the identified measurements, the measurement point in time, and the situations in which uncertainty and risk were present.

This dissertation is different from previous studies in these respects. First, previous studies have had no conceptual distinction between concerns about vacations in general and an actual vacation to a specific destination. This research stressed that travel uncertainty (general cognition) and risk (context specific cognition) should be defined differently. For example, uncertainty should be used in situations where there is a lack of knowledge about an event, whereas risk is used when the probabilities of all possible

outcomes and specific undesirable concerns regarding the future are known to the decision maker, such as financial risk and social risk.

Second, based on the definition of uncertainty and risk, uncertainty perception is suggested as a measurement in situations in which no specific outcome can be predicted, whereas risk perception is a measurement for when possible losses or hazards can be anticipated. Third, Roehl and Fesenmaier (1992) suggested that perceived risk should be measured in a specific situation or site to improve the validity of the questionnaire. This research measured uncertainty regardless of actual vacation planning in the near future and perceived risk was measured en route to a destination. The difference between uncertainty and risk discussed in this dissertation suggests that separate operational measurements for travel uncertainty and risk should be used in an array of frameworks.

Very few studies in the tourism research have used panel data sets. This study examined travel uncertainty and risk in different time phases and this occasions. Further, the studies examined cognitive variables like travel uncertainty and risk over time. Additionally, the panel provided analysis between trip purposes compared to general uses of information technology.

Managerial implications

The results of study discussed in Chapter 2 emphasized that broadcast advertising should consider two factors: (1) "hedonic information need" (Vogt, 1993), which captures consumers' attention and stimulate interests, and (2) "functional need" (Vogt, 1993) which helps consumers narrow their choices and to establish "brand loyalty" based on TV images. Additionally, the Internet was observed as a significant communication channel between travelers and travel businesses or destination organizations. The

findings provide focus to communication contents to further consider travel uncertainty and to present detailed information regarding accommodations, activities, transportations, weather, and culture, which ultimately help travelers reduce uncertainty about vacations.

As discussed in Chapter 3, travelers en route to a destination perceive high levels of satisfaction risk, which indicates that travelers question their decisions which were based on information acquired at home or during pretrip phases. Information technologies have changed consumers' knowledge, attitudes, and behaviors (Wang et al., 2000). The Internet provides a great deal of information which increases consumers' expectations (Murphy & Tan, 2003; Raymond, 2001). Therefore, it is crucial for the travel industry to provide excellent technology services. Company profitability (e.g., technology service providers) will depend on whether the provided services meet travelers' expectations in an effort to satisfy consumers and gain their loyalty.

It is well known that information communication technology has gained its importance from a growing desire by travelers' for electronic connectivity while en route. For example, mobile technologies provide customized and personalized web services for tourists who inquire about available flights, arrange tickets, and pay for services (Pagiavlas & Marburger, 2005). Many studies have tended to stress only the benefits of information technology. However, this research also unveils barriers with the actual use of information technology on trips.

The results of this research identified issues that travelers experience with information technology during trips and it is suggested that more efforts should be made to remove impediments to the use of information technology for trip purposes. For example, global compliance with telecommunication rules and standards are needed to

transport a home or localized mobile device into a vacation destination. Travel destinations should ensure that they are able to provide wireless services to the whole community, which will enhance traveler mobility and flexibility.

Customers have expectations for information technology devices and services. For example, PDA users expect high-quality PDAs with a large screen, long-life battery, compact size and mixture of PDA and cell phone functions (Mingxia et al., 2006). Information technology providers must provide these preferred functions into their product design. Also, Internet services provided by information technology should be consistent and constant en route and available with detailed information on construction and detours, accommodations, local events or attractions.

Limitations

Although this study provides significant insights into information source and technology use for traveling, the study needs to be considered in light of limitations associated to this study. The first limitation is found in the panel data used in this study, which allows deeper and thorough understanding of fewer people in natural circumstances. We may not supported hypothesized relationships because of the small sample and low variation in trip types, destinations, and durations.

The second limitation is the sample generalizability. This study included only Canadians and in this circumstance, the influence of culture on tolerance for travel uncertainty should be considered as argued by Money and Crotts (2003). Hofstede (1980) examined the influence of cultures and the levels of uncertainty on decision making after the information has been gathered. One of Hofstede's (1980) dimensions to understand a culture was tolerance for uncertainty. According to Hofstede's Uncertainty Avoidance

Index (UAI) (1980), Canada is ranked at 48 as compared to the world average of 64 and is considered a low ranked culture on the Uncertainty Avoidance Index, which means that Canada holds high level of tolerance for uncertainty.

The third limitation is found in the lower levels of information technology availability to the respondents. The respondents' ages were ranged from 14 to 84 years old with the mean 49 and median 51. The respondents appear to be older and may not be as active with information technology compared to a younger sample.

The fourth limitation is found in the lower levels of perceived travel risk. The reason can be found with age as suggested by Kogan and Wallach (1964), which have indicated that older individuals take fewer risks than younger individuals. The other reason can be explained by destination choices. As explained earlier, the respondents' destination(s) were mostly within Canada, 19 travelers reported they traveled within the USA and 10 travelers' destinations included Europe, Mexico, Thailand, Cuba, and Africa. In addition, more than half of respondents have been to the destinations. Consequently, the familiarity with destination would diminish degree of perceived travel risk and need for additional information search using information technology use during trips.

The last limitation is found in the panel data used in this study, which allows deeper and thorough understanding of fewer people in natural circumstances. We may not supported hypothesized relationships because of the small sample and variation in trip types and destinations.

Suggestions for Future Research

Suggestions for future research are synthesized by integrating individual studies discussed in Chapter 2, 3, and 4. First, additional research is needed to replicate this study

over heterogeneous travelers with various national, cultural, social, and ethnical backgrounds to examine the influence on the nature of tolerance for travel uncertainty.

Second, perceived risk is situational specific and information search during trips can lead to new risk calculations. Therefore, it is recommended that future research repeatedly measure perceived travel risk in different situations such as before trip, on trip, and after arriving at destination and grasp the changes in degree and types of perceived risk.

Third, there is a barrier to examine outbound travelers and their use of information technology for a trip purpose because consumers experience difficulties using information technology due to technical and financial issues when traveling abroad. Therefore, it is suggested that future research delimits destinations with inbound travelers to examine the use of information technology in a more constrained geographic area.

Lastly, a re-examine of the effect of involvement with information technology on information technology use is suggested. A future study should examine by measuring actual involvement with information technology in terms of the time, intensity, or money as examined by consumer behavior researchers (e.g., Engel & Blackwell, 1982; Havitz & Dimanche, 1990; Kim et al., 1997; Stone, 1984).

Final Comments

The problem this research addressed was the role and impact of travelers' perceptions on information source and technology use. This research was an attempt to provide insights into how individual's tolerance for travel uncertainty affects their use of travel information sources, including both traditional and web-based sources for travel planning. Also, the influence of risk perception on information technology use on

vacation was analyzed. Further, this study sought to understand the effect of involvement with information technology on the interplay between general use of information technologies and specific use of information technologies for actual vacation experiences.

In closing, we observed that people at home relied on information technology more extensively in pursuing a variety of goals than a trip purpose. Technical and non-technical issues in using information technology in a vacation destination prohibit travelers from using and benefiting from information technology. With careful planning and management, these issues and barriers can be resolved. Improvements are certainly needed in information technology applications and wired environments for travelers. It is expected that the tourism and communication industries will need to forge partnerships to better serve travelers to enhance the adoption of not only information technology, but also the services provided by the devices.

APPENDICES

APPENDIX A: QUALIFYING STUDY

This questionnaire is designed to provide information on your vacation travel planning and experience, Internet use, and use of other common technology. In addition there are a few questions that will help us describe characteristics of study participants. Your individual responses will be kept strictly confidential. When finished, please press the submit button at the bottom of this questionnaire. You will be entered in a draw for a chance to win a prize ($250 value).

Part 1: Travel Planning & Experience

1. Would you describe yourself as a well traveled person or a skilled traveler? Please indicate your level of agreement or disagreement with the following statements. (Mark one response for each)

	Strongly Disagree						Strongly Agree
I CONSIDER MYSELF WELL TRAVELLED	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
I AM A SKILLED TRAVELLER	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○

2. In the past twelve months, how many short overnight vacations and long overnight vacations have you taken? (Please enter a number or a "0" if you have not taken a trip)

	HOME PROVINCE	IN CANADA	IN USA	ELSEWHERE
SHORT OVERNIGHT TRIPS (2 - 4 DAYS)				
LONG OVERNIGHT TRIPS (5+ DAYS)				

3. People plan their trips in different ways. Please select the phrase that best describes how you planned your last vacation. (Mark only one)

○ I PLANNED MY ENTIRE TRIP WELL IN ADVANCE

○ I PLANNED MOST OF MY TRIP EN ROUTE TO THE DESTINATION

○ I PLANNED MOST OF MY TRIP AT HOME AND FILLED IN THE DETAILS AFTER I ARRIVED

○ I PLANNED MOST OF MY TRIP WHEN I REACHED MY DESTINATION

○ I TOOK MY TRIP WITHOUT MUCH PLANNING

4. Please select the phrase that best describes your role in decision-making for your last vacation. (Mark only one)

- I WAS THE PRIMARY DECISION-MAKER ABOUT VACATION PLANNING
- I SHARED DECISION MAKING ABOUT VACATION PLANNING
- I DID NOT PARTICIPATE IN DECISION MAKING ABOUT VACATION PLANNING

5. Please indicate if you are planning any vacation trips in the next 12 months and the likelihood that you will take the trip.

Destination	Likely departure month	First time visit	Likely to Go	50-50	Not Likely to Go
		Yes / No			
		Yes / No			
		Yes / No			
		Yes / No			
		Yes / No			
		Yes / No			

6. When planning a vacation, before leaving home, there are many different sources of information that people use to find out about vacation destinations. Please indicate how likely you are to use information from the sources listed below.

Information Source	Definitely Would Not Use			Maybe Use			Definitely Would Use
NEWSPAPER/MAGAZINE ARTICLES	1	2	3	4	5	6	7
NEWSPAPER/MAGAZINE ADS	1	2	3	4	5	6	7
TELEVISION PROGRAMS	1	2	3	4	5	6	7
TELEVISION COMMERCIALS	1	2	3	4	5	6	7
RADIO COMMERCIALS	1	2	3	4	5	6	7
CAA/AAA OR OTHER MOTOR CLUB	1	2	3	4	5	6	7
GUIDE BOOKS (FODOR'S, LONELY PLANET, ETC.)	1	2	3	4	5	6	7
TRAVEL AGENCIES	1	2	3	4	5	6	7
TOUR OPERATORS	1	2	3	4	5	6	7
DESTINATION'S OFFICIAL PUBLICATIONS	1	2	3	4	5	6	7

DESTINATION'S OFFICIAL WEB SITE	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
TRAVEL RESERVATION WEB SITES (TRAVELOCITY, EXPEDIA ETC.)	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
Information Source	Definitely Would Not Use			Maybe Use			Definitely Would Use
PRINTED INFORMATION FROM WEB SITES	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
MY PAST EXPERIENCE	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
ADVICE FROM FAMILY	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
DESTINATION'S OFFICIAL TOLL-FREE TELEPHONE NUMBER	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
CHAMBER OF COMMERCE WEB SITE	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
CONVENTION/VISITOR BUREAU WEB SITE	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
ADVICE FROM FRIENDS	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
ATTRACTION WEB SITES	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
ATTRACTION BROCHURES	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
ACCOMMODATION WEB SITES	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
AIRLINE WEB SITES	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
ROAD MAPS	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
ONLINE MAPS (MAPQUEST, ETC.)	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
VISITOR INFORMATION CENTRES	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○
OTHER	1 ○	2 ○	3 ○	4 ○	5 ○	6 ○	7 ○

Please describe:_____

_____

Part 2: Information Technology Use

7. In the past 12 months, have you used the Internet for personal or work reasons?

○ No IF NO, PLEASE SKIP TO QUESTION 8

○ Yes IF YES, HOW LONG HAVE YOU BEEN USING THE INTERNET?

_____ (NUMBER OF YEARS)

a. Do you access the Internet from: (check all that apply)

☐ HOME ☐ WORK ☐ SCHOOL ☐ WIRELESS LAPTOP ☐ CAFÉ ☐ PUBLIC LIBRARY

☐ A WIRELESS HAND-HELD DEVICE (PHONE, PDA) ☐ OTHER PLACES: SPECIFY _____

b. How often do you go online during a typical week? (mark only one response)

○ SEVERAL TIMES A DAY ○ 6 DAYS A WEEK ○ 3-4 DAYS A WEEK ○ OTHER: SPECIFY

○ ONCE A DAY ○ 5 DAYS A WEEK ○ 1-2 DAYS A WEEK _____

c. In the past 12 months have you used the Internet to plan a vacation or research a vacation destination?

○ No ○ Yes If yes, what type of travel information do you look for on the Internet? (check all that apply)

☐ FLIGHT/AIRLINE (PRICES, SCHEDULES)

☐ OTHER TRANSPORTATION (FERRIES, BUS, TRAIN)

☐ ATTRACTIONS/SIGHTSEEING (MUSEUMS, MONUMENTS)

☐ ACTIVITIES AT DESTINATION (SKIING, HORSEBACK RIDING)

☐ EQUIPMENT USED FOR TRIPS (SPECIALTY ITEMS, CLOTHES, GUIDE BOOKS)

☐ ACCOMMODATION INFORMATION (PRICES, FACILITIES)

☐ EVENTS (SPORTING, FESTIVALS, CONCERTS, THEATRE)

☐ TRAVEL PACKAGES (ALL INCLUSIVE, CRUISE, SEMI-INCLUSIVE)

☐ LOCAL/REGIONAL TOURS

☐ OTHER, PLEASE DESCRIBE: _____

d. In the past 12 months, have you used the Internet to book/purchase any aspect of a vacation?

○ No ○ Yes If yes, how many times? _____ Which aspects? (check all that apply)

- ☐ FLIGHT/AIRLINE
- ☐ OTHER TRANSPORTATION (FERRIES, BUS, TRAIN)
- ☐ ATTRACTIONS/SIGHTSEEING (MUSEUMS, MONUMENTS)
- ☐ ACTIVITIES AT DESTINATION (SKIING, HORSEBACK RIDING)
- ☐ EQUIPMENT USED FOR TRIPS (SPECIALTY ITEMS, CLOTHES, GUIDE BOOKS)
- ☐ ACCOMMODATION
- ☐ EVENTS (SPORTING, FESTIVALS, CONCERTS, THEATRE)
- ☐ TRAVEL PACKAGES (ALL INCLUSIVE, CRUISE, SEMI-INCLUSIVE)
- ☐ LOCAL/REGIONAL TOURS
- ☐ OTHER, PLEASE DESCRIBE: _____

8. Which of the following equipment/services do you currently have available to you? (check all that apply)

- ☐ CELLULAR PHONE WITH INTERNET ACCESS
- ☐ CELL PHONE WITH CAMERA
- ☐ CELL PHONE
- ☐ DIGITAL CAMERA
- ☐ PAGER
- ☐ PERSONAL DIGITAL ASSISTANT (PALM PILOT, BLACKBERRY)
- ☐ LAP TOP COMPUTER
- ☐ LAP TOP COMPUTER WITH WIRELESS ACCESS
- ☐ DESK TOP COMPUTER
- ☐ GLOBAL POSITIONING SYSTEM/GPS IN VEHICLE
- ☐ ON STAR© SERVICE IN VEHICLE
- ☐ PERSONAL DIGITAL ASSISTANT WITH INTERNET ACCESS
- ☐ OTHER, PLEASE DESCRIBE: _____

9. Based on the types of technology listed in question 8, please select a response for each statement:

	Low						High
I CONSIDER MY USE OF TECHNOLOGY AS	1	2	3	4	5	6	7
I CONSIDER MY USE OF THE INTERNET AS	1	2	3	4	5	6	7
COMPARED TO MY FRIENDS, MY OWNERSHIP OF TECHNOLOGY IS	1	2	3	4	5	6	7

Part 3: Participant Information
Please tell us about yourself to assist in understanding how different groups of people use technology and take vacations. Remember individual responses are confidential.

10. Please indicate which best describes you: (mark one)

MARRIED/LIVING COMMON LAW SINGLE

11. Please indicate your highest level of education achieved: (mark one)

0 TO 8 YEARS GRADUATED FROM HIGH SCHOOL POST SECONDARY CERTIFICATE/DIPLOMA

SOME SECONDARY (HIGH) SCHOOL SOME POST SECONDARY UNIVERSITY DEGREE(S)

12. Which of the following best describes your employment status? (mark one)

SELF-EMPLOYED EMPLOYED FULL-TIME EMPLOYED PART-TIME

HOMEMAKER STUDENT RETIRED

UNEMPLOYED OTHER, PLEASE DESCRIBE

13. For 2004, what was your approximate total household income before taxes and deductions? (mark one)

less than $20,000 $60,000 - 79,999 $150,000 - 199,999

$20,000 - 39,999 $80,000 - 99,999 $200,000 or more

$40,000 - 59,999 $100,000 - 149,999

a. How many people contributed to this household income? [ ] people

14. Please provide information below for all individuals who reside in your household:

I am:	○ female	○ male	I was born in the year	[ ]
Person 2 is:	○ female	○ male	he/she was born in the year	[ ]
Person 3 is:	○ female	○ male	he/she was born in the year	[ ]
Person 4 is:	○ female	○ male	he/she was born in the year	[ ]
Person 5 is:	○ female	○ male	he/she was born in the year	[ ]
Person 6 is:	○ female	○ male	he/she was born in the year	[ ]
Person 7 is:	○ female	○ male	he/she was born in the year	[ ]
Person 8 is:	○ female	○ male	he/she was born in the year	[ ]

15. Lastly, please share any comments or stories about whether you think technology is making your vacations better or worse.

APPENDIX B: MONITORING ONE

This brief questionnaire is designed to keep us informed about your information technology (IT) use and any upcoming vacation plans and trips for which you would be willing to complete a travel diary. Your individual responses will be kept strictly confidential. When finished, please return the questionnaire in the pre-addressed, postage-paid envelope to the University of Manitoba within the next two weeks. You will be entered in a draw for a chance to win a prize ($250 value).

1. Which of the following equipment/services do you currently have available to you at work and/or home? (Mark all that apply)

μ CELLULAR PHONE WITH INTERNET ACCESS	μ LAP TOP COMPUTER WITH WIRELESS ACCESS
μ CELL PHONE WITH CAMERA	μ LAP TOP COMPUTER
μ CELL PHONE	μ DESK TOP COMPUTER
μ DIGITAL CAMERA	μ GLOBAL POSITIONING SYSTEM/GPS IN VEHICLE
μ PAGER	μ ON STAR © SERVICE IN VEHICLE
μ PERSONAL DIGITAL ASSISTANT (PALM PILOT, BLACKBERRY) WITH INTERNET ACCESS	
μ PERSONAL DIGITAL ASSISTANT	
μ OTHER, PLEASE DESCRIBE: _____	

OR *μ I have none of the above*

2. In the past 4 months, have you used the Internet for personal or work reasons?

μ NO IF NO, PLEASE SKIPTO QUESTION #3
μ YES IF YES, PLEASE CONTINUE:

a. How long have you been using the Internet? _____ (number of years)

b. Do you access the Internet from: (Mark □ all that apply)

μ HOME	μ WORK
μ SCHOOL	μ WIRELESS LAPTOP
μ CAFÉ	μ PUBLIC LIBRARY
μ A WIRELESS HAND-HELD DEVICE (PHONE, PDA)	μ OTHER PLACES: SPECIFY

_____

c. If you access the Internet, how often are you going online during a typical week? (Mark □ one)

μ CONTINUOUSLY	μ ABOUT ONCE A DAY
μ 3-5 DAYS A WEEK	μ SEVERAL TIMES A DAY
μ 1-2 DAYS A WEEK	μ EVERY FEW WEEKS
μ OTHER: _____	

3. Please circle a response that best reflects your current situation:

	Low						High
I CONSIDER MY USE OF TECHNOLOGY AS	1	2	3	4	5	6	7
I CONSIDER MY USE OF THE INTERNET AS	1	2	3	4	5	6	7
COMPARED TO MY FRIENDS, MY OWNERSHIP OF TECHNOLOGY IS	1	2	3	4	5	6	7

4. Please tell us where, when, and for how long (be as specific as possible) you are planning to go for your next vacations (up to four) in the next four months. Also please indicate (□) for which trip(s) you will do a travel diary (on paper or web based, if you have daily Internet access).

Main Destination	*Date*	*Likely Departure of Days*	*Number Willing to Complete Travel Diary?*
_____	_____	_____	μ Yes μ Paper μ Web (daily access) μ No, not this trip
_____	_____	_____	μ Yes μ Paper μ Web (daily access) μ No, not this trip
_____	_____	_____	μ Yes μ Paper μ Web (daily access) μ No, not this trip
_____	_____	_____	μ Yes μ Paper μ Web (daily access) μ No, not this trip

Based on the above places, please identify the next vacation destination you are most likely to go:

_____

(write in here)

Please answer the next question, question # 5 based on that destination.

5. When planning your vacation identified as the most likely to occur, please indicate how you have used or will use the sources and services listed below, if at all. Not all formats apply in all cases. Traditional refers to how information is presented or the service is purchased (e.g., in print, telephone, or in person), and Internet refers to web-based online sources.

Mark all those that you have used/will use for information and/or purchase, or check didn't use (N/A):

Source/Service	Information Sources to Plan trip			Purchases Made So Far		
	Traditional	Internet	Didn't use	Traditional	Internet	Didn't use
NEWSPAPER/MAGAZINE ARTICLES	μ	μ	μ	μ	μ	μ
NEWSPAPER/MAGAZINE ADS	μ	μ	μ	μ	μ	μ
TELEVISION PROGRAMS	μ	μ	μ	μ	μ	μ
TELEVISION COMMERICIALS	μ	μ	μ	μ	μ	μ
RADIO COMMERCIALS	μ	μ	μ	μ	μ	μ
CAA/AAA OR OTHER MOTOR CLUB	μ	μ	μ	μ	μ	μ
GUIDE BOOKS (FODOR'S, ETC.)	μ	μ	μ	μ	μ	μ
VISITOR INFORMATION CENTRES	μ	μ	μ	μ	μ	μ
TRAVEL MAPS	μ	μ	μ	μ	μ	μ
DESTINATION'S TOURISM DEPARTMENT	μ	μ	μ	μ	μ	μ
CONVENTION/VISITOR BUREAU	μ	μ	μ	μ	μ	μ
ADVICE FROM FAMILY	μ	μ	μ	μ	μ	μ
MY PAST EXPERIENCE	μ	μ	μ	μ	μ	μ
ADVICE FROM FRIENDS	μ	μ	μ	μ	μ	μ
CHAMBER OF COMMERCE	μ	μ	μ	μ	μ	μ
ATTRACTIONS AND/OR EVENTS	μ	μ	μ	μ	μ	μ
ACCOMMODATIONS	μ	μ	μ	μ	μ	μ
AIRLINES	μ	μ	μ	μ	μ	μ
OTHER TRANSPORTATION	μ	μ	μ	μ	μ	μ
TRAVEL WEB SITES (TRAVELOCITY, ETC.)	μ	μ	μ	μ	μ	μ
TRAVEL AGENCIES	μ	μ	μ	μ	μ	μ
TOUR OPERATORS	μ	μ	μ	μ	μ	μ
OTHER	μ	μ	μ	μ	μ	μ

PLEASE DESCRIBE: -

6. These last questions ask about vacation planning in general, not necessarily for the trip you are likely to take soon. Circle a response for each statement that reflects your level of agreement.

Statement	strongly disagree						strongly agree
I BELIEVE IT IS OF REAL IMPORTANCE TO LEARN AS MUCH AS POSSIBLE ABOUT A VACATION DESTINATION IN ADVANCE.	1	2	3	4	5	6	7
WHAT I DON'T KNOW ABOUT THE VACATION DESTINATION DOESN'T REALLY MATTER.	1	2	3	4	5	6	7
I MAY NOT UNDERSTAND MUCH ABOUT A TRAVEL DESTINATION, BUT THAT IS O.K.	1	2	3	4	5	6	7
ANY UNCERTAINTY I HAVE ABOUT A VACATION DESTINATION REALLY BOTHERS ME.	1	2	3	4	5	6	7
IT IS NOT NECESSARY FOR ME TO KNOW MUCH ABOUT A VACATION DESTINATION BEFORE GOING THERE.	1	2	3	4	5	6	7
IT WOULD REALLY BOTHER ME IF I DIDN'T UNDERSTAND A VACATION DESTINATION BEFORE I LEAVE HOME.	1	2	3	4	5	6	7
I HAVE REAL NEED TO ANTICIPATE WHAT WILL TAKE PLACE AT A VACATION DESTINATION BEFORE I LEAVE HOME.	1	2	3	4	5	6	7
I WANT TO BE CERTAIN ABOUT THE OPPORTUNITIES THAT WILL BE AVAILABLE AT A VACATION DESTINATION BEFORE I LEAVE HOME.	1	2	3	4	5	6	7
I WILL SEEK OUT VACATION DESTINATION INFORMATION AS MUCH AS POSSIBLE BEFORE I LEAVE HOME.	1	2	3	4	5	6	7
I WILL KEEP LOOKING FOR VACATION DESTINATION INFORMATION THAT I HAVEN'T BEEN ABLE TO FIND SO FAR.	1	2	3	4	5	6	7
I MAY NOT UNDERSTAND MUCH ABOUT WEB-BASED TRAVEL INFORMATION, BUT THAT IS OK.	1	2	3	4	5	6	7

APPENDIX C: MONITORING TWO

This brief questionnaire is designed to keep us informed about your information technology (IT) use and any upcoming vacation plans and trips for which you would be willing to complete a travel diary. Your individual responses will be kept strictly confidential. When finished, please return the questionnaire in the pre-addressed, postage-paid envelope to the University of Manitoba within the next two weeks. You will be entered in a draw for a chance to win a prize ($250 value).

1. Which of the following equipment/services do you currently have available to you at work and/or home? (Mark all that apply)

μ CELLULAR PHONE WITH INTERNET ACCESS
μ LAP TOP COMPUTER WITH WIRELESS ACCESS
μ CELL PHONE WITH CAMERA
μ LAP TOP COMPUTER
μ CELL PHONE
μ DESK TOP COMPUTER
μ DIGITAL CAMERA
μ GLOBAL POSITIONING SYSTEM/GPS IN VEHICLE
μ PAGER
μ ON STAR © SERVICE IN VEHICLE
μ PERSONAL DIGITAL ASSISTANT (PALM PILOT, BLACKBERRY) WITH INTERNET ACCESS
μ PERSONAL DIGITAL ASSISTANT
μ I-POD/ MP3/ MP4 PLAYER
μ OTHER, PLEASE DESCRIBE: _____

OR

μ I HAVE NONE OF THE ABOVE

2. a. In the past 4 months, have you used the Internet for: personal reasons: μ YES μ NO
work reasons: μ YES μ NO

IF YES TO EITHER, PLEASE CONTINUE:
IF NO TO BOTH, PLEASE SKIP TO QUESTION #3

b. Do you look for wireless Internet access (*wi-fi*): in your everyday use? μ YES μ NO
when you travel? μ YES μ NO

c. Do you access the Internet from: (Mark □ all that apply)

μ HOME μ WORK μ SCHOOL μ WIRELESS LAPTOP μ CAFÉ μ PUBLIC LIBRARY

μ A WIRELESS HAND-HELD DEVICE (PHONE, PDA) μ OTHER PLACES: SPECIFY _____

d. If you access the Internet, how often are you going online during a typical week? (Mark □ one)

μ CONTINUOUSLY μ ABOUT ONCE A DAY μ 1-2 DAYS A WEEK
μ SEVERAL TIMES A DAY μ 3-5 DAYS A WEEK μ LESS OFTEN μ OTHER: _____

3. Please circle a response that best reflects your current situation:

	Low						High
I CONSIDER MY USE OF TECHNOLOGY AS	1	2	3	4	5	6	7
I CONSIDER MY USE OF THE INTERNET AS	1	2	3	4	5	6	7
COMPARED TO MY FRIENDS, MY OWNERSHIP OF TECHNOLOGY IS	1	2	3	4	5	6	7

4. Please tell us where, when, and for how long (be as specific as possible) you are planning to go for your next vacations (up to four) in the next three months (June, July, August). Also please indicate (□) for which trip(s) you will do a travel diary (on paper or web based, only if you have daily Internet access).

Main Destination	*Likely Departure Date*	*Number of Days*	*Willing to Complete Travel Diary?*
_____	_____	_____	μ YES μ PAPER μ WEB (DAILY ACCESS) μ NO, NOT THIS TRIP
_____	_____	_____	μ YES μ PAPER μ WEB (DAILY ACCESS) μ NO, NOT THIS TRIP
_____	_____	_____	μ YES μ PAPER μ WEB (DAILY ACCESS) μ NO, NOT THIS TRIP
_____	_____	_____	μ YES μ PAPER μ WEB (DAILY ACCESS) μ NO, NOT THIS TRIP

Based on the above places, please identify the next vacation destination you are most likely to go:

_____
(write in here)

Please answer the next question, question # 5 based on that destination or SKIP to Question 6 if no upcoming trips.

5. When planning your vacation identified as the most likely to occur, please indicate how you have used or will use the sources and services listed below, if at all. Not all formats apply in all cases. Traditional refers to how information is presented or the service is purchased (e.g., in print, telephone, or in person), and Internet refers to web-based online sources.

Mark all those that you have used or will use for trip information and or purchase.

Source/Service	Information Sources to Plan Trip		Purchases Made So Far through	
	Traditional	Internet	Traditional	Internet
NEWSPAPER/MAGAZINE ARTICLES	μ	μ	μ	μ
NEWSPAPER/MAGAZINE ADS	μ	μ	μ	μ
TELEVISION PROGRAMS	μ	μ	μ	μ
TELEVISION COMMERICIALS	μ	μ	μ	μ
RADIO COMMERCIALS	μ	μ	μ	μ
CAA/AAA OR OTHER MOTOR CLUB	μ	μ	μ	μ
GUIDE BOOKS (FODOR'S, ETC.)	μ	μ	μ	μ
VISITOR INFORMATION CENTRES	μ	μ	μ	μ
Travel maps	μ	μ	μ	μ
Destination's tourism department	μ	μ	μ	μ
CONVENTION/VISITOR BUREAU	μ	μ	μ	μ
ADVICE FROM FAMILY	μ	μ	μ	μ
MY PAST EXPERIENCE	μ	μ	μ	μ
ADVICE FROM FRIENDS	μ	μ	μ	μ
CHAMBER OF COMMERCE	μ	μ	μ	μ
ATTRACTIONS AND/OR EVENTS	μ	μ	μ	μ
ACCOMMODATIONS	μ	μ	μ	μ
AIRLINES	μ	μ	μ	μ
OTHER TRANSPORTATION	μ	μ	μ	μ
TRAVEL WEB SITES (TRAVELOCITY, ETC.)	μ	μ	μ	μ
TRAVEL AGENCIES	μ	μ	μ	μ
TOUR OPERATORS	μ	μ	μ	μ
OTHER PLEASE DESCRIBE: -	μ	μ	μ	μ

6. These last questions ask about vacation planning in general, not necessarily for the trip you are likely to take soon. Circle a response for each statement that reflects your level of agreement.

Statement	strongly disagree						strongly agree
I BELIEVE IT IS OF REAL IMPORTANCE TO LEARN AS MUCH AS POSSIBLE ABOUT A VACATION DESTINATION IN ADVANCE.	1	2	3	4	5	6	7
WHAT I DON'T KNOW ABOUT THE VACATION DESTINATION DOESN'T REALLY MATTER.	1	2	3	4	5	6	7
I MAY NOT UNDERSTAND MUCH ABOUT A TRAVEL DESTINATION, BUT THAT IS O.K.	1	2	3	4	5	6	7
ANY UNCERTAINTY I HAVE ABOUT A VACATION DESTINATION REALLY BOTHERS ME.	1	2	3	4	5	6	7
IT IS NOT NECESSARY FOR ME TO KNOW MUCH ABOUT A VACATION DESTINATION BEFORE GOING THERE.	1	2	3	4	5	6	7
IT WOULD REALLY BOTHER ME IF I DIDN'T UNDERSTAND A VACATION DESTINATION BEFORE I LEAVE HOME.	1	2	3	4	5	6	7
I HAVE REAL NEED TO ANTICIPATE WHAT WILL TAKE PLACE AT A VACATION DESTINATION BEFORE I LEAVE HOME.	1	2	3	4	5	6	7
I WANT TO BE CERTAIN ABOUT THE OPPORTUNITIES THAT WILL BE AVAILABLE AT A VACATION DESTINATION BEFORE I LEAVE HOME.	1	2	3	4	5	6	7
I WILL SEEK OUT VACATION DESTINATION INFORMATION AS MUCH AS POSSIBLE BEFORE I LEAVE HOME.	1	2	3	4	5	6	7
I WILL KEEP LOOKING FOR VACATION DESTINATION INFORMATION THAT I HAVEN'T BEEN ABLE TO FIND SO FAR.	1	2	3	4	5	6	7
I MAY NOT UNDERSTAND MUCH ABOUT WEB-BASED TRAVEL INFORMATION, BUT THAT IS OK.	1	2	3	4	5	6	7

THANK-YOU!

APPENDIX D: VACATION DIARY

Part 1: Questions to answer en route to destination.

1. What is the **main** form of transportation to your destination? (please ✓one)

μ COMMERCIAL AIRLINE μ OWN VEHICLE (CAR) μ OWN VEHICLE (RV) μ RENTAL RV

μ TRAIN μ MOTORCYCLE μ RENTAL CAR μ SHIP μ BUS

μ OTHER, PLEASE SPECIFY: _____

2. Is this your first trip to the main destination? μ Yes μ No
If no, how many times have you been to the destination in the past 5 years?

_____ NUMBER OF TIMES

3. Is your trip to the main destination part of an organized tour package? μ Yes μ No

4. Does your vacation trip include any of the following items? (please ✓all that apply)

μ CONFERENCE μ MEETINGS/WORK μ VISITING FRIENDS /RELATIVES μ NONE

5. In addition to the main destination named, are there other destinations for this vacation?

μ No μ Yes If YES, please list: _____

6. Who is accompanying you on this trip? (please ✓all that apply)

μ NO ONE, I AM TRAVELING BY MYSELF μ OTHER RELATIVE(S)

μ MY SPOUSE/PARTNER μ MY FRIEND(S)

μ MY CHILDREN (UNDER 13 YEARS OLD)

μ PEOPLE I WORK WITH / BUSINESS PARTNERS

μ MY CHILDREN (13-17 YEARS OLD)

μ MEMBERS OF A CLUB /GROUP / ORGANIZATION

μ MY CHILDREN (OVER 17 YEARS OLD)

μ MY GRANDCHILD(REN) (UNDER 18 YEARS OLD)

μ OTHER, PLEASE SPECIFY:

7. For this trip did you use the Internet (go online) to book/purchase any aspect of your vacation?

μ No μ Yes

If YES, which aspects? (please ✓all that apply)

μ FLIGHT/AIRLINE

μ OTHER TRANSPORTATION (FERRIES, BUS, TRAIN)

μ ATTRACTIONS/SIGHTSEEING (MUSEUMS, MONUMENTS)

μ ACTIVITIES AT DESTINATION (SKIING, HORSEBACK RIDING)

μ EQUIPMENT USED FOR TRIPS (SPECIALTY ITEMS, CLOTHES, GUIDE BOOKS)

μ ACCOMMODATION

μ EVENTS (SPORTING, FESTIVALS, CONCERTS, THEATRE)

μ TRAVEL PACKAGES (ALL INCLUSIVE, CRUISE, SEMI-INCLUSIVE)

μ LOCAL/REGIONAL TOURS

μ OTHER, PLEASE DESCRIBE:

8. On this trip, which of the following equipment/services do you have available to/with you? (please ✓ all that apply)

μ CELLULAR PHONE WITH INTERNET ACCESS	μ LAP TOP COMPUTER WITH WIRELESS ACCESS
μ CELL PHONE WITH CAMERA	μ LAP TOP COMPUTER
μ CELL PHONE	μ DESK TOP COMPUTER
μ DIGITAL CAMERA	μ GLOBAL POSITIONING SYSTEM/GPS in vehicle
μ PAGER	μ ON STAR © SERVICE IN VEHICLE
μ PERSONAL DIGITAL ASSISTANT (PALM PILOT, BLACKBERRY) WITH INTERNET ACCESS	
μ PERSONAL DIGITAL ASSISTANT	μ OTHER, PLEASE DESCRIBE: _____

9. Below are statements about possible trip experiences/happenings. Please circle the number that represents how much you agree with the chance or probability of each one occurring on this trip.

THE POSSIBILITY THAT THIS TRIP WILL RESULT IN...	STRONGLY DISAGREE						STRONGLY AGREE
MECHANICAL, EQUIPMENT, OR ORGANIZATIONAL PROBLEMS DURING TRAVEL OR AT DESTINATION	1	2	3	4	5	6	7
POOR VALUE FOR MONEY SPENT	1	2	3	4	5	6	7
BECOMING SICK WHILE TRAVELING OR AT DESTINATION	1	2	3	4	5	6	7
PHYSICAL DANGER/INJURY DETRIMENTAL TO HEALTH	1	2	3	4	5	6	7
BECOMING INVOLVED IN POLITICAL TURMOIL OF THE AREA BEING VISITED	1	2	3	4	5	6	7
NOT REFLECTING MY PERSONALITY OR SELF-IMAGE (DISAPPOINTMENT WITH TRAVEL EXPERIENCE)	1	2	3	4	5	6	7
PERSONAL SATISFACTION	1	2	3	4	5	6	7
NEGATIVE OPINIONS OF ME BY OTHERS (DISAPPROVAL OF VACATION CHOICE OR ACTIVITIES BY FRIENDS/FAMILY/ASSOCIATES)	1	2	3	4	5	6	7
BEING INVOLVED IN A TERRORIST ACT	1	2	3	4	5	6	7
TAKING TOO MUCH TIME OR A WASTE TIME	1	2	3	4	5	6	7

10. In Part A, for each traditional information source you used before leaving home to plan for your trip, please indicate how helpful it was. In Part B, for each Internet source used, indicate how helpful each was. Traditional refers to paper or personal sources and Internet to online/web. Not all sources will apply in both cases.

INFORMATION SOURCE	PART A TRADITIONAL HELPFULNESS OF SOURCE			PART B INTERNET HELPFULNESS OF SOURCE		
	NOT AT ALL	SOMEWHAT	VERY	NOT AT ALL	SOMEWHAT	VERY
NEWSPAPER/MAGAZINE ARTICLES	μ	μ	μ	μ	μ	μ
CAA/AAA OR OTHER MOTOR CLUB	μ	μ	μ	μ	μ	μ

GUIDE BOOKS (FODOR'S, ETC.)	μ	μ	μ		μ	μ	μ
TRAVEL AGENCIES	μ	μ	μ		μ	μ	μ
Tour operators	μ	μ	μ		μ	μ	μ
DESTINATION'S TOURISM DEPARTMENT	μ	μ	μ		μ	μ	μ
TRAVEL WEB SITES (TRAVELOCITY, ETC.)	μ	μ	μ		μ	μ	μ
ADVICE FROM FAMILY	μ	μ	μ		μ	μ	μ
MY OWN EXPERIENCE	μ	μ	μ		μ	μ	μ
ADVICE FROM A FRIEND	μ	μ	μ		μ	μ	μ
ATTRACTIONS	μ	μ	μ		μ	μ	μ
ACCOMMODATIONS	μ	μ	μ		μ	μ	μ
AIRLINES	μ	μ	μ		μ	μ	μ
OTHER TRANSPORTATION	μ	μ	μ		μ	μ	μ
VISITOR INFORMATION CENTRES	μ	μ	μ		μ	μ	μ
CHAMBER OF COMMERCE	μ	μ	μ		μ	μ	μ
TRAVEL MAPS	μ	μ	μ		μ	μ	μ
OTHER, PLEASE DESCRIBE:	μ	μ	μ		μ	μ	μ

11. Please indicate your level of agreement with the reasons listed for taking this vacation.

(Please circle response)	STRONGLY						STRONGLY
I AM TAKING THIS VACATION BECAUSE:	DISAGREE						AGREE
I WANT TO SEE AND DO NEW THINGS	1	2	3	4	5	6	7
I NEED REST AND RELAXATION	1	2	3	4	5	6	7
I LIKE TO TRY DIFFERENT KINDS OF FOOD	1	2	3	4	5	6	7
I WANT TO BE PAMPERED	1	2	3	4	5	6	7
I WANT TO BE ENTERTAINED	1	2	3	4	5	6	7
I LIKE TO VENTURE OFF ON MY OWN	1	2	3	4	5	6	7
I LIKE TO LEARN ABOUT LOCAL CULTURE	1	2	3	4	5	6	7
AND HISTORY	1	2	3	4	5	6	7
I LIKE TO MEET PEOPLE OF HOST COMMUNITY	1	2	3	4	5	6	7
I WANT TO SEE NEW PLACES	1	2	3	4	5	6	7
I WANT EDUCATIONAL EXPERIENCES	1	2	3	4	5	6	7
I WANT TO TEST MY ABILITIES AND DEVELOP SKILLS	1	2	3	4	5	6	7
I WANT TO ENHANCE MY RELATIONSHIPS	1	2	3	4	5	6	7
I WANT TO MEET PEOPLE WITH SIMILAR INTERESTS	1	2	3	4	5	6	7
I WANT TO ESCAPE PERSONAL PROBLEMS	1	2	3	4	5	6	7

WANT TO BE WITH MY FAMILY	1	2	3	4	5	6	7
WANT TO BE AWAY FROM WORK/DAILY ROUTINE	1	2	3	4	5	6	7
WANT TO RECHARGE FOR THE FUTURE	1	2	3	4	5	6	7
WANT TO FULFILL A LIFELONG DREAM	1	2	3	4	5	6	7
OTHER, PLEASE DESCRIBE:							

12. In the space below, please provide a few words describing your travel to your destination. For instance, did you stop and sightsee anywhere along the way? Take pictures of something interesting? Any comments about your transportation experience? Please write anything you would like.

Please continue with Part 2 at the end of your first day at your destination.

1. Today stayed overnight at:

μ HOTEL/MOTEL/LODGE/CABINS μ B&B/INN μ CONDO/TIMESHARE μ CAMPGROUND/RV PARK
μ HOME OF FRIENDS/FAMILY μ CRUISE SHIP μ OTHER PLEASE SPECIFY: _____

2. Primary means of transportation today:

μ OWN VEHICLE (CAR) μ RENTAL CAR μ BUS μ SHIP/BOAT μ TRAIN μ MOTORCYCLE
μ OWN VEHICLE (RV) μ RENTAL RV μ COMMERCIAL AIRLINE μ OTHERr: _____

3. Did you use the Internet today for any aspect of your vacation?

μ YES (CONTINUE) μ NO (SKIP TO QUESTION 7 ➔)

4. What type of equipment did you use today and for what purpose (e.g., vacation planning such as where to stay, maps, events; communicating with home or work; pay bills; play games; watch movies; etc.)?

PART A: Used today: (🗐 all that apply) PART B: Purpose(s) Used (please describe):

μ CELLULAR PHONE WITH INTERNET ACCESS

μ CELL PHONE WITH CAMERA

μ CELL PHONE

μ DIGITAL CAMERA

μ PAGER

μ PERSONAL DIGITAL ASSISTANT (PALM PILOT, BLACKBERRY) WITH INTERNET ACCESS

μ personal digital assistant (palm pilot, blackberry)

μ LAP TOP COMPUTER WITH WIRELESS ACCESS

μ LAP TOP COMPUTER

μ DESK TOP COMPUTER

μ GLOBAL POSITIONING SYSTEM/GPS IN VEHICLE

μ ON STAR © SERVICE IN VEHICLE

μ OTHER, PLEASE DESCRIBE: _____

5. From where did you access the Internet today? (□ all that apply)

μ HOTEL/MOTEL/LODGE/CABINS μ TRAVEL INFORMATION/VISITOR CENTRE μ WIRELESS "HOT SPOT"

μ PUBLIC LIBRARY μ CAFÉ μ CAR/VEHICLE μ OTHER (PLEASE SPECIFY) _____

6. IN GENERAL, HOW WOULD YOU DESCRIBE YOUR EXPERIENCES WITH ANY TECHNOLOGY YOU USED TODAY? (PLEASE CIRCLE A RESPONSE)

a) NOT AT ALL HELPFUL 1 2 3 4 5 6 7 VERRY HELPFUL

b) DETRACTED FROM VACATION 1 2 3 4 5 6 7 ENHANCED VACATION

c) How skillful did you feel in using the technology?

NOT AT ALL SKILLFUL 1 2 3 4 5 6 7 VERY SKILLFUL

d) How successful were you with using the technology to get what you wanted?

NOT AT ALL SUCCESSFUL 1 2 3 4 5 6 7 VERY SUCCESSFUL

E) DID YOU FEEL THE TECHNOLOGY PUT YOU IN CONTROL OF YOUR VACATION AND/OR DAILY ACTIVITIES?

NOT AT ALL 1 2 3 4 5 6 7 VERY MUCH SO

7. For each traditional and Internet information source you used today please indicate how helpful it was. Traditional refers to paper or personal sources and Internet to online/web.

Information Source (Not all sources will apply in both cases)	PART A: TRADITIONAL Helpfulness Not at All		Somewhat		Very		PART B: INTERNET Helpfulness Not at All		Somewhat		Very	
NEWSPAPER/MAGAZINE ARTICLES	μ		μ		μ		μ		μ		μ	
CAA/AAA OR OTHER MOTOR CLUB	μ		μ		μ		μ		μ		μ	
GUIDE BOOKS (FODOR'S, ETC.)	μ		μ		μ		μ		μ		μ	
MY OWN EXPERIENCE	μ		μ		μ		μ		μ		μ	
LOCAL RESIDENTS/EMPLOYEES	μ		μ		μ		μ		μ		μ	
DESTINATION'S TOURISM DEPARTMENT	μ		μ		μ		μ		μ		μ	
TRAVEL WEB SITES(TRAVELOCITY, ETC.)	μ		μ		μ		μ		μ		μ	
ADVICE FROM FAMILY	μ		μ		μ		μ		μ		μ	
CHAMBER OF COMMERCE	μ		μ		μ		μ		μ		μ	
ADVICE FROM A FRIEND	μ		μ		μ		μ		μ		μ	
BILLBOARDS/SIGNS	μ		μ		μ		μ		μ		μ	
LOCAL TV	μ		μ		μ		μ		μ		μ	
LOCAL RADIO	μ		μ		μ		μ		μ		μ	
TRAVEL MAPS	μ		μ		μ		μ		μ		μ	
VISITOR INFORMATION CENTRES	μ		μ		μ		μ		μ		μ	
INFORMATION PRINTED FROM INTERNET	μ		μ		μ		μ		μ		μ	
OTHER: _____	μ		μ		μ		μ		μ		μ	

8. In general, how would you say the above information affected your vacation experience today? (please circle response for each or N/A – Not Applicable)

	DETRACTED FROM VACATION					ENHANCED VACATION		
TRADITIONAL FORMAT	1	2	3	4	5	6	7	N/A
INTERNET FORMAT	1	2	3	4	5	6	7	N/A

9. Did your day go as planned? μ YES μ NO - PLEASE DESCRIBE BELOW:

Part 3: On the way home (or the day you returned home). Please enter date: _____

1. Based on your vacation trip, how satisfied were you with the following opportunities?
(please circle a response for each statement)

	N/A	Less than expected			About Right		More than expected	
TO SEE AND DO NEW THINGS	0	1	2	3	4	5	6	7
TO REST AND RELAX	0	1	2	3	4	5	6	7
TO TRY DIFFERENT KINDS OF FOOD	0	1	2	3	4	5	6	7
TO BE PAMPERED	0	1	2	3	4	5	6	7
TO BE ENTERTAINED	0	1	2	3	4	5	6	7
TO VENTURE OFF ON MY OWN	0	1	2	3	4	5	6	7
TO LEARN LOCAL CULTURE & HISTORY	0	1	2	3	4	5	6	7
TO MEET PEOPLE OF HOST COMMUNITY	0	1	2	3	4	5	6	7
TO SEE NEW PLACES	0	1	2	3	4	5	6	7
FOR EDUCATIONAL EXPERIENCES	0	1	2	3	4	5	6	7
TO TEST MY ABILITIES & DEVELOP SKILLS	0	1	2	3	4	5	6	7
TO ENHANCE MY RELATIONSHIPS	0	1	2	3	4	5	6	7
TO MEET PEOPLE WITH SAME INTERESTS	0	1	2	3	4	5	6	7
TO ESCAPE PERSONAL PROBLEMS	0	1	2	3	4	5	6	7
TO BE WITH MY FAMILY	0	1	2	3	4	5	6	7
TO BE AWAY FROM WORK/DAILY ROUTINE	0	1	2	3	4	5	6	7
TO RECHARGE FOR THE FUTURE	0	1	2	3	4	5	6	7
TO FULFILL A LIFELONG DREAM	0	1	2	3	4	5	6	7
OTHER, PLEASE DESCRIBE:	0	1	2	3	4	5	6	7

2. Based on your vacation trip, how do you feel about the following:
(please circle a response for each statement)

	Terrible						Delighted
THE WAY YOUR PLANS WORKED OUT	1	2	3	4	5	6	7
THE WAY YOU FELT PHYSICALLY	1	2	3	4	5	6	7
THE WAY YOU FELT EMOTIONALLY	1	2	3	4	5	6	7
THE PACE OF VACATION YOU EXPERIENCED	1	2	3	4	5	6	7
YOUR RETURN TO DAILY HOME/WORK LIFE	1	2	3	4	5	6	7
THE AMOUNT OF FUN YOU HAD	1	2	3	4	5	6	7

3. In general, how would you rate your overall satisfaction with your vacation experience?
(please circle a response)

VERY DISSATISFIED 1 2 3 4 5 6 7 VERY SATISFIED

4. Approximately how much money did you spend on the items below? Please do your best to estimate and include taxes and tips where applicable. If you were part of a pre-paid tour, please try to estimate how much you would have paid for items included in your package.

LODGING/ACCOMMODATION $_____
TRANSPORTATION (TO DESTINATION) $_____
TRANSPORTATION (AT DESTINATION) $_____
ENTERTAINMENT AND SPORTS $_____
SHOPPING: $_____
MEALS/FOOD: $_____
INTERNET ACCESS $_____
OTHER: $_____

These expenses I listed were for how many adults? _____ How many children?_____
How many nights away from home? _____

5. Overall, how would you say the following affected your vacation experience?
(please circle a response for **each** statement or N/A – Not Applicable)

		DETRACTED FROM VACATION						ENHANCED VACATION
TRADITIONAL INFORMATION I USED	N/A	1	2	3	4	5	6	7
INTERNET INFORMATION I USED	N/A	1	2	3	4	5	6	7
TECHNOLOGY I USED	N/A	1	2	3	4	5	6	7

6. Any comments you would like to add?

Thank you for completing this diary!

BIBLIOGRAPHY

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Aldenderfer, M. S., & Blashfield, R. K. (1984). *Cluster Analysis*. Sage University paper Series on Quantitative Applications in the Social Science, series no. 07-044. Beverly Hills and London: Sage Publications.

Anckar, B., & D'lncau, D. (2002). Value Creation in Mobile Commerce: Findings from a Consumer Survey. *Journal of Information Technology Theory and Application,* 4(1): 43-64.

Andereck, K. L., & Caldwell, L. L. (1993). The Influence of Tourists' Characteristics on Ratings of Information Sources for Attraction. *Journal of Travel & Tourism Marketing,* 2(2/3), 171-*189.*

Andereck, K. L., & Vogt, C. A. (2005). Information Use over the Course of a Vacation. *Proceedings of the Travel and Tourism Research Association Conference.* Travel and Tourism Research Association, New Orleans, LA, June 2005.

Arndt, J. (1967). Perceived Risk, Sociometric Integration, and Word of Mouth in the Adoption of a New Food Product. In Cox, D. F. (Eds.), *Risk Taking and Information Handling in Consumer Behavior* (pp. 289-316). Boston, MA: Harvard University Press.

Assael, H. (1998). *Consumer Behavior and Marketing Action*, (6th ed.). New York University: South-Western College Publishing.

Ary, D., Jacobs, L., & Razavieh, A. (1996). *Introduction to research in education.* (5th ed.). Ft. Worth, TX: Holt, Rinehart, and Winston, Inc.

Baird, I. S., & Thomas, H. (2006). Toward a Contingency Model of Strategic Risk Taking. *The Academy of Management Review*, 10(2): 230-243.

Bauer, R. A. (1960). Consumer Behavior as Risk Taking. In Hancock, R. S. (Eds.), *Dynamic Marketing for a Changing World* (pp.389-398). Chicago: American Marketing Association.

Barki, H., & Hartwick, J. (1989). Rethinking the Concept of User Involvement. *MIS Quarterly*, March: 53-63.

Baroudi, J., Olson, M. H., & Ives, B. (1986). An Empirical Study of the Impact of User Involvement on System Usage and Information Satisfaction. *ACM*, 29 (3): 232-238.

Beatty, S. E., & Smith, M. S. (1987). External Search Effort: An Investigation Across Several Product Categories. *Journal of Consumer Research*, 14(June): 83-95.

Beldona, S. (2003). *Studies in Online Consumer Behavior: Planning, Search and Purchase.* Unpublished Dissertation. Purdue University. West Lafayette, Indiana.

Berger, C. R. (1979). Beyond Initial Interaction: Uncertainty, Understanding, and the Development of Interpersonal Relationships. In Giles, H., & St-Clair, R. (Eds.), *Language and Social Psychology*, Oxford: Blackwell.

Berger, C. R. (1986). Uncertainty Outcome Values in Predicted Relationships: Uncertainty Reduction Theory Then and Now. *Human Communication Association*, 13(1): 34-38.

Berger, C. R. (1987). Communicating under Uncertainty. In.Roloff, M. E., & Miller, G. R.(Eds.), Interpersonal Processes: *New Directions in Communication Research* (pp. 439-499). New bury Park, CA: Sage.

Berger, C., & Calabrese, R. (1975). Some Explorations in Initial Interaction and Beyond: Toward a Developmental Theory of Interpersonal Communication. *Human Communication Research,* 1: 98-112.

Bettman, J. R. (1971). The Structure of Consumer Choice Processes. *Journal of Marketing Research*, 8: 465-4711

Bettman, J. R. (1973). Perceived Risk and Its Components: A Model and Empirical Test. *Journal of Marketing Research*, 5(May): 184-190.

Bettman, J. R. (1975). Information Integration in Consumer Risk Perception: A Comparison of Two Models of Component Conceptualization. *Journal of Applied Psychology,* 60(3): 381-385

Bettman, J. R. (1979). *An Information Processing Theory of Consumer Choice.* MA: Addison Wesley.

Bhatnagar, A., Misra, S., & Rao, H. R. (2000). On Risk, Convenience, and Internet Shopping Behavior. *Communications of the ACM*, 43(11): 98-105.

Bieger, T., & Laesser, C. (2004). Information Sources for Travel Decisions: Toward a Sources Process Model. *Journal of Travel Research*, 42: 357-371.

Bigne, E., Ruiz, C., & Sanz, S. (2005). The Impact of Internet User Shopping Patterns and Demographics on Consumer Mobile Buying Behavior. *Journal of Electronic Commerce Research*, 6(3): 193-209.

Bjork, P. (1999). The Internet as a Marketspace-the Perception of the Consumers. In Buhalis, D.D., & Schertler, W. (Eds.), *Information and Communication Technologies in Tourism 1999* (pp. 54-65). Wien, New York: Springer.

Bloch, P. H., Sherrell, D. L., & Ridgway, N. M. (1986). Consumer Search: an Extended Framework. *Journal of Consumer Research*, 13: 119-126.

Bonn, M. A., Furr, H. L., & Susskind, A. M. (1999). Predicting a Behavioral Profile for Pleasure Travelers on the Basis of Internet Use Segmentation. *Journal of Travel Research*, 37: 333-340.

Bonoma, T. V., & Johnson, W. J. (1979). Decision Making Under Uncertainty: A Direct Measurement Approach. *Journal of Consumer Research*, 6(September): 177-190.

Bredin, R., Granitz, N., & Koerning, S. (2001). Toward an Understanding of Gender Differences in the Use of E-commerce: An Expansion of the Technology Acceptance Model. *Quarterly Journal of Electronic Commerce*, 2(3): 261-178.

Bruce, H. (1998). User Satisfaction with Information Seeking on the Internet. *Journal of the American Society for Information Science*, 49(6): 541-556.

Brucks, M. (1985). The Effects of Product Class Knowledge on Information Search Behavior. *Journal of Consumer Research*, *12*: 1-16.

Buhalis, D. (1998). Strategic Use of Information Technologies in the Tourism Industry. *Tourism Management*, 19(5): 409-421.

Cai, L., Feng, R., & Breiter, D. (2004). Tourist Purchase Decision Involvement and Information Preferences. *Journal of Vacation Marketing*, 10(2): 138-148.

Card, J., Chen, C., & Cole, S. (2003). Online Travel Products Shopping: Differences between Shoppers and Nonshoppers. *Journal of Travel Research*, 42: 133-139.

Carr, N. (2001). An Exploratory Study of Gendered Differences in Young Tourists Perception of Danger within London. *Tourism Management*, 22: 65-570.

Carter, S. (1998). Tourists' and travelers' social construction of Africa and Asia as risky locations. *Tourism Management*, 19(4): 349-358.

Cater, C. I. (2006). Playing with Risk? Participant Perceptions of Risk and Management Implications in Adventure Tourism. *Tourism Management*, 27: 317-325.

Celsi, R., & Olson, J. (1988). The Role of Involvement in Attention and Comprehension Processes. *Journal of consumer research*, 15(2), 210 - 224.

Cheong, J. H., & Park, M. (2005). Mobile Internet Acceptance in Korea. *Internet Research*, 15(2): 125-140.

Cheron, E. J., & Ritchie, J. R. B. (1982). Leisure Activities and Perceived Risk. *Journal of Leisure Research,* 14: 39-154.

Cho, Y., & Fesenmaier, D. R. (2000). A Conceptual Frmaework for Evaluating Effects of a Virtual Tour. In Fesenmaier, D. R., Klein, S., & Buhalis, D. (Eds.), *Information and Communication Technologies in Tourism 2000* (pp.314-323). Wien, New York: Springer.

Clatterbuck, G. W. (1979). Attributional Confidence and Uncertainty in Initial Interaction. *Human Communication Research*, 5(2): 147-157.

Clatterbuck, G., & Turner, G. (1978). Short-term and Long-term Effects of Information, Physical Attractiveness, and Uncertainty Reduction on Relationship Development. *Proceedings of the Annual Convention of the International Communication Association, Chicago, Ill.*

Claxton, J. D., Fry, J. N., & Portis, B. (1974). A Taxonomy of Prepurchase Information Gathering Patterns. *Journal of Consumer Research,* 1(December):35-42.

Contractor, N.S., Seibold, D. R., & Heller, M. A. (1996). Interactional Influence in the Structuring of Media Use in Groups: Influence in Members' Perceptions of Groups Decision Support System Use. *Human Communication Research*, 22(4): 451-481.

Cox, D. F. (1967). Synthesis: Risk Taking and Information Handling in Consumer Behavior. In Cox, D. F. (Eds.), *Risk Taking and Information Handling in Consumer Behavior* (pp. 604-439). Boston, MA: Harvard University Press.

CRM Today (2006). *Online Sales Show 25% Increase in 2005: Increased Broadband Access and Better Web Marketing Methods Helped Boost Numbers*. January 5, 2006. Retrieved from http://www.crm2day.com/news/crm/116908.php

Crompton, J. (1979). Motivations for Pleasure Vacations. *Annals of Tourism Research*, 6: 408-424.

Crotts, J. (2000). Consumer Decision Making and Prepurchase Information Search. In Pizam, A., & Mansfeld, Y. (Eds.), *Consumer Behavior in Travel and Tourism* (pp.149-168). Binghamton, NY: The Haworth Hospitality Press.

Crotts, J. C., & Reid, L. J. (1993). Segmenting the Visitor Market by the Timing of their Activity Decisions. *Visions in Leisure and Business*, 12(3): 4-7.

Crowe, R. M., & Horn, R.C. (1967). The Meaning of Risk. *Journal of Risk and Insurance*, 34(3): 459-474.

Csikszentmihalyi, M., & Csikszentmihalyi, I. (1988). *Optimal Experiences*. Cambridge: Cambridge University Press.

Cunningham, L. F., Gerlach, J. H., Harper, M. D., & Young, C. E. (2005). Perceived Risk and the Consumer Buying Process: Internet Airline Reservations. *International Journal of Service Industry Management*, 16(3/4): 357-372.

Dacko, G. S. (2004). Marketing Strategies for Last-minute Travel and Tourism: Profitability and Revenue Management Implications. *Journal of Travel & Tourism Marketing*, 16(4): 7-20.

Daigle, J. J., & Zimmerman, C. A. (2004). The Convergence of Transportation, Information Technology, and Visitor Experience at Acadia National Park. *Journal of Travel Research*, 43: 151-160.

D'Amore, L.J., & Anuza, T. E. (1986). International Terrorism: Implications and Challenge for Global Tourism. *Business Quarterly*, 4(November): 20-29.

D'Ambra, J., & Wilson, C. S. (2004). Use of the World Wide Web for International Travel: Integrating the Construct of Uncertainty in Information Seeking and the Task-technology Fit (TTF) Model. *Journal of the American Society for Information Science and Technology*, 55(8): 731-742.

Daniels, M. J., & Norman, W. C. (2001). Uncertainty Reduction Theory: A Means of Exploring Travel Information Seeking. *Proceedings of the 32nd Annual Travel and Tourism Research Association Conference.*

Derbaix, C. (1983). Perceived Risk and Risk Relievers: An Empirical Investigation. *Journal of Economic Psychology*, 3: 19-38.

DeSantis, G., & Poole, M. S. (1994). Capturing the Complexity in Advanced Technology Use: Adaptive Structuration Theory. *Organization Science*, 5(2): 121-147.

Diekhoff, G. (1992). *Statistics for the Social and Behavioral Science: Univariate, Bivariage, Multivariate.* Dubuque: Wm. C. Brown.

Dillman, D. A. (2000). *Mail and Internet Surveys: The Total Design Method.* New York: Wiley and Sons.

Dillon, T. W., & Reif, H. L. (2004). Factors Influencing Consumers' E-commerce Commodity Purchases. *Information Technology, Learning, and Performance Journal*, 22(2): 1-12.

Dolnicar, S. (2005). Understanding Barriers to Leisure Travel: Tourist Fears as a Marketing Basis. *Journal of Vacation Marketing*, 11(3): 197-208.

Donthu, N., & Garcia, A. (1999). The Internet Shopper. *Journal of Advertising Research*, 39(3): 52-58.

Douglas, W. (1990). Uncertainty, Information-seeking, and Liking during Initial Interaction. *Western Journal of Speech Communication*, 54(1): 66-81

Dowling, G. R. (1986). Perceived Risk: The Concept and its Measurement. *Psychology and Marketing*, 3: 193-210.

Dowling G. R., & Staelin, R. (1994). A Model of Perceived Risk and Intended Risk-Handling Activity. *Journal of Consumer Research*, 21(June): 119-134.

Dreze, X., & Zufryden, F. (1997). Testing Website Design and Promotional Content. *Journal of Advertising Research*, 37(2): 77-91.

Eastine, M. S. (2002). Diffusion of E-commerce: An Analysis of the Adoption of Four E-commerce Activities. *Telematics and Informatics*, 19(3): 251-267.

Einhorn, H. J., & Hogarth, R. M. (1985). Ambiguity and Uncertainty in Probabilistic Inference. *Psychological Review*, 92(4): 433-461.

Engel, J. F., & Blackwell, R. D. (1982). *Consumer Behavior (4th ed.)*. Hinsdale: The Dryden Press.

Etzel, J. M., & Wahlers, G. R. (1985). The Use of Requested Promotional Material by Pleasure Travelers. *Journal of Travel Research,* 23(Spring): 2-6.

Fakeye, P.C., & Crompton, J. R. (1991). Image Differences between Prospective, Fist-time, and Repeat Visitors to the Lower Rio Grande Valley. *Journal of Travel Research*, 30(2): 10-16.

Fall, L. (2000). *Segmenting Pleasure Travelers on the Basis of Information Sources Usefulness and Personal Value Importance*. Unpublished Doctoral Dissertation. Michigan State University.

Fesenmaier, D. R., & Vogt, C. A. (1993). Evaluating the Economic Impact of Travel Information Provided at Indian Welcome Centers. *Journal of Travel Research*, 31(Winter): 33-39.

Fesenmaier, D. R., Vogt, C. A., & Stewart, W. P. (1993). Investigating the Influence of Welcome Center Information on Travel Behavior. *Journal of Travel Research*, 31(3): 47-52.

Fesenmaier, D. R., & Jeng, J. (2000). Assessing Structure in the Pleasure Trip Planning Process. *Tourism Analysis*, 5(3): 13-28.

Festinger, L. (1964). *Conflict, Decision and Dissonance*. Stanford: Stanford University Press.

Field, A. (2005). *Discovering Statistics Using SPSS* (2nd ed.). SAGE Publications Ltd.

Field, J. M., Ritzman, L. P., Safizadeh, M. H., & Downing, C. E. (2006). Uncertainty Reduction Approaches, Uncertainty Coping Approaches, and Process Performance in Financial Services. *Decision Sciences*, 37(2): 149-175.

Fodness, D., & Murray, B. (1997). Tourist Information Search. *Annals of Tourism Research*, 24(3): 503-523.

Fodness, D., & Murray, B. (1998). A Typology of Tourist Information Search Strategies. *Journal of Travel Research*, 37 (November): 108-119.

Fodness, D., & Murray, B. (1999). A Model of Tourist Information Search Behavior. *Journal of Travel Research*, 37 (February): 220-230.

Gefen, D., & Straub, D. W. (1997). Gender Differences in the Perception and Use of Email: An Extension to the Technology Acceptance Model, *MIS Quarterly*, 21(December): 389-400.

Gemunden, H.G. (1985). Perceived Risk and Information Search. A Systematic Meta-Analysis of the Empirical Evidence. *International Journal of Research in Marketing*, 2:79-100.

Ghosh, D., & Ray, M. R. (1992). Risk Attitude, Ambiguity Intolerance and Decision Making: An Exploratory Investigation. *Decision Sciences,* 23: 431-444.

Ghosh, D., & Ray, M. R. (1997). Risk, Ambiguity, and Decision Choice: Some Additional Evidence. *Decision Sciences*. 28(1): 81-104.

Ghosh, D., & Grain, T. L. (1993). Structure of Uncertainty and Decision Making: An Experimental Investigation. *Decision Sciences*, 24(4): 789-802.

Gillian, S. M., & Drennan, J. (2005). Marketing M-services: Establishing a Usage Benefit Typology Related to Mobile User Characteristics. *Journal of Database Marketing & Customer Strategy*, 12(4): 327-342.

Gitelson, R. J., & Crompton, J. L. (1983). The Planning Horizons and Sources of Information Used by Pleasure Vacationers. *Journal of Travel Research*, 21(Winter): 2-7.

Goodrich, J. N. (2002). September 11, 2001 Attack on America: A Record of the Immediate Impacts and Reactions in the USA Travel and Tourism Industry. *Tourism Management*, 23(6): 573-580

Gorsuch, R. L. (1983). *Factor Analysis* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.

Gossens, J., & Gin, S. (1994). Tourism and AIDS: The Perceived Risk of HIV Infection on Destination Choice. *Journal of Travel and Tourism Marketing,* 3(4): 4-20.

Greatorex, M., & Mitchell, V. W. (1994). Modeling Consumer Risk Reduction Preferences from Perceived Loss Data. *Journal of Economic Psychology*, 15: 669-685.

Gudykunst, W., & Hammer, M. R. (1988). The Influence of Social Identity and Intimacy of Interethnic Relationships on Uncertainty Reduction Processes. *Human Communication Research,* 14(4): 569-601.

Gudykunst, W., & Nishida, T. (1984). Individual and cultural Influences on Uncertainty Reduction. *Communication Monographs*, 51:23-36.

Gudykunst, W., Yang, S. M., & Nishida, T. (1985). A Cross-Cultural Test of Uncertainty Reduction Theory: Comparisons of Acquaintances, Friends, and Dating Relationships in Japan, Korea, and the United States. *Human Communication Research*, 11: 407-454.

Guriting, P., & Ndubisi, N. O. (2006). Borneo Online Banking: Evaluating Customer Perceptions and Behavioral Intention. *Management Research News*, 29(1/2): 6-15.

Guseman, D. S. (1981). Risk Perception and Risk Reduction in Consumer Services. In Donnelly, J. H., & George, W. R. (Eds.), *Marketing of Services*, American Marketing Association, Chicago, IL.

Hales, C., & Shams, H. (1990). Cautious Incremental Consumption: A Neglected Consumer Risk Reduction Strategy. *European Journal of Marketing*, 25(7): 7-21.

Han, J. Y. (2005). *The Relationships of Perceived Risk to Personal Factors, Knowledge of Destination, and Travel Purchase Decisions in International Leisure Travel.* Doctoral Dissertation. Virginia Polytechnic Institute and State University.

Harman, H. H. (1976). *Modern Factor Analysis*. Chicago: University of Chicago Press.

Havitz, M. F., & Dimanche, F. (1990). Propositions for Testing the Involvement Construct in Recreational and Tourism Contexts. *Leisure Sciences* 12(2): 179-195.

Head, G. L. (1967). An Alternative to Defining Risk as Uncertainty. *Journal of Risk and Insurance,* 34(2): 205-214.

Heichler, E. (1997). Internet Lacks Content for Women. *Computerworld*, 31(19):64.

Heslin, R., Blak, B., & Rotton, J. (1972). Information Search as a Function of Stimulus Uncertainty and the Importance of the Response. *Journal of Personality and Social Psychology*, 23(3): 333-339.

Heung, C.S.V. (2003). Internet usage by International Travelers: Reasons and Barriers. *International Journal of Contemporary Hospitality Management*, 15(7): 370-378.

Hewes, D. E., Graham, M. K., Doelger, J., & Pavitt, C. (1985). Second Guessing: Message Interpretation in Social Networks. *Human Communication Research*, 11: 299-334.

Hisrich, R. D., Dornoff, R. J. & Kernan, J. B. (1972). Perceived Risk in Store Selection. *Journal of Marketing Research*, 9(November): 435-439.

Hoffman, D., Novak, T., & Venkatesh, A. (2004). Has the Internet Become Indispensable? *Communication of the ACM*, 47(7): 37-42.

Hofstede, G. (2001). *Culture's Consequences*. Beverly Hills, CA: Sage Publications.

Hosoe, S. (2005). Exploring the Moment of Consumption Using Cell Phones. *Journal of Electronic Commerce Research*, 6(3): 225-240.

Howard, J. A., & Sheth, J. N. (1968). *A Theory of Buyer Behavior*, New York: John Wiley and Sons.

Hsu, T. H., & Lin, L.Z. (2006). Using Fuzzy Set Theoretic Techniques to Analyze Travel Risk: an empirical study. *Tourism Management*, 27: 968-981.

Hugstad, P., Taylor, J. W., & Bruce, G. D. (1987). The Effects of Social Class and Perceived Risk on Consumer Information Search. *The Journal of Services Marketing*, 1(1): 47-52.

Hyde, K. F., & Lawson, R. (2003). The Nature of Independent Travel. *Journal of Travel Research*, 42(August): 13-23.

Jackson, D. N., Hourany, L., & Vidmar, N. J. (1972). A Four Dimensional Interpretation of Risk Taking. *Journal of Personality*, 40: 483-501.

Jang, S. (2004). The Past, Present, and Future Research of Online Information Search. *Journal of Travel & Tourism Marketing*, 17(2/3): 41-47.

Jaycoby, J., & Kaplan, L.B. (1972). The Components of Perceived Risk. In Venkatesan, M. (Eds.), *Proceedings of the 3rd Annual Conference of the Association for Consumer Research, Association for Consumer Research,* (pp. 382-393). College Park, MD.

Jeng, J. (1997). Facets of the Complex Trip Decision Making Process. In *28th Travel and Tourism Research Association Annual Conference Proceedings*. Norforlk, VA: Travel and Tourism Research Association.

Jeng, J. (2000). *Exploring the Travel Planning Hierarchy: An Interactive Web Experiment.* Unpublished Doctoral Dissertation, University of Illinois at Urbana-Champaign, Urbana, Illinois.

Jia, J., Dyer, J. S., & Butler, J. C. (1999). Measures of Perceived Risk. *Management Science*, 45(4): 519-532.

Johnson, E. J., & Russo, J. E. (1984). Product Familiarity and Learning New Information. *Journal of Consumer Research*, 11: 542-550.

Kahn, B. E., & Sarin, R. K. (1988). Modeling Ambiguity in Decisions under Uncertainty. *Journal of Consumer Research*, 15(2): 265-272.

Kanter, R. M. (2001). *Evolve: Succeeding in the Digital Culture of Tomorrow.* Boston: Harvard Business School Press.

Kanungo, R. N. (1982). *Work Alienation: An Integrative Approach.* Praeger, New York, NY.

Katz, J., & Aspden, P. (1997). Motivations for and Barriers to Internet Usage: Results of a National Public Opinion Survey. *Internet Research*, 7(3): 170-188.

Kellermann, K., & Reynolds, R. (1990). When Ignorance is Bliss: The Role of Motivation to Reduce Uncertainty in Uncertainty Reduction Theory. *Human Communication Research, 17*(1): 5-75.

Kerstetter, D., & Cho, M. (2004). Prior Knowledge, Credibility and Information Search. *Annals of Tourism Research*, 31(4): 961-985.

Kim, D. Y., Lehto, X. Y., & Morrison, A. M. (In press). Gender Differences in Online Travel Information Search: Implications for Marketing Communications on the Internet. *Tourism Management,* available online since May, 2006.

Kim, S. S., Scott, D., & Crompton, J. L. (1997). An Exploration of the Relationships among Social Psychological Involvement, Behavioral Involvement, Commitment, and Future Intentions in the Context of Birdwatching. *Journal of Leisure Research*, 29(3): 320-339.

King, W., & Rodriguez, J. (1978). Evaluating Management Information Systems. *MIS Quarterly*, September: 43-51.

Kogan, N., & Wallach, M. A. (1964). *Risk Taking: A Study in Cognition and Personality.* New York: Holt, Rinehard and Winston.

Klein, S., Kohne, F., & Oorni, A. (2004). Barriers to Online Booking of Scheduled Airline Tickets. *Journal of Travel & Tourism Marketing*, 17(2/3): 27-39.

Knight, F. H. (1921). *Risk, Uncertainty and Profit.* Cambridge Massachusetts: The Riverside Press.

Knobloch, L., & Solomon, D. (1999). Measuring the Sources and Content of Relational Uncertainty. *Communication Studies*, 50(4): 261-278.

Knowles, E. S. (1976). Searching for Motivations in Risk-taking and Gambling. In Eadington, W. R. (Eds.), *Gambling and Society* (pp. 295-322). Springfield, IL: Charles C. Thomas.

Knowles, E. S., Cutter, H. S. G., Walsh, D. H., & Casey, N. A. (1973). Risk-taking as a Personality Trait. *Social Behavior and Personality*, 1: 123-136.

Korgaonkar, P. K., & Moschis, G. P. (1987). Consumer Adoption of Videotext Services. *Journal of Direct Marketing*, 1(4): 63-71.

Kotler, P., Bowen, J., & Makens, J. (2006). *Marketing for Hospitality and Tourism.(4th ed.).* Upper Saddle River, NJ : Pearson Prentice Hall.

Kramer, M. W. (1993). Communication and Uncertainty Reduction during Job Transfers: Leaving and Joining Processes. *Communication Monographs*, 60(June): 178-197.

Kramer, M. W., Dougherty, D. S., & Pierce, R. A. (2004). Managing Uncertainty During a Corporate Acquisition: A Longitudinal Study of Communication During an Airline Acquisition. *Human Communication Research*, 30(1): 71-101.

Kroeber-Riel, W., & Weinberg, P. (2003). *Konsumentenverhalten.* Munich: Verlag Franz Vahlen Muenchen.

Laroche, M., McDougall, G. H. G., Bergeron, J., & Yang. Z. (2004). Exploring How Intangibility Affects Perceived Risk. *Journal of Service Research*, 6(4): 373-389.

Law, R., & Leung, R. (2000). A Study of Airlines' Online Reservation Services on the Internet. *Journal of Travel Research*, 39(November): 202-211.

Leavitt, C., & Walton, J. (1975). Development of a Scale for Innovativeness. *Advances in Consumer Research*, 2(1): 545-555.

Lepp, A., & Gibson, H. (2003). Tourist Roles, Perceived Risk and International Tourism. *Annals of Tourism Research*, 30(3): 606-624.

Lindner, J., & Murphy, T. (2001). Handling Nonresponse in Social Science Research. *Journal of Agricultural Education*, 42(4): 43-53.

Locander, W. B., & Hermann, P.W. (1979). The Effect of Self-confidence and Anxiety on Information Seeking in Consumer Risk Reduction. *Journal of Marketing Research,* 16(May): 268-274.

Lutz, R. J., & Reilly, P. J. (1973). An Exploration of the Effects of Perceived Social and Performance Risk on Consumer Information Acquisition. In Ward, S., & Wright, P. (Eds.), *Advances in Consumer Research*, 1, Association for Consumer Research (pp.393-405), Ann Arbor, MI.

MacCrimmon, K. P., & Wehrung, D. A. (1986). *Taking Risks*. New York: The Free Press.

MacKay, K., McVetty, D., & Vogt, C. (2005). Web-based Information Search and Use: Is It the New Tourism Reality? A Preliminary Examination of Visitors to Canada's Four Mountain Parks. *Travel and Tourism Research Association of Canada Annual Conference Kelowna, BC.*

Mahajan, V., Muller, E., & Srivastava, R. K. (1990). Determination of Adopter Categories by Using Innovation Diffusion Models. *Journal of Marketing Research*, 27 (February): 37-50.

Maser, B., & Weiermair, K. (1998). Travel Decision-making: from the Vantage Point of Perceived Risk and Information Preferences. *Journal of Travel and Tourism Marketing*, 7(4): 107-121.

Mattila, A. S., Apostolopoulos, Y., Sonmez,, S., Yu, L., & Sasidharan, V. (2001). The Impact of Gender and Religion on College Students' Spring Break Behavior. *Journal of Travel Research,* 40(November): 193-200.

Mayo, E. J., & Jarvis, L. P. (1981). *The Psychology of Leisure Travel: Effective Marketing and Selling of Travel Services.* Boston, MA: CBI Publishing Co., Inc.

McCleary, K. W., & Whitney, D. L. (1994). Projecting Western Consumer Attitudes toward Travel to Six Eastern European Countries. *Journal of International Consumer Marketing*, 6(3/4): 239-256.

McDonough, M. H., & Ackert, G. A. (1986). *Information and Travel Decision Making: Tourism Information Series* No. 8. East Lansing: Michigan State University, Corporate Extension Services.

McKelvie, S. J. (1992). Does Memory Contaminate Test-retest Reliability? *Journal of Gen Psychology* 119(1): 59-72.

Meyers-Levy, J. (1989). Influence of Sex Roles on Judgment. *Journal of Consumer Research*, 14: 522-530.

Mills, J. (1965). The Effect of Certainty on Exposure to Information Prior to Commitment. *Journal of Experimental Social Psychology*, 1: 348-355.

Milman, A., & Pizam, A. (1995). The Role of Awareness and Familiarity with a Destination: the Central Florida Case. *Journal of Travel Research*, 33(3): 21-27.

Mingxia, Z., Quan, R., & Xuan, K. (2006). The impact of Sino-western Cultural Differences on IT Products Consumption. *Journal of Technology Management in China*, 1(2): 159-173.

Mitchell, V., Davies, D., Moutinho, L., & Vassos, V. (1999). Using Neural Networks to Understand Services Risk in the Holiday Product. *Journal of Business Research*, 46: 167-180.

Mitchell, V., & Greatorex, M (1993). Risk Perception and Reduction in the Purchase of Consumer Services. *The Service Industry Journal, 13*(4): 179-200.

Mittal, B. (1983). *Understanding the Bases and Effects of Involvement in the Consumer Choice Process.* Doctoral Dissertation. University of Pittsburgh. Ann Arbor, MI: University of Microfilms International.

Mobiletracker (2005). *Total Mobile Subscribers Top 1.8 billion.* May 8, 2005, Retrieved from http://www.mobiletracker.net/archives/2005/05/18/mobile-subcribers-worldwide

Mobileinfo.com (2006). *Separating Mobile Commerce from Electronic Commerce.* Retrieved from http://www.mobileinfo.com/Mcommerce/differences.htm

Money, B. R., & Crotts, J. C. (2001). The Effect of Uncertainty Avoidance on Information Search, Planning, and Purchases of International Travel Vacations. *Proceeding of the 32nd Annual Travel and Tourism Research Association Conference*

Moutinho, L. (1987). Consumer Behavior in Tourism. *European Journal of Marketing*, 21:5-44.

Moutinho, L. (2000). *Strategic Management in Tourism.* New York: CABI Publishing.

Murphy, J., & Tan, I. (2003). Journey to Nowhere? E-mail Consumer Service by Travel Agents in Singapore. *Tourism Management*, 24(5): 543-550.

Murray, K. (1991). A Test of Services Marketing Theory: Consumer Information Acquisition Activities. *Journal of Marketing*, 55 (Jan): 10-25.

Murray, K., & Schlacter, J. L. (1990). The Impact of Services versus Goods on Consumers' Assessment of Perceived Risk and Variability. *Journal of the Academy of Marketing Science*, 18(1): 51-65.

Napier, N. K., Simmons, G., & Stratton, K. (1989). Communication during a Merger: The Experience of Two Banks. *Human Resource Planning*, 12: 105-122.

Ndubisi, N. O., Gupta, O.K., & Massoud, S. (2003). Organizational Learning and Vendor Support Quality by the Usage of Application Software Packages: a Study of Asian Entrepreneurs. *Journal of Systems Science and Systems Engineering*, 12(3):314-331.

Newman, J. P., & Staelin, R. (1972). Prepurchase Information Seeking for New Cars and Major Household Appliance. *Journal of Marketing Research*, 9: 249-257.

Oh, J., Cheng, C., Lehto, Y., & O'Leary, J. T. (2004). Predictors of Tourists' Shopping Behavior: Examination of Socio-demographic Characteristics and Trip Typologies. *Journal of Vacation Marketing*, 10(4): 308-319.

Oorni, A. (2004). Consumer Objectives and the Amount of Search in Electronic Travel and Tourism Markets. *Journal of Travel & Tourism Marketing*, 17(2/3): 3-14.

Onstar by GM (2007). Retrieved from http://www.onstar.com/us_english/jsp/index.jsp?seo=GOO_onstar.

Pagiavlas, N. A., & Marburger, P. (2005). Cell Phone Usage in Commercial Aviation: Differential Strategies across Global Market Segments. *Proceedings of American Academy of Advertising, Lubbock: 5.*

Pan, B. (2003). *Travel Information Search on the Internet: An Exploratory Study.* Unpublished Dissertation, University of Illinois at Urbana-Champaign.

Park, C. W. (1978). A Conflict Resolution Choice Model. *Journal of Consumer Research*, 5: 124-137.

Park, C. W., Hughes, R. W., Thukral, V., & Friedmann, R. (1981). Consumers' Decision Plans and Subsequent Choice Behavior. *Journal of Marketing*, 45: 33-47.

Park, C. W., & Lutz, R. J. (1982). Decision Plans and Consumer Choice Dynamic. *Journal of Marketing Research*, 16: 108-115.

Payne, J. W., Bettman, J. R., & Johnson, E. J. (1993). *The Adaptive Decision Maker.* New York: Cambridge University Press,

Perdue, R. R. (1985). Segmenting State Travel Information Inquirers by Timing of the Destination Decision and Previous Experience. *Journal of Travel Research*, 23(Winter): 6-11.

Perkins, H., & Thorns, D. (2001). Gazing or Performing?: Reflections on Urry's Tourist Gaze in the Context of Contemporary Experience in the Antipodes. *International Sociology*, 16(2): 185-204.

Peterson, R. A., Balasubramanian, S., & Bronnenberg, B. J. (1997). Exploring the Implications of the Internet for Consumer Marketing. *Journal of the Academy of Marketing Science*, 24: 329-346.

Peter, P. J., & Olson, J. C. (2002). *Consumer Behavior and Marketing Strategy*, Irwin McGraw-Hill, Boston.

Peterson, R. A., Balasubramanian, S., & Bronnenberg, B. J. (1997). Exploring the implications of the Internet for consumer marketing. *Journal of the Academy of Marketing Science*, 25(4): 329-346.

Pfeffer, I. (1956). *Insurance and Economic Theory.* Homewood, Illinois: Richard D. Irwin, Inc.

Pinhey, T. K., & Iverson, T. J. (1994). Safety Concerns of Japanese Visitors to Guam. *Journal of Travel & Tourism Marketing*, 3(2): 87-94.

Poon, A. (1993). *Tourism, Technology and Competitive Strategies.* Cab Intern, Wallingford.

Popielarz, D. T. (1967). An Exploration of Perceived Risk and Willingness to Try New Products. *Journal of Marketing Research*, 4: 369-372.

Prentice, R. (2004). Tourist Familiarity and Imagery. *Annals of Tourism Research*, 31(4): 923-945.

Raitz, K., & Dakhil, M. (1989). A Note about Information Sources for Preferred Recreational Environments. *Journal of Travel Research*, 28(Spring): 45-48.

Ramirez, A., Walther, J. B., Brugoon, J. K., & Sunnafrank, M. (2002). Information Seeking Strategies, Uncertainty and Computer-mediated Communication toward a Conceptual Model. *Human Communication Research*, 28(2): 213-228.

Rao, S. R., Thomas, E. G., & Javalgi, R. G. (1992). Activity Preferences and Trip-planning Behavior of the U.S. Outbound Pleasure Travel Market. *Journal of Travel Research*, 9 (Winter): 3-10.

Raymond, L. (2001). Determinants of Web Site Implementation in Small Businesses. *Internet Research*, 11(5): 411-422.

Reimer, G. D. (1990). Packaging Dreams. *Annals of Tourism Research*, 17: 501-512.

Reisinger, Y., & Mavondo, F. (2005). Travel Anxiety and Intentions to Travel Internationally: Implications of Travel Risk Perception. *Journal of Travel Research*, 43 (3): 212-225.

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

Roehl, W. (1988). *A Typology of Risk in Vacation Travel.* Unpublished Dissertation. Texas A&M University.

Roehl, W., & Fesenmaier, D. (1992). Risk Perceptions and Pleasure Travel: An Exploratory Analysis. *Journal of Travel Research*, 30(4):17-26.

Roselius, T. (1971). Consumer Rankings of Risk Reduction Methods. *Journal of Marketing*, 35(January): 56-61.

Rotton, J. (1972). Information Search as a Function of Stimulus Uncertainty and the Importance of the Response. *Journal of Personality and Social Psychology*, 23(3): 333-339.

Salam, A. M. N. (1998). *Three Essays on Electronic Commerce: WWW Information Content, Internet Involvement and Perceived Risk.* Doctoral Dissertation. State University of New York at Buffalo.

Savolainen, R. (1999). The Role of the Internet in Information Seeking: Putting the Networked Services in Context. *Information Processing and Management*, 35: 765-782.

Schaninger, C. M., & Sciglimpaglia, D. (1981). The Influence of Cognitive Personality Traits and Demographics on Consumer Information Acquisition. *Journal of Consumer Research*, 8(September): 208-216.

Schul, P., & Crompton, J. L. (1983). Search Behavior of International Vacationer: Travel-specific Lifestyle and Sociodemographic Variables. *Journal of Travel Research*, 21(fall): 24-30.

SearchMobilecomputing.com (2003). Retrieved from http://searchmobilecomputing.techtarget.com/sDefinition/0,,sid40_gci214590,00.html

Selin, S. W., & Howar, D. R. (1988). Ego Involvement and Leisure Behavior: a Conceptual Specification. *Journal of Leisure Research*, 20(3): 237-244.

Settle, R. B., Dfflon, T. W., & Alreck, P.L. (1999). Acceptance of the Phone-based Interface for Automated Call Direction. *Behavior & Information Technology*, 18(2): 97-107.

Sheth, J. N., & Venkatesan, M. (1968). Risk-reduction Processes in Repetitive Consumer Behavior. *Journal of Marketing Research*, 5(August): 307-310.

Snepenger, D. J. (1987). Segmenting the Vacation Market by Novelty Seeking Role. *Journal of Travel Research*, 26(Fall): 8-14.

Snepenger, D., Meged, K., & Snellling, M., & Worrall , K. (1990). Information Search Strategies by Destination-Naïve Tourists, *Journal of Travel Research*, 27(Summer): 13-16.

Sonmez, S. F. (1994). *An Exploratory Analysis of the Influence of Personal Factors on International Vacation Decisions within the Context of Terrorism and/or Political Instability Risk.* Unpublished Dissertation. Pennsylvania State University.

Sonmez, S. F., & Grafe, A. R. (1998a). Determining Future Travel Behavior from Past Travel Experience and Perceptions of Risk and Safety. *Journal of Travel Research*, 37(2): 171-177.

Sonmez, S., & Graefe, A. R. (1998b). Influence of Terrorism Risk on Foreign Tourism Decisions. *Annals of Tourism Research*, 25: 112-144.

Sonmez, S. F., Apostolopolulos, Y., & Tarlow, P. (1999). Tourism in Crisis: Managing the Effects of Terrorism. *Journal of Travel Research*, 38 (August): 13-18.

Srikanth, B. (2005). Cohort Analysis of Online Travel Information Search Behavior: 1995-2000. *Journal of Travel Research*, 44: 135-142.

Stone, R. N. (1984). The Marketing Characteristics of Involvement. *Advances in Consumer Research*, 11(1):201-215.

Stone, R. N., & Winter, F. W. (1987). Risk: Is It Still Uncertainty Times Consequences? In Belk, R.W. et al. (Eds.), *Proceedings of the American Marketing Association, Winter Educators Conference* (pp 261-265), Chicago, IL.

Sunnafrank, M. (1986). Predicted Outcome Values: Just Now and Then? *Human Communication Research*, 13(1): 39-40.

Sunnafrank, M. (1990). Predicted Outcome Value and Uncertainty Reduction Theories. *Human Communication Research*, 17(1): 76-103.

Sussmann, S., & Rashcovsky, C. (1997). A Cross-Cultural Analysis of English and French Canadians' Vacation Travel Patterns. *International Journal of Hospitality Management,* 16(2): 191-208.

Taylor, J. W. (1974). The Role of Risk in Consumer Behavior. *Journal of Marketing,* 38(2): 54-60.

Telecomworldwire (2005). Feb 4, 2005. Retrieved from http://www.findarticles.com/p/articles/mi_m0ECZ/is_2005_Feb_4/ai_n9512193

Teo, T. S. H., Kim, V. K. G., & Lai, R. Y. C. (1999). Intrinsic and Extrinsic Motivation in Inter Usage. *Omega*, 27(1): 25-37.

Travel Industry Association of America (2004). *Outlook on U.S. tourism.* Washington, D. C.: Travel Industry Association of America.

Tsang, G. (1993). *Visitor Information Network Study.* Unpublished master of commerce thesis, University of Otago, Dunedin, New Zealand.

Tsaur, S. H., Tzeng, G. H. & Wang, K. C. (1997). Evaluating Tourist Risks from Fuzzy Perspectives. *Annals of Tourism Research*, 24 (4): 796-812.

Um, S., & Crompton, J. L. (1990). Attitude Determinants in Tourism Destination Choice. *Annals of Tourism Research*, 17: 432-448.

Urbany, J., Dickson, P., & Wilkie, W (1989). Buyer Uncertainty and Information Search. *Journal of Consumer Research*, 16: 208-214.

Uriely, N., & Y. Belhassen (2006). Drugs and Risk Taking in Tourism. *Annals of Tourism Research*, 33(2): 339-359.

Van Raaij, W., & Francken, D. (1984). Vacation Decisions, Activities and Satisfactions. *Annals of Tourism Research*, 11: 101-112.

Vogt, C. (1993). *The Role of Touristic Information in the Pre-trip Experience.* Unpublished Dissertation. Indiana University.

Vogt, C., & Stewart, S. I. (1998). Affective and Cognitive Effects of Information Use over the Course of a Vacation. *Journal of Leisure Research*, 30(4): 498-520.

Vogt, C., Stewart, I., & Fesnemaier, D. R. (1998). Communication Strategies to Reach First-time Visitors. *Journal of Travel & Tourism Marketing*, 7(2): 69-89.

Walle, A. H. (1996). Tourism and the Internet: Opportunities for Direct Marketing. *Journal of Travel Research*, 35(1):72-77.

Walther, J. B. (1994). Anticipated Ongoing Interaction versus Channel Effects on Relational Communication in Computer-Mediated Interaction. *Human Communication Research*, 20(4): 473-501.

Wang, F., Head, M., & Archer, N. (2000). A Relationship-Building Model for the Web Retail Marketplace. *Internet Research*, 10(5): 374-384.

Weber, E. U., & Millman, R. A. (1997). Perceived Risk Attitudes: Relating Risk Perception to Risky Choice. *Management Science*, 43(2): 123-144.

Weber, K, & Roehl, W. S. (1999). Profiling People Searching for and Purchasing Tavel Poducts on the World Wide Web. *Journal of Travel Research*, 37(3): 291-298.

Weiss, C. H. (1998). *Evaluation* (2nd ed.). Upper Saddle River, NJ. Prentice Hall.

Werthner,H., & Klein, S. (1999). *Information Technology and Tourism: A Challenging Relationship*. Vienna: Springer Computer Science.

Wikipedia (2006). Retrieved from http://en.wikipedia.org/wiki/Electronic_commerce

Wilder, G., Mackie, D., & Cooper, J. (1985). Gender and Computer: Two Surveys of Computer-related Attitudes. *Sex Roles*, 13: 215-238.

Williams, A. (2002). *Understanding the Hospitality Consume.* Burlington, MA. Elsevier Butterworth-Heinemann.

Williams, C. A., & Heins, R. M. (1964). *Risk Management and Insurance*. New York: McGraw-Hill Book Company.

Wilson, T. D. (1981). On User Studies and Information Needs. *Journal of Documentation*, 37: 3-15.

Wong, L. K. F., & Kwan, C. (2001). An Analysis of the Competitive Strategies of Hotels and Travel Agents in Hong Kong and Singapore. *International Journal of Contemporary Hospitality Management*, 13(6): 293-303.

Wood, O. G. (1964). Evolution of the Concept of Risk. *Journal of Risk and Insurance*, 31(1): 83-91.

Woodside, A. G., & Lysonski, S. (1989). A General Model of Traveler Destination Choice. *Journal of Travel Research*, 27(Spring): 8-14.

Yavas, U. (1990). Correlates of Vacation Travel: Some Empirical Evidence. *Journal of Professional Services Marketing*, 5(2): 3-17.

Yoffie, A. J. (1997). The E-shopper. *Brandweek*, 38(19): 30-32.

Yuan, Y., Gretzel, L. U., & Fesenmaier, D. R. (2006). The Role of Information Technology Use in American Convention and Visitors Bureaus. *Tourism Management,* 27(2): 326-341

Yukel, A. (2004). Shopping Experience Evaluation: A Case of Domestic and International Visitors. *Tourism Management*, 25(6): 751-764.

Yuksel, A., & Yuksel, F. (In press). Shopping Risk Perceptions: Effects on Tourists' Emotions, Satisfaction and Expressed Loyalty Intentions. *Tourism Management.*

Zeithaml, V. A. (1988). Consumer Perceptions of Price, Quality, and Value: A Means-end Model and Synthesis of Evidence. *Journal of Marketing*, 52(3): 2-22.