

7-2008

Online travel information search behaviors: An information foraging perspective

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ONLINE TRAVEL INFORMATION SEARCH BEHAVIORS: AN INFORMATION
FORAGING PERSPECTIVE

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
Parks, Recreation and Tourism Management

by
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August 2008

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ABSTRACT

Information search has been a topic of research for a multitude of studies across several fields, including travel and tourism. However, information search on the internet, especially in travel and tourism, has rarely been examined. As a result, this research was undertaken to explore travel information search behaviors on the Internet.

This thesis uses information foraging theory (Pirolli & Card, 1999) as a basis to examine online travel information search behaviors. In addition, other established measures of online information search (Hodkinson, Kiel, & McColl-Kennedy, 2000) were used to supplement findings based upon information foraging theory. Groups of students from two different countries of origin (Belgium and the United States) were compared based on the body of literature started by Hofstede (1980) on uncertainty avoidance. Additionally, Students from the United states were compared when planning trips over two different travel planning horizons (One week and three months) based on the body of literature started by Gitelson and Crompton (1983).

Measures of information foraging were measured by frequency of use, and it was found that such measures applied to online travel information foraging. It was also found that the majority of additional measures were applicable to online travel information foraging, with the addition of several measures found to be unique to the travel genre. Additionally, with the use of independent sample t-tests, this research revealed several significant differences in search behaviors between Belgians and Americans. Finally, with the exception of one measurement, this research revealed that participants with different travel planning horizons were not significantly different

DEDICATION

This thesis is dedicated to everyone who has helped me realize how important education is: My family (Mom, Dad and Erin); two special professors (Dr. Vogt and Dr. Norman); my Michigan State group of encouragers (Paige, Pavlina and Ariel); and all my friends who have stuck with me when this document made me a not so pleasant person. Without these people I would have never made it.

ACKNOWLEDGMENTS

A special thank you to Dr. Norman and Dr. Vogt who decided I would be attending graduate school. Thank you to my other committee members Dr. McGuire and Dr. Backman for being so flexible. In addition, thanks to Dr. Govers and Dr. Vanneste in Belgium, and Dr. Howard for his usability expertise and software.

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CHAPTER ONE

INTRODUCTION

Introduction

The Internet is a world wide, publicly accessible network of computers used by a variety of people for a vast range of activities. One of the most popular activities undertaken by Internet users is searching for travel information (Horrigan, 2008). Popular media and research indicate that use of the Internet to search for travel information has already surpassed traditional media sources, and will continue to increase into the foreseeable future (Patkose, Stokes & Cook, 2004; Tews & Merritt, 2007).

The Internet

Netcraft, a company dedicated to measuring the number of unique websites there are, estimated that in June 2008 there were just over 172 million unique websites in existence (Netcraft, 2008.). In 2005, it was found that each unique website contained an average of 50 web pages (Boutell, 2008). They have estimated that there are more than 8.6 trillion web pages on the Internet today. However, with the recent explosion of user generated content (Web 2.0) the breadth and depth of the Internet is set to grow exponentially in coming years (O'Reilly, 2005).

The global nature of the Internet provides an opportunity for citizens of the world to access the abundant resources available online. In 2008, over 1.4 billion people throughout the world, just over 21% of the entire world population had Internet access (Internet World Stats, 2008). This represents an increase of 290% in worldwide Internet

usage from 2000 to 2008. The Pew Internet and American Life Survey found in 2007 that 76% of American adults use the Internet. The age range of 18-29 years old had an Internet use rate of 92% (Horrigan, 2008). Also, Survey respondents with at least some college education had a use rate of 84% (Horrigan, 2008).

The large number of websites available and widespread use, especially in the United States, makes the Internet a viable source for a multitude of activities. In 2006 Pew Research found that of the 75% of American adults who use the Internet, 91% utilized online search engines to find information. In addition, Pew Research found that 81% of Internet users used the Internet to look for information online about a service or product they were thinking of buying. Pew Research also found that searching for travel information was among the most popular online activities, with 73% of Internet users searching for travel information (Horrigan, 2008).

Widespread Internet use in the United States has led many types of organizations to promote online sales (e-commerce) and even spawned organizations that deal solely in Internet transactions. The U.S. Department of Commerce recently released a report indicating that e-commerce was the fastest growing business sector in 2006. The report states that e-commerce accounted for nearly 3 trillion dollars worth of shipments, sales and revenue during the 2006 fiscal year (US Census, 2008).

The Internet and Travel and Tourism

The type of websites used by travel searchers cover a broad spectrum such as online travel agency sites (e.g. Expedia, Travelocity, Orbitz), travel company websites

(e.g. airlines, hotels, rental car companies), general search engines (e.g. Google, Yahoo, Ask), destination specific sites (e.g. Travel2sc), special interest sites (e.g. Wine tasting, skiing, boating), or even newspaper or magazine sites (Patkose et al, 2004). These sites represent the major industry presence on the Internet and don't include more recent developments such as Web 2.0 type sites like TripAdvisor and RealTravel. Web 2.0 type sites provide user generated travel advice and stories from their own travel experiences. Further, there is new breed of meta-travel agency websites such as Kayak that search travel agency sites, and travel company sites and then routes users directly to those websites.

Of the nearly 120 million adult users of the Internet in 2004, approximately 98 million users utilized the Internet to find travel information (Patkose et al, 2004). This figure represents a 233% increase since the 1997 figure of 42 million users utilizing the Internet for travel information. According to the Travel Industry Association of America (TIA), people utilizing the Internet for travel purposes are most likely to middle aged, well educated and had an average household income of \$73,000. (Patkose et al, 2004).

While many Internet users are utilizing the Internet to find travel information, there has been some research suggesting that there is some apprehensiveness when it comes to the actual purchase of travel products online. The TIA found that 31% of all travelers are actually booking or making travel reservations online. This figure represents an increase from 29% of all travelers who booked online in 2003 and an increase from 10% of all travelers who booked online in 1999 (Patkose et al, 2004). Travelers utilizing the Internet for booking purchased a variety of products and services. In 2004, the top

three items booked or purchased online were airline tickets (82% of online travel bookers), overnight lodging accommodations (67%), and activities (66%) (Patkose et al 2004).

Online travel purchases have recently become a significant source of revenue for many organizations; according to the US Department of Commerce the travel industry generated 27% of its total revenue via e-commerce in 2007. The most recent monetary figures available indicate that in 2003 online travel sales generated 39.4 billion dollars of revenue (Patkose et al, 2004). All indications point toward an increasing percentage of revenue in the travel and tourism industry being generated by online bookings and purchases in the future.

Academic Research on Travel and Tourism on the Internet

Trends in Research on Travel and Tourism on the Internet

The Internet has become an increasingly important element in the travel and tourism industry and, as such, a quickly growing body of literature has been developed over the past 10 years. A review of the proceedings from the 2007 ENTER conference (A conference dedicated to research on information technology in travel and tourism) shows three important trends in research on travel and tourism on the Internet. First, new hardware and software packages such as recommender systems (i.e. systems that recommend future travel options based on past travel purchases) have received much attention for their potential to revolutionize travel marketing. Second, Web 2.0 (i.e. user generated content) has become a hot topic because of the recent development of a large

number of sites with an incredible volume of information. Third, the topic of information searching on the Internet has received much attention recently because of its important role in the travel decision making process and the development of search engines and other websites dedicated solely to travel searching (Jang, 2004). This thesis research will focus on the topic of travel information search on the Internet.

Impact of the Internet on the Travel and Tourism Industry

The travel and tourism industry has been impacted by the Internet in many ways, the most important of which is the destruction of the traditional travel distribution channel structure (O'Connor, 2008). The Internet has revolutionized the relationships between suppliers, intermediaries and consumers, essentially creating a flat distribution channel where consumers have access to suppliers and intermediaries simultaneously. The travel industry is suited particularly well to rely heavily on the Internet as a distribution channel as the majority of offerings within travel and tourism are intangible services rather than durable goods (Buhalis, 1998). These services are almost exclusively purchased before the customer has begun to travel. Thus, it has become extremely important that tourists receive timely and accurate information in order to satisfy their demand for pre-purchase information (Buhalis, 1998). The Internet provides the perfect opportunity for travel and tourism organizations and marketers to reach travel and tourism consumers with the information they need to make pre-travel decisions and purchases.

Information Search

A substantial body of literature exists that attempts to understand information search behaviors exhibited by travelers during various stages of the planning process. This body of literature covers subjects ranging from information search and experience (Perdue, 1985; Snepenger, Meged, Snelling, & Worrall, 1990), information search and welcome centers (Gitelson & Crompton, 1983; Gitelson & Perdue, 1987; Howard & Gitelson, 1989), information searcher typology (Fodness & Murray, 1998), and models of information search behaviors (Vogt & Fesenmaier, 1998; Fodness & Murray, 1999). These studies all utilize information search using traditional forms of communication such as brochures, newspapers, and radio.

Upon further examination of research on information search behaviors several studies discuss the phenomenon of travel planning horizons. Specifically, a majority of these studies discussed how travel planning horizon, or how far in the future actual travel was going to be, had a significant effect on which sources travel planners used and what type of search behaviors they exhibited. As these studies were focusing on traditional communication forms, a search for research on travel planning horizons and the Internet was conducted. Surprisingly, only a small number of studies even mentioning travel planning horizon in an online context were found (Pan & Fesenmaier, 2006; Kim, Lehto & Morrison, 2007). These studies have only made peripheral reference to online travel planning horizons, indicated that they should be studied in the future.

Online Information Search in the Travel and Tourism Industry

The body of literature on online travel information search is fairly young, first starting around 1998 and has since grown into a larger body of literature today. Jang (2004) produced a summary of research done on online travel information search. In Jang's (2004) study, three areas of previous research are highlighted: uncertainty avoidance (The process by which potential travelers appease the uncertainty of travel by planning in detail), benefits to travelers and marketers, and concerns and opportunities.

Academic work on uncertainty avoidance was begun by Hofstede's (1980) study on cultural dimensions and, more recently, the effect culture has on uncertainty avoidance (Hofstede, 2001). Since then, there have been several other studies examining the impact of uncertainty avoidance on online travel information searching (Chen & Gursoy, 2000; Litvin, Crotts, & Heffner, 2004; Gursoy & Umbreit, 2004; Brengman, Geuens, Weijters, Smith, & Swinyard 2005). Of particular interest, Brengman et al. determined that the information search behaviors of Belgians and Americans were acceptable for comparison. In addition, there have been several studies that indicated uncertainty avoidance has significant implications for purchases travel searchers eventually make (Palmer & McCole, 2000; Money & Crotts, 2003; Susskind, Bonn, & Dev, 2003).

Benefits of utilizing the Internet for travel information search are not only limited to the information searcher, travel industry marketers stands to benefit as well. Benefits of online travel marketing include 24 hour accessibility, customized information, relatively low access cost, ease of product comparison, and interactivity. (Hoffman &

Novak, 1997; Wang, Head & Arthur, 2002; Luo, Feng & Kai, 2004; Gursoy & McCleary, 2004).

Concerns and opportunities with online travel information search are centered around the fact that it is a new field. Jang (2004) states that individuals who utilize the Internet for travel and tourism information search are often young and well educated which represent a rather small market segment. These young users expect a great deal from their online information sources, as they have grown up in an age where information is abundantly available and customized. The opportunities here for online travel marketers are that these young, well educated users will eventually be well paid professionals with a large amount of discretionary income to spend. Therefore, Jang (2004) recommends more research be done, especially on young users from a variety of backgrounds, in order to prepare the travel and tourism industry for this opportunity to reach a new market.

Building on Jang's work in 2004, two recent studies of online travel information search behaviors take into account his recommendations. Pan and Fesenmaier (2006) completed a study covering the micro-level process of vacation planning on the Internet. In examining micro-level vacation planning, the authors deconstructed the online travel information search process into episodes and chapters reflecting the specific problem being addressed. This study sought to examine each individual process of online travel searching, while leaving the broader overall (Macro) search behaviors untouched. Furthermore, the authors found that information foraging theory (Pirolli & Card, 1999) was effective in examining the broader behaviors of online information searchers.

Further work by Jun, Vogt, and MacKay (2007) found that online travel information search behaviors differed by what stage of the travel planning process users were in. Utilizing case-based travel planning theory developed by Stewart and Vogt (1999), Jun et al. found that the Internet was used more in the pre-trip planning stage than it was in later stages, particularly when searching for accommodations, activities, and flights. Recommendations by the authors indicate it would be beneficial to further research online travel information search behaviors in the pre-trip planning stage.

Information Foraging Theory

Based on the work of Pan and Fesenmaier (2006), this research utilizes information foraging theory (Pirolli & Card, 1999) in order to examine how users search at the macro level for travel information online. The macro level travel planning involves examining the travel planning process as a whole, not just individual clickstreams. Information foraging theory posits that users will modify their environment in order to maximize their rate of valuable information gained (Pirolli & Card 1999). The task environment of an information searcher is generally comprised of ‘information patches’ (Pirolli & Card 1999). On the Internet, such patches range from individual websites to search engine results, or online compilations.

In the simplest form, there are two ways users can maximize their rate of valuable information gain: *environmental enrichment* and *scent following* (Pirolli & Card 1999). Online, environmental enrichment consists of behaviors that maximize the amount of valuable information contained in an information patch or minimizes the time it takes a

forager to get between patches. An example of this could be refining keywords used in a search engine so that it returns the best possible results. Scent following on the Internet involves clicking several links in succession, taking the user from site to site until they reach the information they were looking for.

Research Gap

It has been determined that information foraging theory is a good fit for examining online travel information search. Additional measurements of information search, however, are scattered throughout a variety of fields and generally only work in the context of one field or another. As a result, the academic literature was searched for a set of measures commonly used to examine online information search behavior. This review led to the discovery of measures developed by Hodkinson, Kiel, and McColl-Kennedy (2000) that can be applied to information foraging to better understand and interpret time measurement of information foraging. Additionally, several of the studies mentioned in this chapter discuss a need to examine how online travel information search behaviors differ between countries. As the body of literature started by Hofstede (1980) found, a variety of countries have different elements of uncertainty avoidance, which in turn leads them to search for travel information differently. Information search behaviors have also been found to differ over travel planning horizons. Both of these fields of work need to be further examined in the context of online travel information searching.

Statement of Purpose

The purpose of this thesis research is to build upon the framework of the online travel information finding activity examined by Pan and Fesenmaier (2006) by using an expanded search environment where participants are allowed to browse the Internet freely while searching for online travel information of their choosing. This includes the incorporation of information foraging theory, comparison of travel search behaviors between two countries and examining behaviors over multiple travel planning horizons, while using established measures previously used to evaluate online search behaviors.

Research Questions

A set of research questions were developed to address the research gaps that were found in the literature and to fulfill the purpose of this study.

Research Question 1: Is information foraging theory applicable to an online travel and tourism information search setting?

Research Question 2: Can the measures developed by Hodkinson, Kiel & McColl-Kennedy measure online travel information search behaviors?

Research Question 3: Do Belgian students search differently for online travel information than American students?

Research Question 4: Does travel planning horizon make a difference in online information search behaviors?

Contribution of Study

These research questions were designed to contribute to the growing body of literature on online travel information search as well as provide some insight for travel organizations and consumers. While information foraging theory has been applied to micro level travel and tourism information searching studies before, it has not been proven applicable to a macro level study where participants are given a more realistic search activity. In addition, the use of established measures will provide insight on how online travel information searchers go about finding information. As suggested by previous research, search behaviors of two countries' citizens will be measured and two travel planning horizons will be used. This information is of particular importance to the online travel industry, which caters to multiple countries and travelers with a variety of planning horizons.

Outline of Thesis

Chapter II will review in detail all of the academic literature on information search in travel and tourism, online information search in travel and tourism, information foraging theory, country of origin and uncertainty avoidance, and travel planning horizons. Chapter III will describe the research methods used in this study, including variables, measurement, hypotheses, timeline, and coding and analysis methods. Chapter IV will present descriptive statistics and tests results as well as hypothesis testing for each research question. Chapter V will include a summary of results, research implications, conclusions, recommendations for future research and study limitations.

CHAPTER TWO

LITERATURE REVIEW

Introduction

Travel and tourism information search has been an important area of study over the past several decades. This literature review will first cover travel and tourism information search using traditional sources such as print, radio, and television in order to understand the history of the topic. Next, research on travel and tourism information search on the Internet will be presented. Then, a review of the underlying theory used to examine travel and tourism information search on the Internet, information foraging theory, will be discussed. Finally, the topics of country of origin and the role of uncertainty avoidance on information search and information search over differing travel planning horizons will be reviewed.

Travel and Tourism Information Search

The body of literature on travel and tourism information search began with a study of planning horizons and information sources used by visitors to highway welcome centers (Gitelson & Crompton, 1983). Prior to this study, research on information search had been centered primarily in the consumer behaviors literature (Claxton, Fry & Portis, 1974; Newman, 1977). Gitelson and Crompton (1983) focused on answering two questions; what type of and how many information sources were travelers using, and how long before their trip travelers started planning. The authors found that there was a significant level of association between planning horizon and the number of different

sources that were used. Travelers who had a long travel planning horizon (more than three months) used significantly more information sources than travelers who had a short travel planning horizon (less than one month). After this publication, several other studies (Perdue, 1985; Gitelson & Perdue, 1987; Howard & Gitelson, 1989) were conducted utilizing visitors to highway welcome centers that extended the information search body of literature

Perdue's (1985) study of visitors to highway welcome centers indicated that state created information brochures sent to travelers before their trips were successful in luring potential visitors. In addition, this study continued the body of literature in finding that informational brochures not only attracted visitors, but also influenced what type of attractions they visited. Continuing the trend of highway welcome center visitor studies, Gitelson and Perdue (1987) found that information obtained by travelers during their trip likely influenced their travel route decisions, activities, and lodging decisions during that trip as well as during future trips. Additionally, Howard and Gitelson (1989) validated previous studies of visitors to highway welcome centers by finding that travelers who visit welcome centers were not significantly different in any trip characteristics than travelers who do not visit welcome centers.

The next landmark study in which traditional information sources were used was that of Fodness and Murray (1997). This study was unique in that it was the first research to examine the broad range information sources used by travel information searchers. Three information search strategies were revealed during the data analysis of this study – Routine information search, limited information search, and extensive information

search. Routine information search was carried out quickly and with a limited number of sources, generally associated with travelers planning a trip to visit friends or relatives who could give additional travel advice. Limited information search was either time limited or source limited. Time limited tourists tended to search quickly using a higher than average number of sources, while source limited tourists tended to use an above-average travel planning horizon on one or two information rich sources (Fodness & Murray, 1997).

Vogt and Fesenmaier (1998) continued the trend of examining travelers using multiple information sources along with the addition of why they used such sources. The authors found that there were four functional aspects of information search that are designed to answer specific questions or reduce identified risks associated with purchase. The first functional role of information search is finding data that serves to gain product knowledge. While some travelers may already have knowledge from their own experiences, invariably travelers search out other information sources to assist in decision making processes. The second functional role of information searching is reduction of consumer uncertainty. Travelers often associate travel, especially to foreign countries, a somewhat risky endeavor, and therefore seek information that reduces their perceived risk of travel. The third functional component of information search is utility. Utility of information search is determined by how much information the searcher gains relative to the cost of finding that information. The fourth and final functional role of information searching is efficiency. Search efficiency is determined by assessing each source of

information available and determining which source or group of sources will return the greatest amount of information in the least amount of time.

It has been established that there are a multitude of travel information sources available and several functional purposes that the information search process serves. In an attempt to discover how potential travelers utilize these sources to achieve their search goals, Fodness and Murray (1998) developed a typology of tourist information search strategies. The authors discovered seven major search strategies, the majority of which took place pre-purchase, during their data analysis: (1) Pre-purchase mix – included a heavy use of a wide variety of contributory sources, (2) Tourist bureau – pre-purchase users of state travel guides and local tourist offices, (3) Personal experience – Ongoing evaluation of ones own travel experiences, (4) Ongoing – An ongoing evaluation of popular media such as newspapers and magazines, (5) On-site – Ongoing evaluation of sources such as friends and relatives, (6) Automobile club – Pre-purchase use of automobile club advice such as AAA, (7) Travel agency – Pre-purchase use of travel agents as a decisive source with limited use of brochures and guidebooks. These seven search strategies highlight the difference between those who do all of their searching before they travel, and those who take an ongoing search approach.

After constructing their typology of tourist information search strategies, Fodness and Murray sought to integrate them into a model of tourist information search behavior (1999). This study attempted to correlate the search strategies previously mentioned with other variables such as search contingencies and individual traveler characteristics. Interestingly, of all survey respondents, over half used only one or two information

sources. Also of interest, as length of stay, number of attractions visited, and number of destinations visited increased, the number of information sources used by travelers significantly increased. Results of this study are consistent with Vogt & Fesenmaier (1998) in that information searchers evaluated relative risk and cost of finding proper information for their travels.

Travel and Tourism Information Search on the Internet

Research on travel and tourism information search behaviors first made the jump the Internet when Weber and Roehl (1999) profiled people searching for and purchasing travel products on online. Even as early as 1999 the Internet was deemed important enough to the travel and tourism industry to merit research projects, even though at that point a mere 5% of travel information searchers were actually purchasing online. At this point in time, the distribution of travel products was in a state of change. Weber and Roehl (1999) make an important conclusion based upon their data: The future of online travel retailing is bright, and as more people gain experience in an online environment, they should become more comfortable with purchasing travel products online.

Continuing the trend of examining online travelers' apprehension toward actually purchasing on the Internet, Susskind, Bonn and Dev (2003) examined why online travel searchers were reluctant to actually purchase what they found. The authors discovered through their research that individuals view online information seeking and online purchasing differently. While a majority of travel information searchers have little apprehension about finding travel information online, they are concerned about actually

purchasing such information. This research found that a new trend of online intermediaries which search direct sellers and then guide travel searchers to the sellers themselves has helped to eliminate such apprehensiveness toward buying online.

Building upon previous research, Gursoy and McCleary (2004) sought to create a model of tourists' information search behavior. This research is of great importance in the online tourist information search literature, as it highlights the online information search process and costs associated with the search process. Gursoy and McCleary (2004) highlight the fact that before external search occurs, travelers undertake an internal search of previous travel and travel planning experiences. Thus, these two elements are useful in explaining the external search actions of online travel information searchers. External search, however, does not come without cost. The authors indicate that in the context of searching for travel information, time is the most important external cost, and is commonly accepted as affecting the extent of external search. Gursoy and McCleary (2004) also indicate that given low cost and ease of information retrieve on the Internet, searchers will expend more external search effort on the Internet rather than traditional information sources.

In 2007, Jun, Vogt and MacKay attempted to establish a relationship between travel information search and travel purchase in a pre-trip context. The pre-trip context is of great importance to this thesis research, as this is the portion of information searching it seeks to explore. Jun et al. found that the gap between searchers and purchasers had nearly disappeared. This research shows that online searchers have become online bookers much more frequently than they had in the past. However, some online

information searchers still switched to offline purchase methods after they had found what they were looking for online. Interestingly, the products that were searched for and purchased the most on the Internet were accommodations, activities, and flights.

Country of Origin and Travel and Tourism Information Search on the Internet

A major body of literature exists founded upon Geert Hofstede's (1980) work on cultural dimensions and, more recently, the effect culture has on uncertainty avoidance (Hofstede, 2001). Specifically, Hofstede states that societies with high uncertainty avoidance are not comfortable with situations that are not carefully planned out while low uncertainty avoidance societies tend to be more comfortable with unstructured travel situations. Several studies, including Litvin, Crofts and Hefner (2004) have shown that uncertainty avoidance plays a major role in travelers' external information search behaviors. Further, Chen and Gursoy (2000) discovered more differences in search behaviors across cultures and call for more future research exploring how cultures search differently.

Litvin, et al. (2004) found that travelers with high uncertainty avoidance (UA) were much more likely to acquire information from friends, relatives or state and city travel offices, while those travelers with low UA were more likely to use marketing dominated sources from major media outlets. Also, travelers with high UA were found to purchase significantly more pre-packaged travel bundles including tour guides, cruises and lodging while travelers with low UA were likely to include a rental car in their pre-

travel purchases. These findings indicate that travelers with low UA were much more comfortable finding their own unique information without the help of others.

In addition, a study conducted by Gursoy and Umbreit (2004) further support the findings of Litvin, et al (2004) by examining external travel information sources used by citizens of European Union countries. Gursoy and Umbreit utilized statistical information from EUROBAROMETER 48, a public opinion poll conducted twice per year in all EU member states. The authors found that most Europeans and specifically Belgians, rarely made use of the Internet when searching for travel information. Of particular interest, of the Belgians in this survey, only 0.66% of participants responded that they used the Internet when searching for travel information. Instead, more traditional information sources such as travel agents and print media sources such as pamphlets or brochures were much more commonly used.

Further, a study by Brengman, Geuens, Weijters, Smith, & Swinyard (2005) validated the cross cultural comparison of Belgians and Americans based on web usage patterns of Internet shoppers. It was found that similar segments of shoppers in the U.S. and Belgium used the Internet for shopping purposes. In addition, it was found that Belgians tended to be more explorative in their searching, actually browsing in a sense, while Americans tended to be very linear in their searches and valued efficiency Brengman et al (2005).

Travel Planning Horizon and Travel and Tourism Information Searching on the Internet

The body of literature concerning travel planning horizons is lacking in recent work, especially travel planning horizons and the use of the Internet. While two studies briefly mention travel planning horizons (Pan & Fesenmaier, 2006; Kim et al, 2007), neither examine behavior over separate planning horizons. This finding is surprising considering one of the first information searching pieces of literature in travel and tourism (Gitelson & Crompton, 1983) found that travel planning horizon had a significant effect on information search behaviors.

In contrast to the academic literature, popular media often mentions travel planning horizons when discussing online travel planning. Several articles ranging from information technology magazines (PC World, 2008) to newspapers (Houston Chronicle, 2005) have given special attention to the phenomenon of last minute deal finding web sites. Indeed, some popular travel websites such as Hotwire.com have built their business model around providing last minute services to both businesses and consumers. Hotwire takes items such as unfilled hotel beds or airplane seats and sells them at the last minute at discounted prices. Such a model provides a benefit to tourism businesses as often the tourism product, such as an airplane seat, is a perishable commodity and airlines will take a loss if their seats aren't filled. On the other had, travelers may benefit by waiting until the last minute to book their trips; sometimes seats are unavailable, but to some travelers that is a risk they are willing to take. Clearly the academic literature is lacking this important part of the online travel information search process.

Information Foraging Theory

Based on a review of previous literature, it became apparent that a traditional travel information search model would not be suitable to measure online information search behaviors. As a result, literature of other disciplines was searched in order to find a theory that, while being consistent with travel information search literature, provided some additional explanation of the online information search process. The theory found that best suited this study was information foraging, developed by Pirolli and Card (1999). Information foraging has been widely used throughout the information technology and human computer interaction fields, as shown by its index in the ISI Web of Knowledge, which shows it has been cited 98 times in just nine years. There is just one study within the travel and tourism field that makes reference to information foraging, that of Pan and Fesenmaier (1999).

Information foraging theory is a derivative of the optimal foraging theory, first developed by Stephens and Krebs in 1986. “Optimal foraging theory seeks to explain adaptations of organism structure and behavior to the environmental problems and constraints of foraging for food” (Pirolli & Card 1999, p. 643). Information foraging theory takes food foraging behaviors described above and applies them to the information seeking process (Pirolli & Card, 1999).

The basic hypothesis of the information foraging theory is that natural information systems (the relationship between information forager and information sources), when feasible, will evolve toward stable states that maximize gains of valuable information per unit cost (Pirolli & Card, 1999). In other words, “This theory assumes

that information foragers will modify their strategies, or modify the structure of the interface, if it is malleable, in order to maximize their rate of valuable information” (Pirolli & Card, 1999, p. 644). Based on this assumption the authors are trying to understand the degree to which information foraging behavior is adaptive given the environmental context in which it occurs (Pirolli & Card, 1999).

For a complete understanding of Information Foraging Theory, one must become familiar with its natural resource background. Patch models in optimal foraging theory concern situations in which the environment of some particular animal has a “patchy” structure. For instance, imagine a bird that forages for berries found in patches on berry bushes. The forager must expend some amount of between-patches time getting to the next food patch. Once in a patch, the forager engages in within-patch foraging and faces the decision of continuing to forage in the patch or leaving to seek a new one. At some point, the forager must decide when the expected future gains from foraging within a current patch of food will diminish to the point that they are less than the expected gains that could be made by leaving the patch and searching for a new one (Pirolli & Card, 1999).

By analogy, the task environment of an information forager often has a “patchy” structure (Pirolli & Card, 1999). Information patches could be relatively static on-line collections, such as a single website, or they could be dynamic, such as a search engine. The information forager has to decide what will be more beneficial: Staying with a patch of information until it has been exhausted or moving from information patch to

information patch, only taking the most beneficial information from each patch (Pirolli & Card, 1999).

One method an information forager can implement maximized information gained is called “environmental enrichment.” There are two types of environmental enrichment. The first is the process of changing the information foraging environment so that the amount of time it takes to get between patches is minimized (Pirolli & Card, 1999). In the context of web information search, this process could be upgrading to a faster computer or upgrading ones Internet connection speed so that multiple websites could be navigated quickly or even simultaneously.

The second type of environmental enrichment involves creating information patches that will ultimately contain the most valuable information possible. This type of environmental enrichment is most effective when it involves refining the information search within one patch, such as a search engine (Pirolli & Card, 1999). Building on the search engine example – one could begin with a very broad keyword and, as results are returned, refine that keyword to maximize the amount of information specific to the forager’s interest that is returned. The common term used to define this behavior is called “filtering” and many applications such as email and search engine applications have filter that can be used without having to do multiple searches (Pirolli & Card, 1999).

The other method maximizing information gained is called “scent following;” a process similar to the user filtering search engine results. “Scent following is navigating through spaces (in this case, virtual) to find high-yield patches” (Pirolli & Card, 1999 p647). Scent following is another adaptation of a biological phenomenon in which an

animal would go from one patch to another by following the smell of the food. The concept is similar with information; the forager may start with a search engine, select one website, find a link to another website on that website, and so on and so forth. Once again, it is important to remember that the goal of the information forager is to maximize the information gained while spending the least amount of time and energy possible (Pirolli & Card, 1999).

When Pirolli and Card (1999) published information foraging, they applied it to physical settings such as a library or an office workplace. In these types of places it is easier to differentiate between environmental enrichment and scent following because environmental enrichment often occurs before the actual search process and involves physically organizing a space so that less time is used when going between information patches. For example, putting two stacks of frequently used papers or books next to each other. Scent following in a physical environment generally occurs after environmental enrichment, and is usually a continual process such as reading a journal article, then browsing the references for more useful sources, and then searching those articles' references, etc. etc.

When discussing an online workspace, however, the line between environmental enrichment and scent following blurs. As can be seen in Figure 2.1, in a physical environment, information foraging is calculated using a measure of information gained (I) over time spent between information patches plus time spent within patches. This measures the combined success of environmental enrichment (T_e) and scent following T_s

(T_s). Within this function, it is possible to differentiate between measures of both behaviors.

$$\frac{I}{T_e + T_s}$$

Figure 2.1. Information foraging function

However, online users will often change back and forth between environmental enrichment and scent following behaviors during a single search process. Instead of environmental enrichment being a simple organization process, it becomes a continual process of refining, often as users return to a search engine after following a scent path unsuccessfully.

For the purpose of this study, environmental enrichment is defined as use of a search engine. Scent following is defined as clicking a link that takes the user from one unique site to another. As figure 2.2 illustrates, it is impossible for an online information forager to use environmental enrichment without then using scent following.

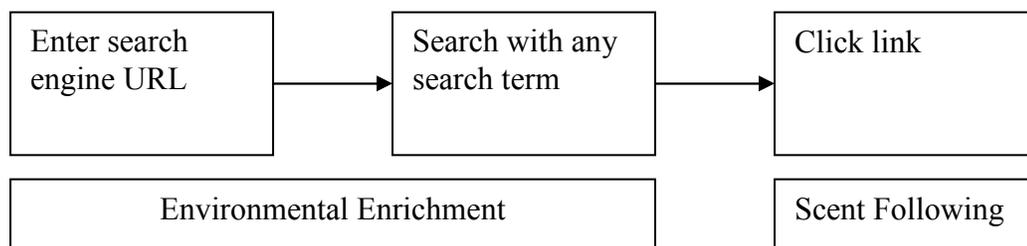


Figure 2.2 – Illustration of search engine use

As environmental enrichment and scent following in an online environment combine, information foraging appears to be a continual evaluation process of the users' environment while repetitively using both behaviors involved in the information search. An illustration of typical user behavior has been included below (See Figure 2.3). Such a constant evaluation process makes it virtually impossible to evaluate environmental enrichment and scent following separately in an online environment. As a result, scent following and environmental enrichment are combined, leaving only the total time spent foraging in the function.

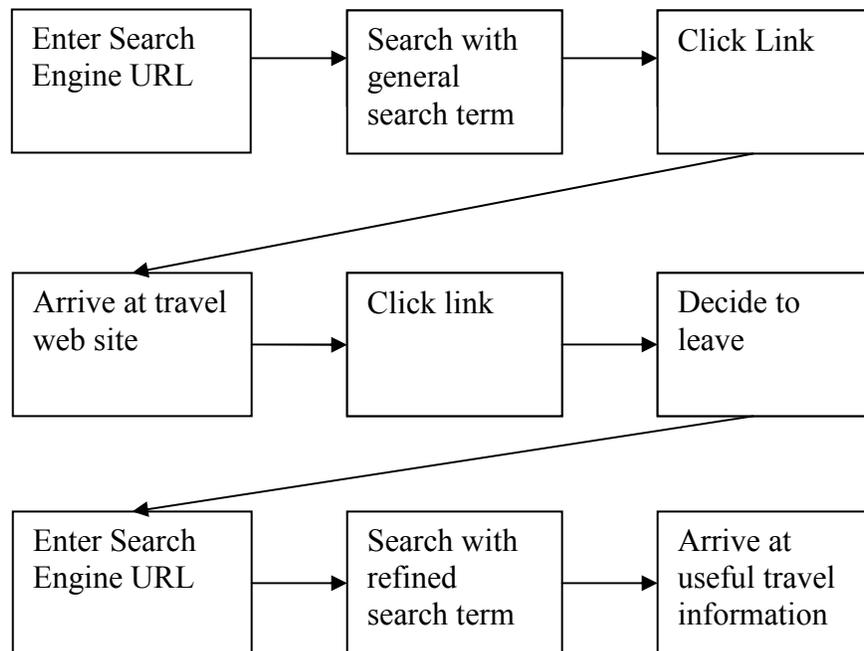


Figure 2.3 Example of information foraging behavior in an online environment

Obviously, information search behaviors cannot simply be measured by how long the information searcher takes to find information. For this reason, a set of measures previously developed to assess consumer search behavior on the Internet were found to provide additional information on travelers' information search behaviors. Measures of search effort, final site arrival method, breadth and depth, and search engine use organized by Hodgkinson et al. were discovered. These measures, utilized by several studies involving information foraging theory, including Pan and Fesenmaier (2006), provide a good base of knowledge to better understand why users took different amounts of time.

Use of Information Foraging in Travel and Tourism Literature

Pan and Fesenmaier (2006) recently conducted an exploratory study in an effort to “investigate the micro-level structure of online travel planning in the vacation planning process and compare the semantic models of tourists with that of information space” (Pan & Fesenmaier, 2006). This study utilized the use of a short travel planning horizon with a formal vacation planning exercise to San Diego, California. Four types of data were collected to capture the online vacation planning process: (1) participants were asked to write a short paragraph regarding their vacation plan when they were through with the study, (2) Participants were asked to vocalize their thought process and that qualitative data was collected through a microphone and digital camcorder, (3) An online camcorder program (Camtasia, www.techsmith.com) was used to record screen activities as well as mouse clicks and keyboard activities, (4) Another program (iOpus, www.iopus.com) was

used to record websites visited, time stamps, keystrokes, and names of computer programs used in the information searching process. A pre-exercise survey was also administered to obtain travel experience, computer and Internet use knowledge, and prior experience using the Internet as a vacation planning source.

The extent of information foraging use in Pan and Fesenmaiers study was that they confirmed that participants in their study exhibited behaviors predicted by information foraging theory. Specifically, it was revealed that users modified their environment to maximize their rate of information gained. Considering this was the first study in the travel and tourism field to even mention information foraging theory, it seems appropriate that the authors' findings be validated in another study. While Pan and Fesenmaier only made peripheral reference to information foraging in their research, it created the backbone for this thesis work.

Conclusions

A large body of literature exists which examines travel information search behaviors, however information search behaviors in an online environment have been examined far less than search behaviors using traditional information sources. Information foraging theory provides a good basis from which online information search behaviors can be examined. The nature of an online environment however, makes measurements proposed by information foraging theory difficult. For this reason, additional measurements were found to help explain information search behaviors.

In addition, literature points to significant relationships between country of origin and information search behaviors and travel planning horizons and information search behavior. These two concepts have also not yet been examined in an online environment.

CHAPTER THREE

METHODS

Introduction

The purpose of this thesis research was to build upon the framework of the online travel information finding activity examined by Pan and Fesenmaier (2006) by using an expanded search environment where participants are allowed to browse the Internet freely while searching for online travel information of their choosing. This includes the incorporation of information foraging theory, comparison of travel search behaviors between two countries and examining behaviors over multiple travel planning horizons, while using established measures previously used to evaluate online search behaviors.

This chapter describes in detail the methods used to collect and analyze data. First, the study is outlined in detail and participant recruitment is discussed. Second, variables and measures used in this study are outlined and defined. Third, Hypotheses are listed based on the four research questions developed for this study. Finally, methods of data collection and analysis as well as assumptions are described in detail.

Study Overview

In order to address the purpose of this study and research questions, data were collected in a one-shot study (Babbie, 1992). One-shot studies are useful for gaining information about behaviors when a long period of time necessary for a longitudinal study is not feasible (Babbie, 1992). In an effort to allow study participants an open environment, it was determined that a travel planning exercise similar to that used by Pan

and Fesenmaier (2006) was implemented. In order to emulate real life travel planning situations, participants searched for several elements of an international trip. A usability testing software package called Morae was determined to be the least intrusive and best fitting system of measurement for this study. Morae allows for the measurement of time as recommended by information foraging theory as well as additional measurements developed by Hodkinson et al. (2000).

Participant Recruitment

Undergraduate students enrolled in upper level geography courses at a Flemish speaking Belgian University and a University in the Southeastern United States were asked to participate in this study with the incentive of extra credit given to anyone who volunteered, Eight out of a possible thirty-two students at the Belgian university volunteered while eleven out of a possible twenty-two students signed up to participate in this study. Three Belgian participants and one American participant were removed because of incomplete data. The resulting data was based on the five Belgian students and ten American students.

Research Procedures

First, a brief questionnaire was completed by each participant that asked questions about Internet search proficiency, prior trip planning experience, general Internet use questions and demographic information (See Appendix A). Internet search proficiency questions were taken with permission from the Internet searching proficiency test

developed by O'Hanlon in 1999. Four questions were used for this research. This data were collected in order to create a profile of characteristics deemed important for each group of students.

Second, students were asked to search for several elements (Accommodation, air transport, and activities) of a trip to Australia using only the Internet. The general framework of the trip was laid out for them such as locations and dates, while how they found the rest was left up to the individual (See Appendix B). Australia was chosen as a destination because of its immense distance from Belgium and the United States, as well as its diverse range of travel opportunities. Three cities (Darwin, Cairns, and Sydney) within Australia were chosen for students to plan for. Each city is within an entirely different geographical region of Australia, and each has a unique blend of accommodation and activity varieties in ensuring a diversity of choices for study participants. The travel planning activity required each participant to find air transport to and from Australia as well as between each city within the country. Participants were also required to find accommodation for five days in each city and an activity to do each of the five days they would be staying there.

Study Variables

Independent Variables

Independent variables used in this thesis research were country of origin (Belgium and the United States) and travel planning horizon (One week and three months). All Belgian students were asked to find elements of their trips with a travel planning horizon

of three months, while students from the U.S. were split into groups of five students using a one week travel planning horizon and five students using a three month travel planning horizon. Belgium and the United States were chosen for several reasons including cultural distance, proficiency in the English language, and ease of data collection. One week and three months were chosen as travel planning horizons in order to capture differences between the last minute traveler and one who is planning a trip in advance. In tourism, the concept of yield management has led tourism businesses to heavily discount their products at the last minute in an attempt to fill as many rooms or seats as possible.

Dependent Variables

The key dependent measurement of information foraging in this study was the amount of time participants were engaged in a travel information searching activity. The information search task resulted in twenty two items that each participant searched for. In addition to total time spent, there are several other measurements that can provide insight into why users took various amounts of time to complete the same activity. Hodkinson, Kiel, and McColl-Kennedy (2000) developed several measures that can be used to learn more about why people were more or less efficient in their information foraging (See Table 3.1). Measures developed by Hodkinson et al. (2000) encompass several categories in order to get an accurate profile of all elements of Internet searching.

The dependent variable categories and measurements are as follows:

- 1) **Effort** – An overall measure of how hard the participant tried to find exactly what they were looking for. Measurements include:
 - a. *Number of links clicked* – any time a participant clicked a URL or button on any website that took them to a different, unique website.
 - b. *Number of search actions* – activities that constituted a “search action” were – clicking a link, performing a search engine search, entering a URL and surfing to that page, clicking any link or button within a website that took the participant to other content on that same website.
- 2) **Final Site Arrival Method** – Indicates which search method led directly to the successful discovery of a piece of travel information. Measurements include:
 - a. *Link from search engine* – When a participant reached a trip selection as a direct result of clicking on a link from a list of search engine results.
 - b. *Site to site link* – When a participant reached a trip selection as a direct result of clicking on a link from any website other than a search engine.
 - c. *Entered URL* – When a participant reached a trip selection as a direct result of entering a URL other than a search engine.
- 3) **Breadth/Depth** – Measures the overall amount of information viewed by the participant as well as how widely the user searched the web. Indicates what type of search methods the user used such as wide, meandering search or a linear search directly to a piece of information. Measurements include:

- a. *Unique webpage* – sites with a completely different root page (e.g. www.google.com and www.google.com/maps or any other site with a root of www.google.com would only count as one unique website).
 - b. *Total web pages viewed* – the total number of web pages viewed by participants regardless of site uniqueness (e.g. www.google.com and www.google.com/maps would count as two web pages).
- 4) **Search Engines** – Indicates how often and to what extent study participants utilized search engines to aid their search. Search engines are an easy way for users to increase their search efficiency by allowing them to browse results from multiple sites on one page. Measurements include:
- a. *Number of general search engines used* – the total number of search engines that the participant used (e.g. www.google.com, www.yahoo.com, www.ask.com, etc.).
 - b. *Number of general search outputs produced* – total number of search outputs produced by clicking the “search” or “find” button on a general search engine website.

	<i>Effort</i>	<i>Final site arrival method</i>	<i>Breadth/depth</i>	<i>Search engines</i>
Measurement	1. Number of links clicked 2. Number of search actions	1. Link from search engine 2. Site-to-site link 3. Entered URL	1. Total web pages viewed 2. Number of unique web sites visited	1. Number of general search engines used 2. Number of search outputs produced

Table 3.1 – Dependent variable measurements

Hypotheses

A series of hypotheses based upon previous literature were developed to test each research question. Hypotheses for research questions three and four were directional hypotheses based upon literature presented in chapter two.

Research Question 1 Hypothesis

Research Question 1: Is information foraging theory applicable to an online travel and tourism information search setting?

Hypothesis 1: Study participants will exhibit information foraging behavior by using environmental enrichment and scent following.

To test this hypothesis, two measures of information foraging were used. First, environmental enrichment was measured by use of general search engines. Participants were considered to be using environmental enrichment if they used at least one general search engine. Second, scent following was measured by the use of clicking links.

Participants were considered to be using scent following clicked at least one link during the online travel information search.

Research Question 2 Hypotheses

Research Question 2: Can measures developed by Hodkinson, Kiel & McColl-Kennedy measure online travel information search behaviors?

Hypothesis 2a: Study participants will click multiple links

Hypothesis 2b: Study participants will complete multiple search actions

Hypothesis 2c: Study participants will arrive at their final site decision via multiple search engine links

Hypothesis 2d: Study participants will arrive at their final site decision via multiple site to site links

Hypothesis 2e: Study participants will arrive at their final site decision via multiple directly entered URLs

Hypothesis 2f: Study participants will view multiple web pages

Hypothesis 2g: Study participants will view multiple unique web sites

Hypothesis 2h: Study participants will use multiple general search engines

Hypothesis 2i: Study participants will produce multiple general search engine outputs

To test these hypotheses, frequencies of each behavior were run. In order to be considered a valid measure of online travel information search behavior, each measure must have been used multiple times.

Research Question 3 Hypotheses

Research Question 3: Do Belgian students search differently for online travel information than American students?

Hypothesis 3a: Belgian students will spend more time searching than American students.

Hypothesis 3b: Belgian students will click more links than American students

Hypothesis 3c: Belgian students will attempt more search actions than American students

Hypothesis 3d: American students will arrive at more sites containing information they wish to use via search engine links than Belgian students

Hypothesis 3e: Belgian students will arrive at more sites containing information they wish to use from site to site links than American students

Hypothesis 3f: American students will arrive at more sites containing information they wish to use from entering direct URLs than Belgian students

Hypothesis 3g: Belgian students will view more total web pages than American students

Hypothesis 3h: Belgian students will view more unique web sites than American students

Hypothesis 3i: Belgian students will use more search engines than American students.

Hypothesis 3j: Belgian students will produce more search outputs than American students.

To test these hypotheses a series of one tailed t-tests were run. A significance level of 0.1 was used for these tests.

Research Question 4 Hypotheses

Research Question 4: Does travel planning horizon make a difference in online information search behaviors?

Hypothesis 4a: Students with a one week travel planning horizon will take less time searching than students with a three month travel planning horizon.

Hypothesis 4b: Students with a one week travel planning horizon will click less links than students with a three month travel planning horizon.

Hypothesis 4c: Students with a one week travel planning horizon will attempt less search actions than students with a three month travel planning horizon.

Hypothesis 4d: Students with a one week travel planning horizon will arrive at more sites containing information they wish to use via search engine links than students with a three month travel planning horizon.

Hypothesis 4e: Students with a one week travel planning horizon will arrive at more sites containing information they wish to use from site to site links than students with a three month travel planning horizon.

Hypothesis 4f: Students with a one week travel planning horizon will arrive at more sites containing information they wish to use from directly entering a URL than students with a three month travel planning horizon.

Hypothesis 4g: Students with a one week travel planning horizon will view less total web pages than students with a three month travel planning horizon.

Hypothesis 4h: Students with a one week travel planning horizon will view less unique web sites than students with a three month travel planning horizons

Hypothesis 4i: Students with a one week travel planning horizon will use less search engines than students with a three month travel planning horizon.

Hypothesis 4j: Students with a one week travel planning horizon will produce less search outputs than students with a three month travel planning horizon.

To test these hypotheses a series of one tailed t-tests were run. A significance level of 0.1 was used for these tests.

Data collection procedures

Data were collected over a three week period in October during the fall semester of 2007 in Belgium at a large university. Data from a university in the South Eastern United States were collected over a two month period in March and April during the spring semester of 2008. As travel planning horizon has been previously found to effect trip planning behavior, the group of students from the South Eastern United States University was split in half with each half completing their trip planning activity under different planning horizons (one week and three months). During the task, participants were asked to record their decisions on designated areas provided to them on the task information sheets to ensure accuracy in choice identification (See Appendix B).

The recording of data using Morae usability testing software loaded on a single laptop computer. The Morae software package is an industry standard in the usability testing field, and records a variety of data including: screen video (i.e. Everything occurring on the computer screen as a video file), screen text, key strokes, web page changes, audio via computer microphone, and windows events. While Morae is generally used for usability testing (e.g. examining ease of navigation and data organization of a particular website) its capabilities are well suited for testing Internet search behaviors.

Morae has been used throughout the information technology literature, particularly in studies dealing with usability testing (Fagan, 2006; Moha, Gaffar, & Michel, 2007; Howarth, Andre, & Hartson; 2007). However, a similar software package developed by the same company called Camtasia was used by Pan & Fesenmaier (2006) to measure information search behaviors in travel and tourism. Furthermore, Moha, Gaffar, & Michel (2007) recommend Morae for those not trained in usability testing in commercial situations.

A single laptop computer in an empty room was used help reduce extraneous sources of variability such as distractions from other experiment participants or variations in computer configurations. During the task, experiment participants were left in a quiet room by themselves in order to ensure concentration on the task. Participants were asked to simply exit the room when they have completed their task.

Data Coding Process

With the use of Morae software, each participant video was watched in full to record measurements developed by Hodkinson, et al. A tally sheet was developed in order to accommodate each measurement (See Appendix C). Once tally sheets were completed for every study participant, results were entered into SPSS 15.0 for further analysis.

Reliability

There was some concern that reliability could be diminished because a researcher had to watch a video of participant activity and tally actions. For this reason, strict definitions were adhered to during the movie watching and tallying process. In addition, the Morae software package provides on screen indicators of mouse clicks and key strokes, enhancing the researchers focus on these actions. After the research videos were watched and tallied, results were compared with spreadsheets produced by Morae to further account for errors.

Analysis

Analysis of data was completed using SPSS 15.0 statistical package. First, Descriptive statistics were run in order to profile Belgian and American participants. Then each hypothesis was tested using t-tests in SPSS. Hypotheses were tested in the order they were listed. For this research, an alpha level of 0.1 is utilized to test data significance. There are several reasons for using 0.1 in this study, first and foremost is the

small sample size. Kline (2004) states that conventional levels of alpha in the social sciences are generally .05 or .01, but the only reason for this is journal editorial policy. When determining a proper alpha level, researchers must examine multiple factors and decide what alpha level suits their type of experiment and data. In addition, Denonberg (1976) makes the argument that in research foraying into new territory (such as that of information searching on the Internet) studies may be able to use alpha levels higher than .05 in order to make gains into new bodies of literature.

Assumptions

This thesis research operates on three key assumptions. First, in this research there was no possibility of having a failed search while in real life situations information searching could lead to no results. Second, researchers are assuming that Belgian students in this study were proficient in reading and writing English. In an attempt to account for this, all materials were first edited by a sample of Belgian students in order to eliminate any language that could be difficult for Belgians to understand. Third, it is assumed that it is possible to emulate a real life travel planning situation. While several elements of the trip were pre-planned for participants, efforts were made to give as much freedom as possible.

CHAPTER IV

RESULTS

Introduction

Prior to hypothesis testing, descriptive statistics were run on all participants' responses to the pre-activity questionnaire and then divided into groups by country of origin and travel planning horizon. Country of origin and travel planning horizon results were compared using two tailed t-tests with a significance level of .05. Then, variable normality was tested using measures of skewness and kurtosis. Finally, each hypothesis was tested and briefly discussed.

Overall participant profile

In total, there were six male participants and nine female participants. The mean age of all participants was 21.3 years. Every participant had current internet access. On average, participants had internet access for 7.8 years. Participants averaged nearly four trips planned using the internet ever, while the average number of trips planned using the internet in the last three years was 2.5 trips. The average participant score on the Internet proficiency questions developed by O'Hanlon (1999) was 2.5 out of a possible score of four (See Table 4.1).

	<i>Overall mean score (N=15)</i>
Length of access to a computer with Internet connection	7.8 years
Number of times used the Internet to plan a trip EVER	3.9 times
Number of times planned a trip IN THE LAST 3 YEARS	2.5 times
Number of times traveled out of home country in the last three years	1.9 times
Internet proficiency score (Out of a possible score of 4)	2.5

Table 4.1 Overall profile of research participants

Profile of Belgians and Americans

Descriptive statistics were run to compare Belgian participants to American participants who received the same travel planning horizon of three months (See Table 4.2). Belgian participants had internet access for an average of 7.2 years while American participants had access for 6.4 years. Belgian participants averaged 1.8 trips planned using the internet ever, while American participants averaged 6.4 trips. Belgian participants averaged 1.8 trips planned in the last three years, while American participants averaged. Belgians and Americans scored significantly different on the internet proficiency questions, with Belgians scoring an average of 3.2 out of 4 and Americans scoring an average of 1.6 out of 4 (See Table 4.2).

	<i>Belgian mean score (n=5)</i>	<i>U.S.A mean score (n=5)</i>	<i>T-Score</i>	<i>P-Value</i>
Length of access to a computer with Internet connection	7.2 years (s.d.=1.92)	6.4 years (s.d.=3.21)	0.48	0.65
Number of times used the Internet to plan a trip EVER	1.8 times (s.d.=2.05)	6.4 times (s.d.=10.55)	-0.96	0.39
Number of times planned a trip IN THE LAST 3 YEARS	1.8 times (s.d.=1.10)	3.2 times (s.d.=1.10)	-2.02	0.08
Number of times traveled out of home country in the last three years	3.4 times (s.d.=1.67)	2.2 times (s.d.=4.38)	0.57	0.58
Internet proficiency score (Out of a possible score of four)	3.2 (s.d.=0.84)	1.6 (s.d.=1.14)	2.53	0.03

Table 4.2 Profile of Belgians and Americans

Profile of Americans with Different Travel Planning Horizons

Statistics were run to compare groups of American participants who received different travel planning horizons (See Table 4.3). Participants with a one week travel planning horizon had internet access for an average of 9.8 years while participants with a three month travel planning horizon had access for 6.4 years. Participants with a one week travel planning horizon averaged 3.6 trips planned using the internet ever, while participants with a three month travel planning horizon averaged 6.4 trips. Participants with a one week travel planning horizon averaged 2.4 trips planned in the last three years,

while participants with a three month travel planning horizon averaged 3.2. Participants with a one week travel planning horizon scored an average 2.6 out of four on internet proficiency, while those with a three month travel planning horizon scored an average of 1.6 out of four. As expected, none of these results were found to be significantly different (See Table 4.3).

	<i>U.S.A 1 week mean score (n=5)</i>	<i>U.S.A. 3 months mean score (n=5)</i>	<i>T-Score</i>	<i>P-Value</i>
Length of access to a computer with Internet connection	9.8 years (s.d.=2.86)	6.4 years (s.d.=3.21)	1.77	0.12
Number of times used the Internet to plan a trip EVER	3.6 times (s.d.=3.05)	6.4 times (s.d.=10.55)	-0.57	0.58
Number of times planned a trip IN THE LAST 3 YEARS	2.4 times (s.d.=1.82)	3.2 times (s.d.=1.10)	-0.84	0.42
Number of times traveled out of home country in the last three years	0.2 times (s.d.=0.45)	2.2 times (s.d.=4.38)	-1.01	0.34
Internet proficiency score (Out of a possible score of 4)	2.6 (s.d.=1.14)	1.6 (s.d.=1.14)	1.39	0.20

Table 4.3 Profile of American participants receiving different travel planning horizons

Sample Distribution

As there was a concern over small sample size, tests of sample normality were conducted on study variables. Tests of skewness and kurtosis were run (See Table 4.4) using SPSS. According to SPSS, normally distributed data generally have low skewness

and kurtosis score. For this research a skewness score of greater than 2.5 and a kurtosis score of greater than 6.5 were considered invalid. As can be seen, results of arrival from site to site links and direct URLs have very high skewness and kurtosis scores. These results indicate those two measures were not valid for this study.

<i>Measure</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Skewness</i>	<i>Kurtosis</i>
Time	67.20 minutes	16.95	0.23	-0.30
Links clicked	17.60	10.76	0.88	0.77
Search Actions	90.40	32.88	0.94	0.58
Arrival search engine links	15.80	5.27	-1.61	2.11
Arrival site to site links	0.40	1.12	2.91	8.39
Arrival direct URLs	0.07	0.26	3.87	15.00
Total web pages viewed	160.33	71.58	1.31	2.87
Unique web pages viewd	16.20	8.53	0.36	-0.52
Search engines used	1.0	0.0	0.0	0.0
Search outputs	12.60	7.49	1.59	4.41

Table 4.4 Measures of skewness and kurtosis

Hypothesis Testing

Research question one was tested using frequencies of links clicked and search engines used. Research question two was tested using frequencies and measurements of skewness and kurtosis. Research questions two and three were tested by running a series of t-tests. In this section, each hypothesis will be listed and analyzed as well as briefly discussed. At the end of this section results will be condensed into tables for easier viewing.

Research Question 1 Hypothesis Test

Research Question 1: Is information foraging theory applicable to an online travel and tourism information search setting?

To test this research question two measures of information foraging were used. First, environmental enrichment was measured by use of general search engines. Participants were considered to be using environmental enrichment if they used at least one general search engine. Second, scent following was measured by the use of clicking links.

Participants were considered to be using scent following clicked at least one link during the online travel information search.

Hypothesis 1: Study participants will exhibit information foraging behavior by using environmental enrichment and scent following.

Result: Accept

Each study participant used exactly one general search engine. The average number of search outputs produced by each participant was 12.6. In addition, study participants arrived at their final choice of travel information via search engines an average of 15.8 times. Additionally, Study participants clicked an average of 17.6 links during their online travel information search. However, only two people arrived at their final choice of travel information via clicking site to site links.

These results reveal that not only did participants engage in environmental enrichment activity, it was used successfully the vast majority of the time. These results confirm that the environmental enrichment portion of information foraging theory applies well to online travel information search. Findings are consistent with those of Pan and Fesenmaier (2006), who found that their study participants did engage in information foraging activities while searching for travel information on the Internet.

In addition, these results reveal that while participants did engage in scent following activities, it very rarely led them to the information they were looking for. This finding is confirmatory of the new model of online information foraging described in chapter two, where online information searchers are unable to complete environmental enrichment without the use of scent following. While participants often engaged in scent following activities, it was frequently counted as arrival via search engine because of how Hodkinson et al. defined their measurements.

Research Question 2 Hypotheses Tests

Research Question 2: Can measures developed by Hodkinson, Kiel & McColl-Kennedy measure online travel information search behaviors?

In order to determine if measurements developed by Hodkinson, et al. were applicable to online travel information searchers, frequencies, distributions and mean scores were run using SPSS. It was determined that all measures except site arrival method of site to site links and directly entered URLs as well as number of search engines used were valid measurements of online travel information search behavior. Results are presented in Table 4.5 for easier viewing.

Hypothesis 2a: Study participants will click multiple links

Result: Accept

All study participants clicked at least one link. The average number of links clicked was 17.6. These results that not only did users click links, they clicked them often. When mean time spent searching is taken into account (67.2 minutes per participant) it is revealed that participants clicked a link, on average, once every four minutes. This measurement shows that, for study participants, clicking links is a valid way to search for travel information.

Hypothesis 2b: Study participants will complete multiple search actions

Result: Accept

Study participants completed an average of 90.4 search actions. This result is not surprising considering the broad spectrum activities encompassed by the definition of search actions. However, this finding does reveal that participants were very active in their search for online travel information, completing an average of 1.3 search actions per minute.

Hypothesis 2c: Study participants will arrive at their final site decision via multiple search engine links

Result: Accept

Search engine links were the most popular method of final site arrival in this study. Participants arrived at their final site choice an average of 15.8 times. Within the measures developed by Hodkinson et al., search engine links proved to be the only valid method of site arrival in this study. These results confirmed that environmental enrichment was an integral part of online travel information search.

Hypothesis 2d: Study participants will arrive at their final site decision via multiple site to site links

Result: Invalid

Measures of skewness and kurtosis revealed that this method of final site arrival was an invalid measure of online travel information search behavior.

Hypothesis 2e: Study participants will arrive at their final site decision via multiple directly entered URLs

Result: Invalid

Measures of skewness and kurtosis revealed that this method of final site arrival was an invalid measure of online travel information search behavior.

Hypothesis 2f: Study participants will view multiple web pages

Result: Accept

Study participants viewed an average of 160.33 web pages during the course of their online travel information searching. This result revealed that participants were thorough in their online travel information search, with participants viewing greater than two web pages per minute on average. When amount of unique web pages are taken into account, it is obvious that participants went deeper than a simple surface search, viewing nearly ten pages per unique site.

Hypothesis 2g: Study participants will view multiple unique web sites

Result: Accept

Participants viewed an average of 16.2 unique web sites during their online travel information search. This result reveals that participants utilized a fairly large amount of different unique sites during their online travel information search. However, this result

does not mean that participants made a travel decision based on each one of the sites they browsed.

Hypothesis 2h: Study participants will use multiple general search engines

Result: Reject

Every single participant used only one general search engine during their online travel information search. Upon further examination, it was found that 93.3% (14 out of 15) participants used the same search engine (www.google.com). The other search engine used was www.ask.com. This finding reveals just how dominant a role Google plays in today's web search market.

Hypothesis 2i: Study participants will produce multiple general search engine outputs

Result: Accept

While each study participant used only one search engine, they did however produce multiple search outputs on their search engine of choice. Participants averaged 12.6 search outputs. This statistic is very revealing when coupled with the fact that each participant averaged 15.8 final site arrivals via search engine links.

<i>Hypothesis</i>	<i>Measure</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Result</i>
2a	Links clicked	17.60	10.76	Accept
2b	Search Actions	90.40	32.88	Accept
2c	Arrival search engine links	15.80	5.27	Accept
2d	Arrival site to site links	0.40	1.12	Not Valid
2e	Arrival direct URLs	0.07	0.26	Not Valid
2f	Total web pages viewed	160.33	71.58	Accept
2g	Unique web pages viewd	16.20	8.53	Accept
2h	Search engines used	1.0	0.0	Reject
2i	Search outputs	12.60	7.49	Accept

Table 4.5 Established measures hypothesis test results

Travel Search Engine Phenomenon

At this juncture, the researcher noticed a new pattern of participant information search behaviors. All participants made use of travel search engines as well as general search engines. Travel search engines are listed by the website www.searchenginewatch.com under the category of specialty search engine. Other categories of search engines are general search engines, metacrawlers, news search engines, shopping search engines, and multimedia search engines. Travel search engines have developed fairly recently as a result of the internet boom in the late 1990's. In that past few years, travel search engines have developed language websites for most major languages, including Dutch, the native language of Belgian participants in this study.

These additional measures were incorporated into the measures developed by Hodkinson et al. resulting in the following measurements (See Table 4.6):

	<i>Effort</i>	<i>Final site arrival method</i>	<i>Breadth/depth</i>	<i>Search engines</i>	<i>Travel search engines</i>
Measurement	1. Number of links clicked	1. Link from search engine	1. Total web pages viewed	1. Number of general search engines used	1. Number of travel search engines used
	2. Number of search actions	2. Site-to-site link 3. Entered URL 4. Link from travel search engine	2. Number of unique web sites visited	2. Number of search outputs produced	2. Number of travel search outputs produced.

Table 4.6 Measurements including travel search engines

Link from travel search engine – when a participant reached a trip selection as a direct result of clicking on a link from a list of travel search engine results.

Number of travel search engines used – the total number of travel search engines such as Orbitz, Expedia, Travelocity or any other search engine specifically designed to search for more than one type of travel information (such as air transport, car rental, accommodation, activities, cruises, etc.).

Number of travel search engine outputs produced – the total number of search outputs produced by clicking the “search” or “book” button on a travel search engine website

As a result of this phenomenon, additional hypotheses were written to be tested along with those previously mentioned. It was determined because of American students’ greater experience planning trips online that they would be more familiar with, and therefore use more travel search engines and produce more travel search engine outputs.

Hypothesis 3k: American students will arrive at more sites containing information they wish to use via travel search engine links than Belgian students.

Hypothesis 3l: American students will use more travel search engines than Belgian students.

Hypothesis 3m: American students will produce more travel search engine outputs than Belgian students.

In addition, it was determined that because travelers with a short travel planning horizon tend to use less information sources, they would be more likely to use travel search engines because they offer a one stop shop for all travel elements.

Hypothesis 4k: Students with a one week travel planning horizon will arrive at more sites containing information they wish to use via travel search engine links than students with a three month travel planning horizon.

Hypothesis 4l: Students with a one week travel planning horizon will use more travel search engines than students with a three month travel planning horizon.

Hypothesis 4m: Students with a one week travel planning horizon will produce more travel search engine outputs than students with a three month travel planning horizon.

Descriptive statistics and tests of skewness and kurtosis were run on these additional variables (See Table 4.7) using SPSS.. Tests of skewness and kurtosis revealed that number of all measures were valid for this study.

<i>Measure</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Skewness</i>	<i>Kurtosis</i>
Arrival travel search engine	5.73	5.42	1.65	2.35
Travel search engines used	1.87	1.69	2.10	6.12
Travel search outputs	6.93	5.57	0.71	-0.12

Table 4.7 Travel search engine measures of skewness and kurtosis

Research Question 3 Hypothesis tests

Research Question 3: Do Belgian students search differently for online travel information than American students?

To test these hypotheses a series of one tailed t-tests were run. A significance level of 0.1 was used for these tests. Results are condensed in Table 4.8 for easier viewing.

Hypothesis 3a: Belgian students will spend more time searching than American students.

Result: Accept

Belgians searched an average of 79.3 minutes while Americans took 64.8 minutes on average ($t = 1.64, p = 0.07$). It had been outlined in the literature review that Europeans tend to take a more longitudinal approach to searching and use a very non-linear search path. During the viewing of search videos, the researcher noted that

Belgians would often view several pages of information before making their decision. These findings indicate uncertainty avoidance may have played a role, as Belgians generally use expert sources of information and therefore tend to be more thorough when searching on their own. Conversely, Americans tended to search more linearly and efficiently and generally chose the first option they found. These findings are in agreement with the findings of Hofstede, (2001), Litvin, et al. (2004) and Chen (2001).

Hypothesis 3b: Belgian students will click more links than American students

Result: Accept

Belgians clicked an average of 25.0 links while Americans only clicked 13.6 on average ($t = 1.63, p = 0.07$). These findings are unsurprising as Belgians' longitudinal searching generally involves more site to site linking and exploring, while Americans' linear paths rarely deviated from a page once it was reached. This result is consistent with Brengman et al. (2005) in that Belgians are more explorative in their searches and tend to be browsers, as browsing often includes clicking site to site links.

Hypothesis 3c: Belgian students will attempt more search actions than American students

Result: Accept

Belgians attempted an average of 116.6 search actions while Americans attempted an average of 79.6 search actions ($t = 1.74, p = 0.06$). Such findings are once again consistent with the overall trend of Belgians exploring more than Americans. In addition,

this result indicates Belgian participants uncertainty led them to complete more search actions in order to be sure they were finding what they were looking for. This result is unsurprising considering Gursoy and Umbreit (2004) found that 0.66% of Belgians used the Internet when searching for travel information.

Hypothesis 3d: American students will arrive at more sites containing information they wish to use via search engine links than Belgian students

Result: Accept

Belgian searchers gained an average of 19.4 pieces of travel information as a direct result of linking from a search engine while American searchers gained an average of 13.4 pieces of travel information ($t = 2.27, p = 0.025$). As Gursoy and Umbreit (2004) found, Belgians are extremely unfamiliar with using the Internet to plan trips. Findings in this research confirm this trend, as Belgians tended to use general search engines to find travel information, while Americans were less reliant on general search engines.

Hypothesis 3e: Belgian students will arrive at more sites containing information they wish to use from site to site links than American students

Result: Invalid

Measurements of skewness and kurtosis showed this measurement to be invalid.

Hypothesis 3f: American students will arrive at more sites containing information they wish to use from entering direct URLs than Belgian students

Result: Invalid

Measurements of skewness and kurtosis showed this measurement to be invalid.

Hypothesis 3k: American students will arrive at more sites containing information they wish to use via travel search engine links than Belgian students.

Result: Accept

Belgian students gained an average of 1.8 pieces of useful travel information while Americans gained 8.0 pieces of useful travel information via travel search engines ($t = -2.29, p = 0.025$). In contrast to the results of general search engine use, where Belgians gained more information, American students gained a vastly greater amount of information via travel search engine. This result is unsurprising considering the greater number of trips Americans students had planned themselves using the Internet.

Hypothesis 3g: Belgian students will view more total web pages than American students

Result: Reject

The mean number of total web pages viewed by Belgians was 197.8, while Americans' averaged only 166.2 ($t = 0.6, p = 0.28$). While Belgians did, on average, view more pages than American students, these results were not significantly different. A possible explanation for this result could be the large amount of pages viewed by both types of participants.

Hypothesis 3h: Belgian students will view more unique web sites than American students

Result: Reject

Belgians averaged 21.2 unique web sites viewed per person while Americans averaged 16.4 sites per person ($t = 0.85$, $p = 0.21$). This result is not surprising considering the results of hypothesis 3g. While Belgians again averaged a greater number of unique web sites, they were not significantly more. It is interesting to note that this result reveals that Americans spent a larger amount of time per unique web site (3.95 minutes) than did their Belgian counter parts (3.74 minutes)

Hypothesis 3i: Belgian students will use more search engines than American students.

Result: Reject

Every study participant used only one general search engine during their search. Nine students used only www.google.com, while one used www.ask.com.

Hypothesis 3j: Belgian students will produce more search outputs than American students.

Result: Accept

Belgian students averaged 17.6 search engine outputs per person, while American students averaged a meager 9.8 search outputs ($t = 1.65$, $p = 0.07$). Considering both groups of participants used only one search engine, it would appear as though Belgians

had more trouble finding exactly what they were looking for. This finding is consistent with Belgians' inexperience searching for travel information online (Gursoy & Umbreit, 2004).

Hypothesis 3l: American students will use more travel search engines than Belgian students.

Result: Accept

Belgians averaged only one travel search engine used, while Americans used two travel search engines on average ($t = -1.58$, $p = 0.08$). Results are consistent with Americans' greater experience using the Internet as a travel information search tool. It makes sense that they would be more aware of the array of travel search engines available to them.

Hypothesis 3m: American students will produce more travel search engine outputs than Belgian students.

Result: Reject

Belgian students produced an average of 4.6 travel search engine outputs, while American students produced an average of 7.6 travel search engine outputs ($t = -0.88$, $p = 0.20$). These results are surprising in themselves, but less so when compared with the results of hypothesis 6l. It was originally thought that using less search engines would result in less search outputs, but it appears as though Belgians produce a greater amount of search outputs per search engine, regardless of what type of search engine it is.

Hypothesis	Belgian Mean	American Mean	T-value	P-value	Result
3a. Time	79.3 minutes	64.8 minutes	1.64	0.07	Accept
3b. Links clicked	25.0	13.6	1.63	0.07	Accept
3c. Search Actions	116.6	79.6	1.74	0.06	Accept
3d. Arrival search engine links	19.4	13.4	2.27	0.025	Accept
3e. Arrival site to site links	0.8	0.4	0.45	0.33	Invalid
3f. Arrival direct URLS	0.0	0.2	-1.0	0.16	Invalid
3k. Arrival travel search engine links	1.8	8.0	-2.29	0.025	Accept
3g. Total web pages viewed	197.8	166.2	0.61	0.28	Reject
3h. Unique web sites viewd	21.2	16.4	0.85	0.21	Reject
3i. Search engines used	1.0	1.0	0.0	1.0	Reject
3j. Search outputs	17.6	9.8	1.65	0.07	Accept
3l. Travel search engines used	1.0	2.0	-1.58	0.08	Accept
3m. Travel search outputs	4.6	7.6	-0.88	0.20	Reject

Table 4.8 Country of origin hypothesis test results

Research Question 4 Hypothesis Tests

Research Question 4: Does travel planning horizon make a difference in online information search behaviors?

To test these hypotheses a series of one tailed t-tests were run. A significance level of 0.1 was used for these tests. Results are condensed in table 4.9 for easier viewing.

Hypothesis 4a: Students with a one week travel planning horizon will take less time searching than students with a three month travel planning horizon.

Result: Reject

American students with a one week travel planning horizon averaged 57.5 minutes searching while those with a three month travel planning horizon averaged 64.8 minutes ($t = 0.71$, $p = .25$). While results indicated that those with a one week travel planning horizon did take less time, results were not significant. This may reveal that a hypothetical time restraint was not as effective as anticipated.

Hypothesis 4b: Students with a one week travel planning horizon will click less links than students with a three month travel planning horizon.

Result: Reject

American students with a one week travel planning horizon clicked an average of 14.2 links while students with a three month travel planning horizon clicked an average

of 13.6 links ($t = 0.12$, $p = 0.45$). The number of links clicked by both groups was very similar. This could be a result of Americans general web searching behavior. Americans tend to be very succinct and concise with their searching no matter how much time they have. As a result, Americans just don't click very many links in general.

Hypothesis 4c: Students with a one week travel planning horizon will attempt less search actions than students with a three month travel planning horizon.

Result: Reject

American students with a one week travel planning horizon completed 75.0 search actions on average, while students with a three month travel planning horizon completed an average of 79.6 search actions ($t = -0.30$, $p = 0.38$). These results are somewhat surprising considering the significantly greater number of sites used by students with a three month travel planning horizon. Perhaps a larger sample size would have revealed significant differences for this hypothesis.

Hypothesis 4d: Students with a one week travel planning horizon will arrive at more sites containing information they wish to use via search engine links than students with a three month travel planning horizon.

Result: Reject

American students with a one week travel planning horizon arrived at a useful piece of information via search engine an average of 14.6 while students with a three

month travel planning horizon arrived via search engine an average of 13.4 times ($t = -0.71, p = .37$). These results indicate that students were unlikely to use search engines to find information more often under hypothetical time restraint than if they were planning a trip three months away. This result could be a product of low search proficiency.

American students scored very low on the internet search skills proficiency test, and therefore could have struggled finding what they were looking for using general search engines.

Hypothesis 4e: Students with a one week travel planning horizon will arrive at more sites containing information they wish to use from site to site links than students with a three month travel planning horizon.

Result: Reject

Measurements of skewness and kurtosis showed this measurement to be invalid.

Hypothesis 4f: Students with a one week travel planning horizon will arrive at more sites containing information they wish to use from directly entering a URL than students with a three month travel planning horizon.

Result: Reject

Measurements of skewness and kurtosis showed this measurement to be invalid.

Hypothesis 4k: Students with a one week travel planning horizon will arrive at more sites containing information they wish to use via travel search

engine links than students with a three month travel planning horizon.

Result: Reject

Students with one week travel planning horizon arrived at useful pieces of information an average of 14.6 times, while students with a three month travel planning horizon arrived in this manner an average of 13.4 times ($t = -0.16$, $p = 0.44$). These results indicate students were once again, unaffected by the hypothetical time restraint of having to plan a trip only one week in advance. This result could be a result of the inexperience of this sample in planning trips on the Internet. Often, more experienced online travel planners have a greater knowledge of travel search engines.

Hypothesis 4g: Students with a one week travel planning horizon will view less total web pages than students with a three month travel planning horizon.

Result: Accept

Students with a one week travel planning horizon viewed an average of 117.0 web pages while students with a three month travel planning horizon viewed an average of 166.2 web pages ($t = -1.12$, $p < .05$). Results indicate that while other factors may not have been affected by the time restraint of only one week until travel, web pages viewed was. As a result, students with one week travel planning horizon were less thorough than their counterparts with a longer travel planning horizon. This statistic is worth further

exploration, perhaps it is an indicator that a hypothetical time restraint was effective at some level, however some elements of the time restraint may need to be changed.

Hypothesis 4h: Students with a one week travel planning horizon will view less unique web sites than students with a three month travel planning horizons

Result: Reject

Students with a one week travel planning horizon viewed an average of 11.0 unique web sites while students with a three month travel planning horizon viewed an average of 16.4 unique web sites ($t = -1.12$, $p = .15$). These results indicate that while students with a one week travel planning horizon viewed less pages overall, their unique website visitation was not significantly affected.

Hypothesis 4i: Students with a one week travel planning horizon will use less search engines than students with a three month travel planning horizon.

Result: Reject

As previously mentioned, all survey participants used only one search engine.

Hypothesis 4j: Students with a one week travel planning horizon will produce less search outputs than students with a three month travel planning horizon.

Result: Reject

Students with a one week travel planning horizon produced an average of 10.4 search outputs while students with a three month travel planning horizon produced an average of 9.8 search outputs ($t = 0.18$, $p = 0.43$). This result may be a product of this sample's poor score on the internet search proficiency test. Their low scores indicates these students were unskilled in web searching, and therefore may not have been able to find what they were looking for via search engine.

Hypothesis 4l: Students with a one week travel planning horizon will use more travel search engines than students with a three month travel planning horizon.

Result: Reject

Students with a one week travel planning horizon used an average of 2.6 travel search engines while students with a three month travel planning horizon used an average of 2.0 travel search engines ($t = 0.51$, $p = .31$). This result may be because of such a homogeneous group of American students. Perhaps if students had significantly different levels of online travel planning experience, they would have been more familiar with a greater variety of travel search engines.

Hypothesis 4m: Students with a one week travel planning horizon will produce more travel search engine outputs than students with a three month travel planning horizon.

Result: Reject

Students with a one week travel planning horizon produced an average of 8.6 travel search engine outputs while those with a three month travel planning horizon produced an average of 7.6 travel search engine outputs ($t = 0.28$, $p = 0.39$). Once again the homogeneity of the sample in this research could have contributed to this result. As seen in popular media, several travel search engines are dedicated to last minute travel planning and could have been used by travel planners had they been aware of such sites. .

Hypothesis	One Week Mean	Three Month Mean	T-value	P-value	Result
4a. Time	57.5 minutes	64.8 minutes	-0.71	0.25	Reject
4b. Links clicked	14.2	13.6	0.12	0.46	Reject
4c. Search Actions	75.0	79.6	-0.30	0.17	Reject
4d. Arrival search engine links	14.6	13.4	0.33	0.37	Reject
4e. Arrival site to site links	0.0	0.4	-1.0	0.17	Invalid
4f. Arrival direct URLS	0.0	0.2	-1.0	0.16	Invalid
4k. Arrival travel search engine links	7.4	8.0	-0.16	0.44	Reject
4g. Total web pages viewed	117.0	166.2	-2.13	0.03	Accept
4h. Unique web sites viewd	11.0	16.4	-1.12	0.15	Reject
4i. Search engines used	1.0	1.0	0.0	1.0	Reject
4j. Search outputs	10.4	9.8	0.18	0.43	Reject
4l. Travel search engines used	2.6	2.0	0.51	0.31	Reject
4m. Travel search outputs	8.6	7.6	0.28	0.39	Reject

Table 4.9 Travel planning horizon hypothesis test results

CHAPTER FIVE

CONCLUSIONS AND IMPLICATIONS

Summary

The purpose of this thesis research was to build upon the framework of the online travel information finding activity examined by Pan and Fesenmaier (2006) by using an expanded search environment where participants are allowed to browse the Internet freely while searching for online travel information of their choosing. This includes the incorporation of information foraging theory, comparison of travel search behaviors between two countries and examining behaviors over multiple travel planning horizons, while using established measures previously used to evaluate online search behaviors.

It is believed that this empirical examination gives additional insight into how potential travelers go about their task of information searching on the Internet. This research also confirms that information foraging and some established measures can be applied to an online travel searching environment, with the addition of several measures specific to online travel information search. In addition, this research adds to the relatively slim body of knowledge that currently exists on online travel information search behaviors. Furthermore, the incorporation of country of origin and travel planning horizon element provides a basis for future studies within these subjects.

Conclusions

This research was successful in determining the applicability of information foraging theory and additional measures to online travel information search. Information

foraging behavior was observed in all study participants. Most additional measures tested were applicable to this setting, while several new measures were discovered unique to travel and tourism. Further research testing these new measures is needed.

In concurrence with information foraging theory, all users modified their environment to garner the most information while using the least amount of time. How users went about this, however, differed between cultures and, in one respect, travel planning horizon. In general, American students were more efficient in applying the principles of information foraging theory, this can be attributed to three factors mentioned in previous literature. First, Americans are less risk adverse and more willing to take chances in travel. Second, Americans are generally more experienced in using the Internet to plan trips. Third, the search style of Americans fits better with the framework of information foraging theory than the Belgians' search style. What information foraging doesn't take into account is thoroughness of browsing. It seems that Belgians, in general, take their time searching for information so as not to overlook any possibilities. The additional measures used were useful in revealing this difference.

In the case of travel planning horizons, research results indicate that hypothetical time restraints are not an effective way to stimulate travel searching behavior. This result is perhaps a product of a homogeneous sample, such a group of students could search for travel information the same no matter when they are traveling. As a result, more studies need to be completed examining effects of time constraints on travel information searchers using larger, more heterogeneous samples. Indeed, perhaps there is no difference in travel information search behaviors between travel planning

horizons. It could be that users exhibit the same search behaviors regardless of when their prospective trip is.

Theoretical Implications

The results of this research extend existing knowledge about how potential travelers find information on the Internet. First and foremost, this study confirms that information foraging theory can be applied to online travel searching. Second, this study examined search behaviors using an established set of measures, something that had previously not been done. Two additional measures unique to travel and tourism were also discovered and should be confirmed by further testing in the future. It is important the information searching body of literature continue with the use of established measures so that similar works can be compared across industries.

In addition, this study extends past findings by Pan & Fesenmaier (2006). While the Pan and Fesenmaier study was not replicated exactly, several key elements were preserved. The information searching activity in this research was very similar to that of Pan and Fesenmaier, as was the pre-activity questionnaire and elements of information foraging theory (Pirolli & Card, 1999) in their study framework.

In the context of information foraging theory (Pirolli & Card, 1999), this research made several interesting findings. While scent following and environmental enrichment were unable to be directly measured because of the continual re-evaluation process used by those searching for information on the Internet, several study findings point to a trend toward environmental enrichment behaviors. The overwhelming use of search engines

and travel search engines in this study show that users preferred to mold their environment so that it provided them the most valuable information at the least cost. Scent following behaviors, however, were not widely successfully used to find pertinent information, as can be seen by the very few participants who obtained useful information by clicking site to site links.

Country of origin comparisons were perhaps the most interesting findings and fruitful contributions of this research. Findings by this research were in agreement with previous work started by Hofstede (2001). Several significant results were of note in the country of origin hypothesis tests: Belgians took significantly more time, clicked more links, completed more search actions, arrived at useful information more via search engine and produced more search outputs than Americans did. Conversely, Americans arrived at useful information via travel search engine significantly more, and used more travel search engines. Such results are not only consistent with the body of work centered around Hofstede, but also with the Brengeman et al (2005) study where Belgians tended to be more of a browsing type of shopper while Americans took a very linear path.

Travel planning horizon results were less informative, however. The only significant finding in this set of data was that of total web pages viewed. It would seem as though the hypothetical time crunch that those with a one week travel planning horizon were under, did little to affect their search behaviors. Other studies focused on limiting time for online activity tended to limit the actual time users had to browse, not the time until users would actually consume the product they were purchasing. In the online

context, at least, it seems as though a hypothetical time crunch did not turn searchers in to the bargain hunters it was originally thought it would.

Implications for Industry and Consumers

This research is only the beginning in what should be along line of studies evaluating travel search behaviors on the Internet. As such, it provides a basic concept of how potential travelers may go about finding travel information online. For travel organizations, this research has shown that search engines and travel search engines are far and away the most common way potential travelers find their information. It would appear as though the most effective way to reach the potential traveler would be search engine optimization and effective marketing of travel search engine participation. For Belgians sites, it would appear as though general search engines are more used than travel search engines. Consumers also stand to benefit from the knowledge that use of travel search engines could save them time over general search engines or longitudinal browsing techniques.

Study Limitations

There were two major limitations of this study. First, small sample sizes makes results hard to extrapolate over the general population of U.S. and Belgian students, this however, was not the goal of the research. That said, small sample sizes make it difficult to judge significant findings. Second, a hypothetical travel planning activity is perhaps

not the best way to get an accurate picture of real travel planning activities. This research does, however, provide a starting point for such a body of literature.

Recommendations for Future Research

Eventually, it would be extremely beneficial to have a research project which longitudinally examined actual travelers search behaviors over time. One such study was completed fairly recently (Cothey, 2001), that study covered general online information search, not travel and tourism information search. While this research provided a brief look into how potential travelers find information online, a study using real travelers would ultimately provide a more accurate picture of travel information search behaviors online. Such a study may have more interesting findings based on travel planning horizons when the time crunch is actual as opposed to hypothetical.

APPENDICES

Appendix A

Travel Information Searching Questionnaire

1. Do you (or did you) own or have regular access to a computer with an Internet connection?

Yes No (If no, please skip to question 3)

2. If yes, how long have you owned or had regular access to a computer with an Internet connection?

_____ Years

3. How often do you use the Internet?

a) Every day
b) Several times per week
c) Once a week
d) Less than once a week

4. Have you used the Internet to plan a vacation before?

Yes No (If no, please skip to question 6)

5. If yes, how many times? _____

6. How often do you use the Internet as an information search tool?

a) Every day
b) Several times per week
c) Once a week
d) Less than once a week

7. How often do you use the Internet to search for TRAVEL information?
a) Every day
b) Several times per week
c) Once a week
d) Less than once a week

8. Keyword and subject searching are two different ways of finding information on a topic. Keyword searching works best when your topic is:
- a) Specific
 - b) Unclear
 - c) Recent
 - d) Quantitative
9. How can you require two search concepts to be present in search results?
- a) Use AND or a plus (+) symbol
 - b) Use OR
 - c) Use NOT or a minus (-) symbol
 - d) Use quotation marks (“ ”)
10. Which search statement below will retrieve the most pages?
- a) chile AND peru AND olivia
 - b) chile OR peru OR olivia
 - c) chile OR peru AND NOT olivia
 - d) +chile +peru +olivia
11. A meta-searcher (such as MetaCrawler) gives results from:
- a) Many different search tools
 - b) One Web directory and a Web index
 - c) A “special collection”
 - d) None of the above
12. In the past 3 years, how many times have you traveled out of your home country on vacation?
- _____
13. In the past 3 years, how many vacations (Domestic AND international) have you planned yourself?
- _____
14. Have you ever traveled to Australia before?
- Yes No

If yes, how many times

_____ times

15. Please indicate the following:

Age: _____ Years

Sex: Male Female

Appendix B

Travel Information Searching Activity

For this activity, imagine that you are planning a trip to Australia. The basic framework of your vacation has been decided (5 days each in Darwin, Sydney and Cairns), but how you get there, where you stay, and what you do while you are there are completely up to you. Activities you choose may be anywhere in the general region of the destination (For example, if you were going to Clemson, an activity in Greenville would be acceptable because you can return to your accommodation in Clemson at night). Also, an activity doesn't necessarily have to be something that costs money (For example, spending time at the beach), but if you do plan such an activity, please be sure to find and document which beach you will go to, etc. Due to the distances between destinations within Australia, an optional travel day between destinations may be used if necessary.

This study aims to understand how a potential traveler searches for information on three major components of the travel process (transportation, accommodation, and activities) under several different scenarios. During the activity you are about to complete, please do your best to exhibit behavior that would be normal for you during your travel planning process.

Please do all of your travel information searching using one of the web browsers provided on the desktop of the computer in front of you. Remember that you may use any type of website of your choosing, it is completely up to you. The order of your travels is also up to you, but be advised that you must find transportation between each destination as well as to and from Australia.

There are only a few rules for this activity:

- You must arrive at your first destination on July 10, 2008
- Total costs are not to exceed \$11,700 USD.
- In order to record a choice you must reach a web page with some type of “book” or “purchase” button. Certain activities that do not need reservations, like going to the beach, are exceptions.

- Please record your choices on the lines that follow. Simply write down the name and a few **details** (e.g. Flight number, type of room, etc.) of your selection as well as **cost**.
- You are finished with this activity when you have filled in each line on the following sheets of paper.

The destinations are as follows:

Darwin, Northern Territory – 5 days

Date of Arrival: _____ ***Date of Departure:*** _____

Accommodation: _____ Cost: _____

Transportation (arrival): _____ Cost: _____

Transportation (departure): _____ Cost: _____

Activity 1: _____ Cost: _____

Activity 2: _____ Cost: _____

Activity 3: _____ Cost: _____

Activity 4: _____ Cost: _____

Activity 5: _____ Cost: _____

Sydney, New South Wales – 5 days

Date of Arrival: _____ ***Date of Departure:*** _____

Accommodation: _____ Cost: _____

Transportation (arrival): _____ Cost: _____

Transportation (departure): _____ Cost: _____

Activity 1: _____ Cost: _____

Activity 2: _____ Cost: _____

Activity 3: _____ Cost: _____

Activity 4: _____ Cost: _____

Activity 5: _____ Cost: _____

Cairns, Queensland – 5 days

Date of Arrival: _____ ***Date of Departure:*** _____

Accommodation: _____ Cost: _____

Transportation (arrival): _____ Cost: _____

Transportation (departure): _____ Cost: _____

Activity 1: _____ Cost: _____

Activity 2: _____ Cost: _____

Activity 3: _____ Cost: _____

Activity 4: _____ Cost: _____

Activity 5: _____ Cost: _____

Thank you for participating!

APPENDIX C

Data Coding Sheet

Links clicked	Total web pages viewed	Number of search actions
Link from search engine	URL	Site to site link
Number of unique sites	Number of search engines	Number of search outputs

REFERENCES

- Babbie, E. (1992). *The Practice of Social Research: Sixth Edition*. Belmont, CA: Wadsworth publishing company.
- Boutell (2008). *WWW FAQs: How many websites are there?* Retrieved July 5, 2008 from: <http://www.boutell.com/newfaq/misc/sizeofweb.html>
- Brengman, M., Geuens, M., Weijters, B., Smith, S.M., & Swinyard, W.R. (2005) Segmenting Internet shoppers based on their Web-usage-related lifestyle: a cross-cultural validation. *Journal of Business Research*, 58(1), 79-88.
- Buhalis, D. (1998). Strategic use of information technologies in the tourism industry. *Tourism Management*, 19(5), 409-421.
- Chen, J.S. & Gursoy, D. (2000). Cross-cultural comparison of the information sources used by first time and repeat travelers and its marketing implications. *Hospitality Management*, 19, 191-203.
- Claxton, J.D., Fry, J.N., & Portis, B. (1974). A taxonomy of prepurchase information gathering patterns. *Journal of Consumer Research*, 1(3), 35.
- Cothey, V. (2001). A longitudinal study of World Wide Web users' information-searching behavior. *Journal of the American Society for Information Science and Technology*, 53(2), 67-78.
- Denenberg, V.H. (1976) *Statistics and Experimental Design for Behavioral and Biological Researchers*. Washington, DC: Hemisphere Publishing Corporation.
- Fagan, J.C. (2006) Usability testing of a large, multidisciplinary library database: Basic search and visual search. *Information Technologies and Libraries*, 24, 140-150

- 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, 108-119.
- Fodness, D. & Murray, B. (1999). A model of tourist information search behavior. *Journal of Travel Research*, 37(3), 220-230.
- Gitelson, R.J. & Crompton, J. (1983). The planning horizons and sources of information used by pleasure vacationers. *Journal of Travel Research*, 21(3), 2-7.
- Gitelson, R.J. & Perdue, R.R. (1987). Evaluating the role of state welcome centers in disseminating travel related information in North Carolina. *Journal of Travel Research*, 25, 15-19.
- Gursoy, D. & McCleary, K.W. (2003). An integrative model of tourists' information search behavior. *Annals of Tourism Research*, 31(2), 353-373.
- Gursoy, D. & Umbreit, W.T. (2004). Tourist information search behavior: Cross-cultural comparison of European Union member states. *Hospitality Management*, 23, 55-70.
- Hodkinson, C., Kiel, G., & McColl-Kennedy, J.R. (2000). Consumer web search behavior: Diagrammatic illustration of wayfinding on the web. *International Journal of Human-Computer Studies*, 52, 805-830.
- Hoffman, D.L. & Novak, T.P. (1997). A new marketing paradigm for electronic commerce. *The Information Society*, 13(1), 43-54.

- Hofstede, G. (1980). *Culture's Consequences: International differences in work-related values*. Beverly Hills, CA: SAGE Publications.
- Hofstede, G. (2001). *Culture's Consequences: Comparing values, behaviors, institutions, and organizations across nations*. Thousand Oaks, CA: SAGE Publications.
- Horrigan, J. (2008). *Online shopping: Internet users like the convenience but worry about the security of their financial information*. Pew Internet and American Life Project. Retrieved July 7, 2008 from, http://www.pewinternet.org/pdfs/PIP_Online%20Shopping.pdf
- Howard, D.R., Gitelson, R.J. (1989). An analysis of the differences between state welcome center users and nonusers: A profile of Oregon vacationers. *Journal of Travel Research*, 27, 38-40.
- Howarth, J., Andre, T.S., & Hartson, R. (2007). A structured process for transforming usability data into usability information. *Journal of Usability Studies*, 3(1), 7-23.
- Hsieh-Yee, I. (2001). Research on web search behavior. *Library & Information Science Research*, 23, 167-185.
- Internet World Stats. (2008). The Internet big picture: world Internet users and population statistics. Retrieved July 5, 2008 from: <http://www.internetworldstats.com/stats.htm>
- Jang, S. (2004). The past, present, and future research of online information search. *Journal of Travel & Tourism Marketing*, 17(2/3), 41-47.

- Jun, S.H., Vogt, C.A., & MacKay, K.J. (2007). Relationships between information search and travel product purchase in pretrip contexts. *Journal of Travel Research, 45*(3), 266-274.
- Kim, J., Lehto, X.Y., & Morrison, A.M. (2007). Gender differences in online travel information search: Implications for marketing communications on the Internet. *Tourism Management, 28*, 423-433.
- Kline, R. B. (2004). *Beyond Significance Testing: Reforming Data Analysis Methods in Behavioral Research*. Washington, DC: American Psychological Association.
- Litvin, S.W., Crotts, J.C., & Hefner, F.L. (2004). Cross-cultural tourist behaviour: A replication and extension involving Hofstede's uncertainty avoidance dimension. *International Journal of Tourism Research, 6*, 29-37.
- Luo, M., Feng, R., Cai, L. A. (2004). Information search behavior and tourist characteristics: The Internet vis-à-vis other information sources. *Journal of Travel and Tourism Marketing, 17*(2), 15-25.
- Moha, N., Gaffar, A., & Michel, G. (2007). Remote usability evaluation of web interfaces. *Human Computer Interaction in Web Design and Evaluation, 8*, 273-294.
- Money, R.B. & Crotts, J.C. (2003). The effect of uncertainty avoidance on information search, planning, and purchases international travel vacations. *Tourism Management, 24*, 191-202.
- Newman, J.W. (1977). *Consumer and external search: Amounts and determinants*. New York, NY: North-Holland.

- Netcraft, Ltd. (2008). *Web server survey archives*. Accessed July 5, 2008 from:
http://news.netcraft.com/archives/web_server_survey.html
- O'Connor, P. (2008). Distribution channels and e-commerce. In H. Oh (ed.), *Handbook of Hospitality Marketing Management* (53-71). New York, NY: Butterworth-Heinemann.
- O'Hanlon, N. (2002). Net knowledge: Performance of new college students on an Internet skills proficiency test. *Internet and Higher Education*, 5(1), 55-66.
- Palmer, A. & McCole, P. (2000). The role of electronic commerce in creating virtual tourism destination marketing organizations. *International Journal of Contemporary Hospitality Management*, 12(3), 198-204.
- Pan, B. & Fesenmaier, D.R. (2006). Online information search: Vacation planning process. *Annals of Tourism Research*, 33(3), 809-832.
- Patkose, M., Stokes, A.M., Cook, S.D. (2004). *Travelers use of the Internet: 2004 Edition*. Travel Industry Association of America. Washington D.C.
- Perdue, R.R. (1985). Segmenting state travel information inquirers by timing of the destination decision and previous experience. *Journal of Travel Research*, 23, 6-11.
- Pirolli, P., & Card, S. (1999). Information foraging. *Psychological Review*, 106(4), 643-675.
- Snepenger, D., Meged, K., Snelling, K., & Worrall, K. (1990). Information search strategies by destination-naive tourists. *Journal of Travel Research*, 29(1), 13-16.

- Susskind, A.M., Bonn, M.A., & Dev, C.S. (2003). To look or book: An examination of consumers' apprehensiveness toward internet use. *Journal of Travel Research*, 41(3), 256-264.
- Tews, J., Merritt, S. (2007). *2007 Independent travel web site satisfaction study*. JD Power and Associates. Retrieved July 3, 2008, from <http://www.jdpower.com/corporate/news/releases/pressrelease.aspx?ID=2007277>.
- U.S. Census Bureau. (2008). *U.S. Census Bureau: E-stats*. Retrieved July 7, 2008 from, <http://www.census.gov/estats>.
- Vogt, C. A., Fesenmaier, D. R. (1998). Expanding the functional information search model. *Annals of Tourism Research*, 25(3), 551-578.
- Wang, F., Head, M., & Arthur, N. (2002). E-tailing: An analysis of web impacts on the retail market. *Journal of Business Strategies*, 19(1), 73-93.
- Weber, K. & Roehl, W.S. (1999). Profiling people searching for and purchasing travel products on the World Wide Web. *Journal of Travel Research*, 37(3), 291 – 298.