REVISITING TRAVEL UNCERTAINTY WITH AN EYE ON INFORMATION TECHNOLOGY

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ABSTRACT

This study is aimed at a more comprehensive understanding of travel information sources in two formats- traditional and web-based – with a consideration of tolerance for travel uncertainty levels. The findings of the study suggest that individuals believe it is important to reduce travel uncertainty and at some point before an actual vacation, a traveler reaches more certainty about travel decisions. However, no significant effect for tolerance for travel uncertainty on a variety of information search behaviors was found. The weak associations of information sources in traditional and web formats indicated that web-based information sources are not replacing but instead complementing traditional information sources. TV programs and commercials were found to be easily and highly available to travelers and significantly related to tolerance for travel uncertainty. This finding suggests that it is important to consider broadcast advertising which focuses on two factors (Vogt and Fesenmaier, 1998): (1) "hedonic information need" which captures consumers' attention and stimulates interests, and (2) "functional need" which helps consumers narrow their alternatives and as establish "brand loyalty" based on the images on TV. Additionally, the Internet was observed to be a significant communication channel between travelers and travel businesses or destination organizations. It is therefore important to focus on content that solves travel uncertainty and presents detailed information regarding accommodations, activities, transportations, weather, and culture.

INTRODUCTION

Travel can afford both certain and uncertain conditions and experiences. First trips to unfamiliar places certainly hold unknown elements; whereas repeat visits to familiar places over time are more predictable experiences. Allocentric travelers would be viewed as individuals hungry for new experiences, novelty seeking, and accepting of uncertain conditions; psychocentric tourists would be adverse to brand new experiences and travel challenges (Plog, 1974). Tourism research is full of explorations into these dichotomized traveler types that feature the opposite types of character personalities, destination preferences, planning and decision making, and styles of travel.

Studies of risk (Roehl and Fesenmaier, 1992; Sonmez and Graefe, 1998) and uncertainty (Daniels and Norman, 2001) in the tourism literature have shown that both risk and uncertainty influence vacation decision making, destination choice, and information seeking. Vogt and Fesenmaier's (1998) research on information needs and trip planning consider risk and uncertainty cognitions and their related behaviors as knowledge seeking, problem solving or functional planning. Work by Daniels and Norman (2001) incorporated Berger and Calabrese's (1975) Uncertainty Reduction (UR) theory and Kellerman and Reynolds's (1990) adaptation of the theory into a scale to test travel information seeking behaviors and knowledge needs. As part

of this study we became interested in revisiting Daniels and Norman's investigation into uncertainty as a state of mind that individuals hold about travel in general, not necessarily a specific trip. Daniels and Norman's examination of uncertainty was broadly contextualized; meaning respondents didn't have a specific trip or situation in mind. This lens is consistent with uncertainty being more like a personality trait or comfort zone rather than an *in-situ* emotion. The aim of their scale is to describe individuals by their level of need for certainty and their personal rating of the importance of reducing uncertainty when a travel opportunity comes along. Axiom 3 of the Uncertainty Reduction Theory posits, those who place high importance on reducing uncertainty and the need to be certain before acting on a behavior like a trip would exhibit greater information seeking behaviors as they use information to become more knowledgeable, confident and certain; and those who feel comfortable with uncertainty would exhibit lower information seeking behaviors, particularly before a trip.

Thus, we are interested in how new information technologies appeal to these two traveler types (high tolerance for uncertainty means "ok" with uncertainty and low need and importance for certainty; low tolerance means "not ok" with uncertainty and high need and importance for certainty). Recent travel trends show greater levels of independent travel, increased use of the Internet for planning and booking, planning and booking closer to the departure, and more frequent shorter length trips (TIA, 2004). These travel trends may suggest travelers, particularly those less tolerant of uncertainty, may be learning new travel skills and forming new information preferences to execute their travels. Specifically, our research questions were: what levels of certainty are held by travelers and are individuals with similar certainty dispositions unique demographically or in their travel characteristics? How are certainty levels associated with information sources accessed using the Internet and more traditional media? Specifically, are those with lower tolerance for uncertainty more likely to use the web and other information sources for travel decision making and trip planning compared to individuals with high levels of tolerance for uncertainty?

METHOD

To implement a study on trip planning and information search in a way that we could gain deeper access to and understanding of travel behaviors, we designed a panel study over a 12 month period. We used multiple survey formats to evaluate travel experience and interests, planning and decision making in general and for specific trips, and demographics. We started with a qualifying instrument and a sample from several Canadian park or tourism authorities who had recently fulfilled an information request (N=1,026) to identify vacationers and trip planners. We further delimited the sample to only Canadians (n=732) for mail reasons (cost and speed). Slightly over 300 individuals (n=313) responded to the qualifying instrument and were willing to participate in our year long panel study which offered various monetary incentives and payments. With this sample, our next contact was with a monitoring questionnaire (n=260, RR= 83%).

The independent variable in the study was tolerance for travel uncertainty. Past research by Kellerman and Reynolds (1990) and Daniels and Norman (2001) found two dimensions for tolerance for travel uncertainty – need for certainty and the importance of reducing uncertainty. Each dimension drew from four items measured on a 7- point scale. Respondents were asked to consider vacation planning in general, not necessarily for a trip they were likely to be taking soon. The dependent variable was information sources. Twenty-two information sources were employed based on a review of recent information source literature. Many of these sources such as travel books, convention and visitor bureaus, and word-of-mouth, are found in electronic or

web-based mediums, as well as nonweb or printed (traditional) mediums. We asked respondents to indicate which medium they accessed information sources using three responses – traditional places, Internet or didn't use. Following initial data reduction and clustering analyses, descriptive and nonparametric statistics were used to test tolerance for travel uncertainty levels and information source preferences.

FINDINGS

A profile of our respondents shows men and women were equal in number and average age was 49 years with a range of 19 to 64 years old. A greater number of respondents had no bachelor degree (58%) than a bachelor degree or greater (42%). Eight of ten (83%) were married or cohabiting and 17% were single. Almost half (46%) earned C$80,000 in annual household income. The average number of years using the Internet was 9 years with a range of 1 to 25 years. Sixty-five percent indicated they use the Internet several times a day, 17% once a day, and 18% less than once a day. On average, these respondent rated themselves slightly over the midpoint of the scale as "well-traveled" (mean 4.6 on 7 pt disagree/agree scale) and "skilled as a traveler" (mean 4.7).

On the tolerance for uncertainty scale, oblique/correlated factor analysis supported a two factor solution (consistent with past research of two correlated dimensions) (Table 1). The importance of reducing uncertainty dimension explained 49% of the variance and scored a .75 Cronbach's alpha. Three items aligned with this factor: two of the original items and one of the need items (and one item dropped for low internal consistency). An overall mean of 5.2 where "7" equals strongly agree suggests our respondent sample was moderately agreeing they place importance on reducing uncertainty about travel. The need for certainty dimension explained 17% of the variance and scored a .82 Cronbach's alpha. Four items aligned with this factor: three of the original items and one of the importance items. An overall mean of 4.4 where "7" equals strongly agree suggests respondents were more neutral or between agreeing and disagreeing they held needs for travel certainty.

Table 1. Factor analysis of tolerance for uncertainty scale

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

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

Next, a hierarchical cluster analysis used the factor scores for the two identified factors (importance and need dimensions) and three unique clusters were obtained (Table 2). The first cluster (low tolerance in need dimension and moderate importance) included 48% of the respondents, the second cluster was 22% (low tolerance in importance dimension and leaning toward high need tolerance), and the third cluster was 30% (high tolerance on need and importance dimensions).

Table 2. Differences in mean factor scores across clusters

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

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

Several characteristics were tested to examine the differences among the three clusters on demographics, Internet use, travel characteristics, and travel planning styles. These analyses showed the certainty clusters were not different. Although travel planning styles were not significantly associated with certainty clusters, the results showed about 1/3 plan at home and about 1/2 plan at home and at the destination. The high tolerance group was at least twice as more likely to not pre-plan (11%) than the low tolerance groups (3% and 6% respectively), a result to be expected from the UR theory.

To analyze the usefulness of the tolerance for uncertainty variable in explaining information use and to test Axiom 3 of the UR theory, information source use was examined based on web and non-web formats. A factor analysis was estimated for the nonweb and web data separately and yielded a six-factor solution. For nonweb formats, mass media, destination organizations, travel business, published material, professional consultant, and personal advice were the six factors (Table 3). For web formats, travel business, destination travel organization, broadcast media, printed media, professional consultant and personal advice were the six factors (Table 5). Next, factor scores were used in ANOVA tests with the three uncertainty clusters. For nonweb (Table 4) and web formats (Table 6), the use of the six information source factors was similar across the three clusters. Despite the nonsignificant results, a pattern was observed (in the percent who used) where the two low tolerance clusters were more likely to use a variety of information sources than the high tolerance cluster for travel planning (Table 7 and Table 8 respectively).

Table 3. Factor analysis of traditional information source utilization

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

Table 4. Differences in mean factor scores across six identified traditional information factors among tolerance for travel uncertainty groups

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

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

Table 5. Factor analysis of web-based information source utilization

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

Table 6. Differences in mean factor scores across six identified web-based information factors among tolerance for travel uncertainty groups

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

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

Table 7. Usage patterns of traditional information sources based on tolerance for travel uncertainty groups

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

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

Table 8. Usage patterns of web-based information sources based on tolerance for travel uncertainty groups

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

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

More targeted analysis tested the association between traditional and web formats for the three certainty cluster groups (Table 9). For those individuals with less tolerance for uncertainty particularly in the importance dimension, they were likely to use tour operators as information sources in both traditional and web formats (phi=.54, p<.001). In another example, those individuals with less tolerance for uncertainty in the need dimension were likely to use newspaper and magazine ads from both traditional and web formats (phi=.28, p<.01).

Table 9. Consistency in information source utilization of traditional and web format

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

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

Finally, the association between levels of uncertainty and levels of information source usage were examined similar to Daniels and Norman (2001). In terms of traditional formats, slight positive relationships were found between uncertainty and TV programs (r=.17, p<.05 for importance; r=.15, p<.05 for need), TV commercials (r=.15, p<.05 for importance), and travel maps (r=.20, p<.01 for need). Considering web formats, slight positive relationships were found between uncertainty (importance dimension only) and destinations' tourism departments (r=.15, p<.05), travel maps (r=.21, p<.01), visitor information centers (r=.20, p<.01), and convention/visitor bureaus (r=.15, p<.01).

CONCLUSION

The results showed individuals believe it is important to reduce travel uncertainty and necessary to be certain about vacation experiences and destinations. Although the statistical tests in information source utilization did not vary significantly for the different types and levels of tolerance for travel uncertainty groups, the descriptive analysis conducted using a cross tabulation method supported the proposed model by Kellerman and Reynolds (1990). Evidence showed the low tolerance for travel uncertainty groups displayed high usage levels of traditional

and web-based information sources, as compared to the high tolerance for travel uncertainty group. The results showed web-based information sources continue to complement traditional information sources. TV programs and commercials were found to be easily and highly available to travelers and significantly related to tolerance for travel uncertainty. Therefore, it is important to consider broadcast advertising which focuses on two factors (Vogt and Fesenmaier, 1998): (1) "hedonic information need", which captures consumers' attention and stimulate interests, and (2) "functional need", which helps consumers narrow their alternatives and establish "brand loyalty" based on televised images. Additionally, the Internet was observed to be a significant communication channel between travelers and travel businesses or destination organizations. As a result, it is important to focus on content that solves travel uncertainty and presents detailed information regarding accommodations, activities, transportations, weather, and culture.

REFERENCES

Berger, C., & Calabrese, R. (1975). Some explorations in initial interaction and beyond: toward a developmental theory of interpersonal communication. *Human Communication Research*, 1: 98-112.

Daniels, M. J., & Norman, W. C. (2001). Uncertainty reduction theory: a means of exploring travel information seeking. *Proceedings of the 32nd Annual Travel and Tourism Research Association Conference.*

Kellermann, K., & Reynolds. R. (1990). When ignorance is bliss: the role of motivation to reduce uncertainty in uncertainty reduction theory. *Human Communication Research*, 17(1): 5-75.

Plog, S. (1974). Why destinations rise and fall in popularity. *The Cornell Hotel and Restaurant Administration Quarterly*, 14(4): 55-58.

Roehl, W., & Fesenmaier, D. (1992). Risk perceptions and pleasure travel: an exploratory analysis. *Journal of Travel Research*, 30(4):17-26.

Sonmez, S., & Graefe, A. R. (1998). Influence of terrorism risk on foreign tourism decisions. *Annals of Tourism Research*, 25(1): 112-144.

Travel Industry Association (2004). *Travelers' use of the Internet*. TIA: Washington, DC.

Vogt, C., & Fesenmaier, D. (1998). Expanding the functional information search model. *Annals of Tourism Research*, 25(3): 551-578.

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