

Full Length Research Paper

The Effect of tourism web page design on browser's attitude and visit intention

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This study investigated the influence of different types of web page design on browsers' attitudes, figured out if information-processing styles play moderating roles, and examined the relationship between attitude towards the web page and visit intention. This research specifically designed three web pages, created in different types, words only, pictures only, and a combination of words and pictures. Respondents were undergraduate students, and answered questionnaires online. This research found no significant difference between high and low need for cognition (NFC) individuals in terms of attitude towards the web page when the web page was presented in words design. A higher level of attitude was associated with high PFA individuals when the web page presented in pictures design. Individuals with high NFC and high PFA were significantly different from the other groups when the web page presented in combination design. At last, a positive correlation existed between attitude towards the web page and visit intention.

Key words: Attitude towards the web page, visit intention, web page design, information processing styles.

INTRODUCTION

The prevalence of network technology increases the proportion of internet users each year. The internet has become the main channel for seeking and disseminating information. Many people browse the internet to obtain information they want. According to the 2007 statistics of the Taiwan Tourism Bureau, 73% of visitors to Taiwan had seen official advertisements promoting Taiwan tourism on the Internet before choosing to visit Taiwan (a percentage that trailed those who had seen such advertisements on TV, radio, magazines, or books) (Tourism Bureau, 2008). A 2008 survey showed that 76% of visitors to Taiwan had seen advertisements or reports promoting Taiwan tourism on the Internet before they visited Taiwan (Tourism Bureau, 2009). The survey results demonstrate the growing importance of the internet to travelers in seeking relative tourism information. Therefore, designing effective websites is a key ingredient to creating ideal tourists.

Irrespective of countries, tourism bureaus, or other tourism promotion organizations, creating attractive websites is a very important way to pull a large number of

potential tourists. A successful website can reach millions of people in every corner of the world at very little cost. For example, Taiwan Tourism Bureau invites F4, a popular Taiwanese boy band, to promote Taiwan to Japanese and Korean with their boyish charm, and hopes to cash in on the band's popularity to promote Taiwan's tourism industry. The F4 project is expected to cost the Taiwan Tourism Bureau US\$ 2.7 million, which covers the production fee and the budget to buy air time in both Japan and Korea. Although achieving certain effect, in comparison, it seems that designing an appealing website or web page will obtain better and remarkable economic benefit.

Research motive and objectives

A travel decision requires large amounts of reference information, but a lengthy web page introduction may not draw attention. Users may have diverse preferences about web page information displays. This study

investigates the influence of different types of web page designs on browsers' attitudes and visit intentions, utilizing three research questions:

- i. Do different web page displays lead to different attitudes towards the web page?
- ii. Do information-processing styles play moderating roles in the influence of different types of web page designs on browsers' attitudes towards the web page?
- iii. Is there a positive relationship between attitude towards the web page and visit intention?

Understanding how viewers perceive web pages is imperative. This understanding is essential for securing and incorporating user input in the design process to ensure effective design. Without this understanding, presenting information on web pages will continue "in a way that is intuitive for designers but not for end users" (Proctor et al., 2002). Research findings should help to design effective web pages that are more likely processed by certain individuals because the design is consistent with individual processing preference.

LITERATURE REVIEW

Web page design

Professional analysts and designers generally agree that well-designed user interfaces improve web performance and appeal, helping to convert "tourists" or "browsers" to "residents" and "customers" (Marcus and Gould, 2000). Researchers across disciplines agree that visual representation in appropriate graphs could contribute to information comprehension, problem solving, and effective communication (Kosslyn, 1989; Schapira, Nattinger and McHorney, 2001; Edwards et al., 2002; Tuch et al., 2009; Blanco et al., 2010; Ganguly et al., 2010). Page layout is the visual presentation of the web page by means of background color, white space, horizontal and vertical scrolling, font-size, and color, and other design elements. The layout affects ease of use and quick identification of page components (Becker and Mottay, 2001). Other dimensions include background music, interaction, interface design (such as animation), etc. Although there are many dimensions of a web page or message design, this study only discusses the word (verbal) and picture (visual) design of tourism web pages. Internet marketing possesses great multimedia ability, using words, pictures, images, and sounds. Hanna and Millar (1997) reported that following the initial welcome page, photographs of destinations are the most popular website content. Standing and Vasudavan (2000) considered that one of the major weaknesses of the Western Cape site of South Africa is the reliance on a text description with few photos. Photographic images of places and attractions help form expectations regarding tour

tours during the pre-travel stage (Markwell, 1997). Photographs on web pages are thus important in tourism marketing.

Many tourism web pages use long descriptions to introduce destinations, offering browsers plentiful information, such as accommodations, traffic, shopping, entertainment, events/activities, etc. Potential tourists form preliminary concepts through reviewing introductions on web pages. However, appropriately arranging web page contents is very important to the designer in charge of marketing. Some previous researches have touched on the issue, focusing on various products. Adelaar et al. (2003) explored the effects of media formats on emotions and impulse buying intent. The results indicated that displaying the text of lyrics had a greater effect on impulse buying intent than showing still images of the music video. In addition, different media formats caused emotional responses that explain the participant's impulse buying intent to buy the CD. Unexpectedly, the still images and video did not necessarily generate more buying intention than combinations of the text and music. Therefore, research recommends that electronic commerce and marketing managers explore innovative ways of integrating visual and verbal media formats for eliciting an effective consumer response. Martin et al., (2005) found that subjects prefer web sites with medium level complexity, rather than high or low complexity. High sensation seekers who prefer complex visual designs, and low sensation seekers who prefer simple visual designs, prefer medium complexity web sites. High need-for-cognition subjects evaluated web sites with high verbal and low visual complexity more favorably. According to the above researches, effectiveness of web page presentation modes is different according to product categories. This study focuses on the web page for tourist attraction, and conceptualizes the web page design as stimuli to present in verbal (words), visual (pictures), or combined form.

Information processing styles

Individual differences among message recipients may lead to wide variations in the way people respond to advertising appeals (Moore et al., 1995). The field of attitude research has long acknowledged individual difference as a major variable that causes variations in attitude (Underwood and Shaughnessy, 1975). Sojka and Giese (2001) investigated individuals' preferences for the visual as opposed to verbal information and explored how those preferences relate to processing styles of personality traits. They used the Style of Processing scale (Childers et al., 1985) to test for preferences towards verbal or visual information. Results showed that individuals with a high need for cognition prefer to process verbal information while individuals with a high need for affect prefer to process visual information. Ruiz and

Sicilia (2004) used compact camera ads to consider whether individuals differ in their propensity to rely on affective, cognitive, or both systems to process information. Three ads were very informational, very emotional, and very informational and emotional at the same time. Their research suggested that persuasive appeals tend to be more effective when the nature of the appeal matches, rather than mismatches, the individual personality-type preferences for processing information. Results showed that informational and informational-emotional advertising appeals, which match consumer's processing style (thinking and thinking-feeling processors, respectively), can generate more positive attitudes towards the brand, purchase intention, and brand choice. Sojka and Giese (2006) used different sweater (with fictitious brand name "Enue") ad styles (visual and verbal version) and a beach resort ad (combination visual/verbal version) to test the role of affect and cognition in processing visual and verbal information. They suggested that high-affect individuals (affective processors) respond more favorably to a visual ad than the other groups, and individuals high in both affect and cognition (combined processors), respond more favorably to a combination visual/verbal ad. In addition, an interesting question arises for products such as clothing, perfume, and alcohol, advertised primarily through visual means. Although occasionally, some of these product categories might use a verbal appeal (for example, beer that tastes great but is less filling), in many cases, products such as clothing, perfume, and alcohol are shown primarily in a visual format. Branded clothing, such as Tommy Hilfiger, GAP, or Ralph Lauren, and certain athletic wear (most notably Nike) often feature a picture of the clothing with only the brand and logo on the page. Although these pictures might be very effective for individuals with high affect, what about high-cognition individuals. Are these advertisers effectively reaching all intended audiences, or are there more effective means to reach individuals with high cognition (Sojka and Giese, 2006)? Therefore, different product categories may be different in the relationship between visual/verbal advertisements and their effectiveness, considering the processing styles of audiences.

This study explores the relationship between visual/verbal designs of tourism web pages and their effectiveness, considering the processing styles of browsers. As mentioned earlier, visual materials, such as photographs of a destination, play an important role in tourism marketing. Similarly, tourism information presented in text is also essential.

Research has typically referred to personality classifications that focus on the cognitive style (tendency to engage in and enjoy thinking about) as the need for cognition (NFC) (Cacioppo and Petty, 1982). Cohen et al. (1955) defined the NFC as "a need to structure relevant situations in meaningful, integrated ways." A variety of factors may contribute to involvement (for example, situational and decision factors, personal needs, goals,

and product characteristics), but individual and personality characteristics such as a person's need for cognition, appear to be another important source of consumer involvement. Research has identified an individual's need for cognition as one of the precedent variables contributing to message involvement and hence, the motivation to process ad messages (Andrews et al., 1990).

Cacioppo and Petty (1982) developed the NFC scale for researchers to distinguish between high and low NFC individuals. Persons scoring high on the Need for Cognition Scale, intrinsically enjoy thinking, whereas persons scoring low on the scale tend to avoid effortful cognitive work (Haugtvedt et al., 1992). Several studies have validated the NFC scale with a variety of techniques (Cacioppo and Petty, 1982, 1984; Cacioppo et al., 1983; Lassiter et al., 1991; Petty et al., 1985; Srull et al., 1985).

More positive responses are found to be obtained in high NFC individuals with factual appeals or more information-dense ads and those with high-quality arguments (Geuens and De Pelsmacker, 1998). Additional research found that individuals with a high need for cognition (cognitive processors), as opposed to a low need for cognition, preferred verbal information (Martin et al., 2005; Sojka and Giese, 2001; Venkatraman et al., 1990) and enjoyed the problem-solving challenge presented in verbal symbolism (Brennan and Bahn, 2006). NFC individuals' preference for verbal stimuli should reflect a higher level of attitude towards the web page than would be expressed by those low in cognition. On the contrary, a web page with very few words that is mainly visual, results in a similar attitude of both low and high NFC individuals towards the web page, because it does not present any information to process. Hence, the following hypothesis is proposed:

H₁: A higher level of attitude towards the web page (A_{wp}) is associated with high need for cognition (NFC) individuals, compared with low NFC individuals, when the tourism web page presents a word (all-verbal) design, and no differences appear when the tourism web page presents a picture (all-visual) design.

However, cognition represents only one processing style. Individuals may also differ in their tendencies to process affective or emotional stimuli (Raman et al., 1995). Conceptualized as a complementary construct to the need for cognition, the need for affect is an individual's tendency to engage in and enjoy processing feelings (Giese et al., 1999). The Preference for Affect (PFA) scale (Sojka and Giese, 1997) measures affective processing situations.

Larsen and Diener (1987), using the Affect Intensity Measurement (AIM) scale (Larsen, 1984), demonstrated that some people, compared with others, consistently experience emotions with greater strength when exposed to emotionally provocative stimuli. However, these individual differences in emotional intensity tend to disappear

when confronting high and low affect intensive individuals with a non-emotional stimulus (Larsen et al., 1987). Individuals scoring high on the affect intensity measure responded with greater emotional intensity to advertisements with an emotional appeal (Moore and Harris, 1996; Moore et al., 1995). Sojka and Giese (2001) found that individuals with a high need for affect prefer to process visual information. Martin et al. (2005) also found that high sensation seekers prefer complex visual designs, and low sensation seekers prefer simple visual designs. Therefore, if individuals with high affect are truly adept at processing visual stimuli, they might prefer a visual web page. PFA individuals' preference for visual stimuli should reflect a higher level of A_{wp} than would be expressed by those low in affect. Hence, the following hypothesis is proposed:

H₂: A higher level of attitude towards the web page (A_{wp}) is associated with high PFA individuals, compared with low PFA individuals, when the tourism web page presents a picture (all-visual) design, and no differences appear when the tourism web page presents a word (all-verbal) design.

Following Sojka and Geise's (1997) classification, it is possible to identify four types of individuals according to cognitive and affective processing styles. They suggested that cognitive and affective processing systems are independent, but can operate interactively. They conceptualized the relationship between affect and cognition as a biaxial grouping of four quadrants. Feeling processors with high affect/low cognition rely on affect to make decisions. Thinking processors with high cognition/low affect generally prefer to think rationally and tend to rely heavily on cognitive information. Combination processors with high affect and high cognition are comfortable using either processing style. Passive processors are low on both cognitive and affective processing styles. Their processing type is unclear.

Ruiz and Sicilia (2004) suggested that persuasive appeals tend to be more effective when the nature of the appeal matches the individual personality-type preferences for processing information. For combination processors, advertising appeals based on information and emotions, obtained better results. Informational-emotional advertising appeals, which match consumer's processing style (combination processors), can generate attitudes that are more positive towards the brand, purchase intention, and brand choice. Similarly, this work proposes that a web page presenting in combined words and pictures (verbal and visual), which matches the processing style of combination processors (high NFC/high PFA), can generate a higher level of attitude towards the web page (A_{wp}). Hence, the following hypothesis is proposed:

H₃: A higher level of attitude towards the web page (A_{wp}) is associated with individuals with high NFC and high

PFA, compared with the other processor groups, when the tourism web page presents a combination (words and pictures) design.

Website effectiveness

To measure advertisement effectiveness, past research used attitude towards the ad, attitude towards the brand, and purchase intention (Ruiz and Sicilia, 2004). Singh and Dalal (1999) conceptually and empirically showed how home pages are similar to ads. The measures of website effectiveness can borrow from the measures of advertisement effectiveness. Martin et al. (2005) used brand attitudes, website attitudes, and purchase intentions to make website evaluations. Singh et al. (2005) suggested that the proposed model (Feelings→ Evaluations→ Attitude towards Web Page→ Behavioral Intentions) provides an adequate means to characterize web page perception. The current study uses attitude towards the web page (A_{wp}) and visit intention (VI) to measure web page effectiveness.

Researchers have widely investigated the stages of attitude formation after exposure to a stimulus (for example, advertisement). Although there are various arguments on the different stages of attitude formation, this work only explores the effect of attitude on intention. Singh et al. (2005) used fourteen, and Appiah (2006) used eleven, 7-point semantic differential scales to measure attitude towards the web page. Bruner and Kumar (2000) and Stevenson et al. (2000) used three, 7-point semantic differential scales to measure attitude towards the website. This research adopts the latter measures.

Finally, this study tests the relationship between attitude towards the web page and visit intention. Singh et al. (2005) empirically proved that attitude towards the web page has significant effect on behavioral intentions. Therefore, we believe that attitude towards a web page will affect browser's visit intention. Hence, the following hypothesis is proposed:

H₄: Attitude towards the web page (A_{wp}) has a significant effect on visit intention (VI).

RESEARCH METHOD

Research framework

Figure 1 presents the research framework of this study. The independent variable is tourism web page design, including three types of web page design: words, pictures, and combined words and pictures. The dependent variables are attitude towards the web page (A_{wp}) and visit intention (VI). The moderating variable is information-processing style, including NFC and PFA.

This work proposes that the levels of attitude towards the web page (A_{wp}) are associated to the different information processing styles (NFC or PFA) of subjects exposed to various tourism web page designs (words, pictures, or combined words and pictures). While the tourism web page design matches the information processing style, it presumably generates a higher level of attitude

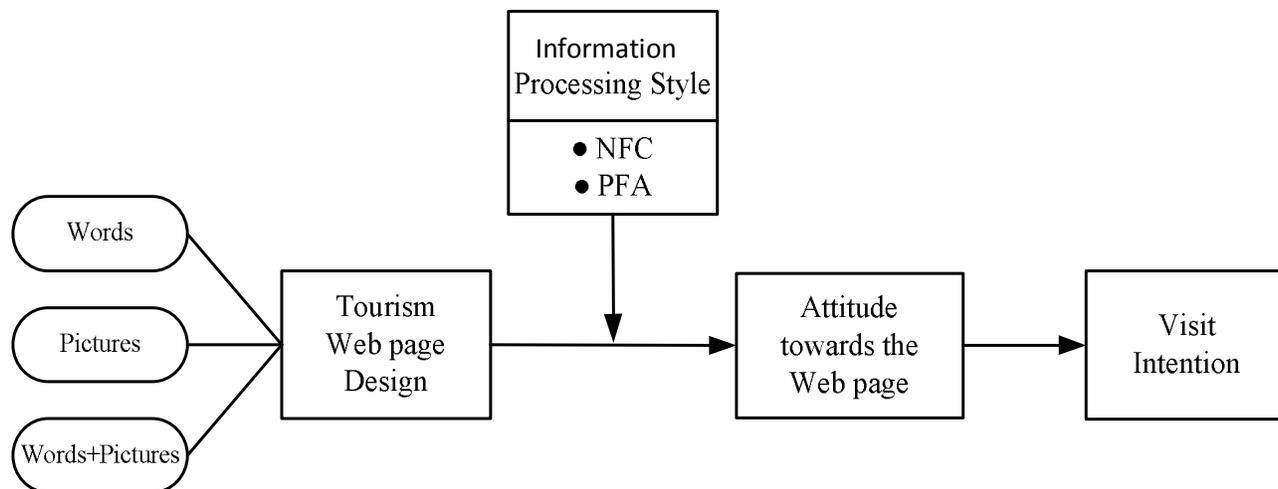


Figure 1. Research framework.

towards the web page. Subjects' attitudes towards the web page (A_{wp}) supposedly have a significant effect on their visit intention (VI). In other words, a higher level of attitude towards the web page generates a higher degree of visit intention.

Stimulus materials: Web pages

This research specially designs three fictitious web pages since people may have their own perceptions of real destinations, even if they have never visited those places. Choosing existing web pages (such as web pages of any tourism bureau) as the stimulus materials, may give some cues for recognizing places, even after carefully removing names of places and pictures of noted sights.

The places introduced in the three web pages should demonstrate common characteristics to avoid any possible bias, so we chose a simple theme of island tourism. The common characteristics include the sea, a sandy beach, marine life, and sea activities.

The three web pages were created in different types. Web page type refers to the basic web page design, either textual or pictorial. The first web page consisted of words only. The second web page was composed of pictures only without any objective information. The third web page contained both words and pictures, including objective descriptions and relevant pictures. The three web pages were the same size; presented in one page with no need to scroll down. The first page contained nearly 560 words, the second, six pictures, and the third, about 280 words with three pictures.

Measures

The moderating variable and information-processing style included NFC and PFA. NFC was measured via the scale developed by Cacioppo et al. (1984). An 18-item, nine-point scale, the Need for Cognition scale, measures the extent to which individuals seek out and use cognitive information for decision processing across all situations. In previous testing, the coefficient alpha for this scale was 0.90. PFA was measured with the scale developed by Sojka and Giese (1997). The 13-item, nine-point scale, measures affective processing, and the coefficient alpha of the scale was 0.9136 and 0.8721 of different samples in Sojka and Giese's study.

The dependent variables related to the concept of web page promotion effectiveness, were attitude towards the web page and

visit intention. Each was assessed using nine-point scales. "I like the web page", "I think it is a good web page", and "I think it is a nice web page" are used for measuring A_{wp} (Bruner and Kumar, 2000; Stevenson et al., 2000). The degree to which persons would consider visiting a destination, the likelihood that they would visit the destination, and their willingness to visit the destination were used for measuring VI (Xing and Chalip, 2006).

Pretest

An online questionnaire system was developed specifically for this study. A pretest was conducted before the actual experiment. Subjects (not included in the main experiment) were asked to answer the online questionnaire individually. One purpose of the pretest was to test if the questionnaire was easy to understand and if any ambiguous descriptions required some modifications. The end of the questionnaire included an open-ended question about unclear parts. Feedbacks from the subjects were used to fine-tune the design of the online questionnaire. The other purpose of the pretest was to test the consistency and stability of the measured items in the questionnaire.

The first pretest consisted of 18 samples. A week later, a second test included the same samples in the first pretest. Data from the two pretests were checked by test-retest reliability. The correlation of every item was between 0.477 and 0.946. The P-value was almost less than 0.01 except for item 15 of NFC and item 6 of PFA, showing high stability of the translatable items of the questionnaire.

This study tested the consistency of dimensions using Cronbach's α . Cronbach's α is a coefficient for testing internal consistency, and consistency is higher when the coefficient is higher. The Cronbach's α of the two dimensions of information processing styles, NFC and PFA, are between 0.962 and 0.977.

The high coefficients show high consistency of the two dimensions.

Procedure

Participants in this study were undergraduate students, majoring in Information Management or Computer Science and Information Engineering. They were chosen not only because they are considered heavy internet users, but also because the unity of samples is necessary in our experimental design. Subjects used

PCs in a computer classroom to ensure a consistent high network speed for all and used the same internet browser (that is, Internet Explorer 8) to answer the online questionnaire. First, they were tested by the NFC and PFA scales. Subjects then browsed one type of web page design randomly to avoid the order effect when browsing all three types at the same time, rated the web page according to its verbal and visual contents (a manipulation check confirming the stimuli are perceived as verbal, visual, or a combination visual-verbal web page), and responded to questions concerning their A_{wp} and VI. At the end of the questionnaire, participants were asked to provide their personal information, such as gender, habits of using the Internet, etc.

Data analysis

SPSS 14 for Windows was used to perform statistical analyses. The analysis methods mainly included descriptive statistics, ANOVA, and regression analysis.

Reliability analysis tests were conducted on all scales. The Cronbach's α of NFC was 0.914, similar to Cacioppo et al. (1984) result ($\alpha = 0.9$). The Cronbach's α of PFA was 0.918, similar to Sojka and Giese's (1997) result ($\alpha = 0.9136$). The Cronbach's α of A_{wp} was 0.909, slightly lower than Stevenson et al.'s (2000) result ($\alpha = 0.93$). The Cronbach's α of VI was 0.929, higher than Xing and Chalip's (2006) result ($\alpha = 0.88$).

DATA ANALYSIS AND RESULTS

Sample analysis

Three-hundred and three (303) students answered the questionnaire, but the valid sample was 264. Those samples with incomplete answers were sieved out from the data pool. The ratio of valid samples was 87.1%.

Questionnaire A consisted of 64 valid samples (tested web page of words design), 72 valid samples in Questionnaire B (pictures design), and 128 valid samples in Questionnaire C (combination design). The last questionnaire had the most samples because they would be divided into four groups. The descriptive statistics of personal information are further listed.

Samples included 75.8% for males, and about 24.2% for females. Ninety percent (90%) of samples had used the internet more than four years, revealing subjects' familiarity with the Internet. 81% of subjects accessed the internet seven days per week, and surfed on the internet every day. Overall, 40% of subjects accessed the internet more than six hours per day, 17% for three hours, 13% for four hours, and 11% for five hours. More than 80% of subjects were heavy internet users.

Manipulation checks reinforced that participants perceived the all-words web page to be "verbal", the all-pictures web page to be "visual", and the combination (words and pictures) web page to be medium verbal/visual ($M_{(\text{verbal wp})} = 1.27$; $M_{(\text{visual wp})} = 6.08$; $M_{(\text{combination wp})} = 3.67$).

Test of hypotheses

This study used dichotomous partitioning for the NFC and

PFA scales. One major concern in the decision to use a median split was because of size, although previous research has used median splits (Mantel and Kardes, 1999; Zhang, 1996), tripartite partitioning (Geuens and De Pelsmacker, 1999), and quartile splits (Moore et al., 1995).

Test of hypothesis 1

1. Questionnaire A (words): High vs. low NFC: The median was 0.64 in NFC scores and was the partition of high and low individuals. Low NFC individuals rated an average of -0.58 and high NFC individuals rated 0.15 in the nine-point scale (ranging from -4 to 4). The mean difference for NFC was not statistically significant ($p = 0.089 > 0.05$). This means that attitude towards the web page was not different between high and low NFC individuals when the tourism web page was presented in words (all-verbal) design. Thus, the first half of H_1 is not supported.

2. Questionnaire B (pictures): High vs. low NFC: The median was 0.62 in NFC scores and was the partition of high and low individuals. Low NFC individuals rated an average of -0.22 and high NFC individuals rated -0.52 in the nine-point scale (ranging from -4 to 4). The mean difference for NFC was not statistically significant ($p = 0.45 > 0.05$). This means that attitude towards the web page was not different between high and low NFC individuals when the tourism web page was presented in pictures (all-visual) design. Thus, the latter half of H_1 is accepted.

Test of hypothesis 2

1. Questionnaire B (pictures): High vs. low PFA: The median was 0.96 in PFA scores and was the partition of high and low individuals. Low PFA individuals rated an average of -0.76 and high PFA individuals rated 0.02 in the nine-point scale (ranging from -4 to 4). The mean difference for PFA was statistically significant ($p = 0.044 < 0.05$). This means that attitude towards the web page was different between high and low PFA individuals when the tourism web page was presented in pictures (all-visual) design. Thus, the first half of H_2 is accepted.

2. Questionnaire A (words): High vs. low PFA: The median was 1 in PFA scores, but values of rank 31 to 35 were all 1. We considered the distance before and after (rank 30 and 31, rank 35 and 36) and the size of high and low groups at the same time. The partition of high and low individuals was 1.12. Low PFA individuals rated an average of 0.15 and high PFA individuals rated -0.63 in the nine-point scale (ranging from -4 to 4).

The mean difference for PFA was not statistically significant ($p = 0.069 > 0.05$). This means that attitude towards the web page was not different between high and

low PFA individuals when the tourism web page was presented in words (all-verbal) design. The latter half of H2 is accepted.

Test of hypothesis 3

1. Questionnaire C (combination of words and pictures):

- (1) High NFC, high PFA;
- (2) High NFC, low PFA;
- (3) Low NFC, high PFA;
- (4) Low NFC, low PFA

Subjects were divided into four groups. The NFC score was used first to do a median split (0.7), and then the median of PFA (1.66) was used to separate again. High NFC/high PFA individuals rated an average of 1.33, high NFC/low PFA individuals rated 0.11, low NFC/high PFA individuals rated 0.37, and low NFC/low PFA individuals rated -0.3 in the nine-point scale.

The mean difference for groups was statistically significant ($p = 0 < 0.05$). This means that attitude towards the web page was different among the four groups when the tourism web page was presented in a combination (words and pictures) design.

To figure out the detail difference situation, a post hoc test of multiple comparisons was processed. The result showed that the high NFC/high PFA group was significantly different from the other three groups. The mean difference displayed that the high NFC/high PFA group had the highest level of attitude towards the web page, followed by the low NFC/high PFA group, the third was the high NFC/low PFA group, and the low NFC/low PFA group was the lowest level. Thus, H3 is supported.

Test of hypothesis 4

(1) Questionnaire A: Samples ($n = 64$) of Questionnaire A were considered to test H_4 first. The mean of VI was 0.49, and the mean of A_{wp} was -0.22. Then, the correlation of VI and A_{wp} was calculated. The coefficient of the Pearson correlation was 0.573. The result showed a moderate relationship between VI and A_{wp} because the coefficient was greater than 0.4. The dependent variable was VI, and the independent variable was A_{wp} . The regression analysis result showed that the adjusted R square was 0.317, which means 31.7% of the variance was explained by A_{wp} . The result of ANOVA showed the regression model was statistically significant ($F(1,62) = 30.279, p = 0.000 < 0.05$). The result of the coefficient estimation showed that the estimated Beta of A_{wp} was 0.573 ($t = 5.503, p = 0.000$). This shows that the higher level of A_{wp} , the higher level of VI. H_4 is supported. (2) Questionnaire B: Samples ($n = 72$) of Questionnaire B were considered to test H_4 . The mean of VI was 0.33, and the mean of A_{wp} was -0.37. Then, the correlation of VI and A_{wp} was

calculated. The coefficient of the Pearson correlation was 0.845. The result showed a moderate relationship between VI and A_{wp} because the coefficient was greater than 0.7. The dependent variable was VI, and the independent variable was A_{wp} . The regression analysis result showed that the adjusted R square was 0.710, which means 71% of the variance was explained by A_{wp} . The result of ANOVA showed the regression model was statistically significant ($F(1,70) = 175.201, p = 0.000 < 0.05$). The result of the coefficient estimation showed that the estimated Beta of A_{wp} was 0.845 ($t = 13.236, p = 0.000$). This shows that the higher level of A_{wp} , the higher level of VI. H_4 is supported.

(3) Questionnaire C: Samples ($n = 128$) of Questionnaire C were considered to test H_4 first. The mean of VI was 0.51, and the mean of A_{wp} was 0.39. Then, the correlation of VI and A_{wp} was calculated. The coefficient of the Pearson correlation was 0.936. The result showed a high relationship between VI and A_{wp} because the coefficient was greater than 0.7. The dependent variable was VI, and the independent variable was A_{wp} . The regression analysis result showed that the adjusted R square was 0.874, which means 87.4% of the variance was explained by A_{wp} . The result of ANOVA showed the regression model was statistically significant ($F(1,126) = 883.911, p = 0.000 < 0.05$). The result of the coefficient estimation showed that the estimated β of A_{wp} was 0.936 ($t = 29.731, p = 0.000$). This shows that the higher level of A_{wp} , the higher level of VI. H_4 is supported.

(4) The whole (Questionnaire A, B, and C): All samples ($n = 264$) were considered together to test H_4 . The mean of VI was 0.46, and the mean of A_{wp} was 0.03. Then, the correlation of VI and A_{wp} was calculated. The coefficient of the Pearson correlation was 0.779. The result showed a high relationship between VI and A_{wp} because the coefficient was greater than 0.7. The dependent variable was VI, and the independent variable was A_{wp} . The regression analysis result showed that the adjusted R square was 0.606, which means 60.6% of the variance was explained by A_{wp} . The result of ANOVA showed the regression model was statistically significant ($F(1,262) = 405.55, p = 0.000 < 0.05$). The result of the coefficient estimation showed that the estimated Beta of A_{wp} was 0.779 ($t=20.138, p=0.000$). This shows that the higher level of A_{wp} , the higher level of VI. H_4 is supported. Besides H_1 , other hypotheses are accepted. H_1 is partially accepted; the first half is not supported, but the latter half is accepted.

DISCUSSION

This research finds no significant difference between high and low NFC individuals in terms of attitude towards the web page when the tourism web page is presented in words (all-verbal) design. The first half of H_1 is not

supported. The result is different from previous research suggesting that individuals with a high need for cognition, as opposed to a low need for cognition, prefer verbal information (Martin et al., 2005; Sojka and Giese, 2001; Venkatraman et al., 1990). One possible reason is that the information quantity offered by the words web page is not enough to make a difference. The other reason may be that all-verbal information cannot draw attention no matter whether viewers are high or low NFC. Although high NFC individuals are relatively fond of thinking and prefer verbal information theoretically, a tourism web page full of words is not attractive. As mentioned previously, photographs of places and attractions help form expectations during the pre-travel stage, playing a key role in introducing tourism web pages. However, when the web page is only composed of pictures without any written description, NFC individuals, irrespective of high or low NFC, show a much lower level of attitude towards the web page and no differences appear between them. This is because they are not adept at and not interested in processing visual stimuli.

The statistical analysis of the first half of H_2 shows a significant difference between high and low PFA individuals. A higher level of attitude towards the web page is associated with high PFA individuals, compared with low PFA individuals, when the tourism web page presents in pictures (all-visual) design. This proves that high PFA individuals prefer visual designs and are adept at processing visual stimuli. This finding supports previous research suggesting that individuals with a high need for affect prefer processing visual information (Sojka and Giese, 2001) and high sensation seekers prefer complex visual designs, and low sensation seekers prefer simple visual designs (Martin et al., 2005). When the tourism web page presents in words (all-verbal) design, PFA individuals, irrespective to high or low PFA, show a much lower level of attitude towards the web page and no differences appear between them. This is because they are not good at and not interested in processing verbal stimuli.

Findings for H_3 show that individuals with high NFC and high PFA are significantly different from the other groups (high NFC/low PFA, low NFC/high PFA, and low NFC/low PFA) when the tourism web page presents in combination (words and pictures) design. They show a higher level of attitude towards the web page, compared with the three other processor groups. The findings are the same as Sojka and Giese's research (2006) suggesting that individuals, high in both affect and cognition respond more favorably to a combination visual/verbal ad. The result is similar to the findings of Ruiz and Sicilia (2004), which suggested that persuasive appeals tend to be more effective when the nature of the appeal matches the individual personality-type preferences for processing information. Therefore, the combination web page, designed in verbal and visual formats simultaneously, matches browser's processing style (combination

processors), and generates attitudes that are more positive towards the page.

H_4 focuses on the relationship between attitude towards the web page and visit intention. The result shows a positive correlation between the two variables. Whether data are tested in subgroups or the whole, a high relationship exists between attitudes towards the web page and visit intention, except for the subgroup of Questionnaire A (moderate relationship). We conclude that attitude towards the web page has a significant impact on visit intention, namely, higher level of A_{wp} , then a higher level of VI. The result is similar to the findings of Stevenson et al. (2000), Bruner and Kumar (2000), and Poh and Adam (2002). They proved that attitude-toward-the-website has a positive impact on purchase intention. Because the web pages in this study are tourism introductions and not actual products, the behavior intentions change from purchase to visit. In short, when individuals form attitudes that are more favorable towards a web page introducing tourism attraction, they will show stronger intention to visit the place.

Theoretical and practical implications

Results of this study, show a higher level of attitude when individuals are exposed to web pages, congruent with their information processing styles, in terms of affect. The result cannot apply to NFC subjects because no differences in attitude towards the web page are found between high and low NFC individuals. The lack of visual attractiveness in a highly informational web page (just a list of written descriptions about tourism introduction) provokes a lower level of attitude towards it. The result illustrates that an all-verbal web page design is less attractive.

Individuals high in affect may prefer pictures and individuals high in affect and cognition prefer web pages that contain both visual and verbal elements for them to process. The current study proves this argument (H_2 and H_3). The findings of this study offer additional support that cognitive and affective processing systems can operate not only independently, but also interactively (combination processors). High NFC and high PFA individuals show the highest level of attitude towards the web page when viewing the combined verbal and visual design, verifying previous research results in advertisements in web page design, especially applied to tourism marketing.

The two classifications of information processing styles, cognition and affect, are powerful tools for segmenting consumers, which can guide marketing personnel or website designers in the web page type best suited to different groups of browsers. Therefore, various types of web page designs can exist in different websites for specific processor groups. In other words, web page design should be customer-oriented or, more precisely, browser-oriented. A country, a place, a scenic spot, or

any tourism promotion organization can create more than one website to introduce their tourism attractions to different segments. For example, create a website full of pictures for browsers high in affect, and design another website which contains both visual and verbal materials for browsers high in affect and cognition simultaneously. One website that fits all browsers is no longer enough to attract and satisfy various browser demands. The attitude towards a web page makes a great impact on visit intention. Designing suitable web pages for specific groups of browsers is an important way to attract them to pay a visit.

LIMITATIONS

Web pages or message designs include many dimensions, but this study only discusses the words (verbal) and pictures (visual) design of tourism web pages. Although this matches our research theme, it is still a limitation of the study.

Some moderating variables may not be included in this study, such as scenic spots introduced, different travel types supplied, browser characteristics, etc. This work focuses on the relationship between web page design and attitude towards the web page, moderated by information processing style (NFC and PFA). This is another limitation.

To avoid the order effect, every participant only views one type of web page design. Therefore, attitude towards the web page and visit intention of the three different groups are not comparable to determine which type of web page design is most attractive to browsers.

FUTURE RESEARCH

As mentioned in the literature review, there are many dimensions of web page design, such as message framing, background color, font style, organization of text and graphics, etc. Studies may add these dimensions to the framework to see if some other designs perform better for browsers with specific information processing styles.

This study does not research passive processors (low NFC/low PFA). What types of web page or what combination of pictures and words will be more effective for them? Further studies could explore this issue.

Future research should include a greater quantity of web pages and more actual web pages, as they may be more realistic for respondents, but should consider controlling existing knowledge or familiarity of respondents towards places introduced on web pages. Additional research should experiment with different styles of combination visual/verbal web pages and use text and pictures in varying degrees; large picture/small text and small picture/large text to further explore the interaction of affect and cognition in response to visual and verbal

stimulus.

Another issue for advanced research is involvement. How do the various aspects of involvement; involvement with a tourism web page or involvement with tourist attraction, influence the connection between affect/cognition and visual/verbal elements?

Investigating the mentioned issues can contribute to tourism marketing theory and to practically applying internet tourism marketing.

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