THEME PARK VISITORS’ RESPONSES TO THE SARS OUTBREAK IN TAIWAN

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ABSTRACT

The purpose of this study is to examine empirically different characteristics between theme park visitors who did and did not visit theme parks during the SARS outbreak period in Taiwan. The data consisting of 1,255 respondents were obtained from visitors to the five leading theme parks. Discriminant analysis was used to analyze respondents’ characteristics such as age, benefit sought, product involvement, and risk perception to examine significant differences between the two categories of respondents. Results of this study showed that younger or more frequent visitors more likely continued to visit theme parks during the SARS outbreak. Besides, visitors who continued to visit theme parks perceived greater infectious risk than those who did not visit theme parks during the SARS outbreak.

INTRODUCTION

Severe acute respiratory syndrome (SARS), caused by the previously unrecognized coronavirus (SARS-CoV), is a highly contagious febrile respiratory illness and also associated with a high mortality rate. It is the first severe and readily transmissible new disease to emerge in the 21st century. Dr. Carl Urbani, a
World Health Organization (WHO) epidemiologist working in Vietnam, submitted a report to the WTO, an affiliation of the United Nations, and identified/named this unknown disease “SARS” initially in March for the cases with the onset in February of 2003 (WHO, 2003a), however, the health authority in China named the disease “atypical pneumonia” (or feidian, the shortened version of its full Chinese name) instead (Wang, 2004). The first cases of SARS are now known to have emerged in mid-November 2002 in Guangdong Province, China. On February 21, 2003, an infected medical doctor (Dr. Liu) left Guangdong Province and visited Hong Kong for attending a wedding reception. Dr. Liu stayed at the Metropole Hotel in Hong Kong and infected a number of tourists from several parts of the world (WHO, 2003b). Subsequently, the disease began spreading around the world along international air travel routes. A few days later, hospitals in Hong Kong, Vietnam, and Singapore began reporting cases. By late February 2003, SARS was considered an emerging disease (WHO, 2003a).

From SARS’ appearance in November 2002 to July 11, 2003, when the WHO declared that owing to the outbreak more than 8,400 individuals were infected by and 813 victims died from the disease (WHO, 2003c). Most SARS cases have occurred in Mainland China, Hong Kong, Taiwan, and Canada. Mainland China reported the largest number of SARS infections (5,327) and deaths (348), followed by Hong Kong (1,755; 298) and Taiwan (671; 84) (CDC, 2003; WHO, 2003c). Consequently, SARS caused considerable social disruption and public anxiety, even in area well beyond the outbreak sites (WHO, 2003d).

In terms of the number of SARS infections and deaths, the severity of the outbreak might seem to be overstated and people’s responses might look like over-reacting. In contrast to tuberculosis (15,000 people infected and 1,500 dead per year), or car accidents (35,000 people injured and 680 killed in the first 3 months of 2003), SARS killed “only” 84 patients in Taiwan (Chen, Jang, & Kim, 2007). Accordingly, some scholars (e.g., Chen et al., 2007; McKercher & Chon, 2004) point out that people were over-reacting to the SARS epidemic and tourism suffered unnecessary damage. However, it seems more interesting and necessary to realize factors out of the cumulative number of fatal cases that caused an enormous panic – which subsequently resulted in the over-reactions.

A Nationwide Panic Caused in Taiwan

The SARS epidemic has been characterized by its rapid spread. Hsieh, Chen, and Hsu (2004) synthesize official reports and describe the rapid
spread of the SARS outbreak in Taiwan in detail. The WHO reported 3,947 probable SARS cases with 229 deaths worldwide on April 22, 2003; China, Hong Kong, Singapore, Vietnam, and Toronto, Canada, had the most cases. Taiwan, meanwhile, had 29 probable cases and no deaths. Seventy-eight percent of the cases were imported. The growth of the numbers of SARS infections seemed to be a typical minor outbreak at that time. On that day, a new cluster of seven infections in Hoping Hospital in Taipei was reported and it started a chain of local transmissions that cumulated in 116 probable cases and 10 deaths in the following two weeks. By mid-May, the numbers grew to 264 probable cases and 34 deaths. Subsequently, by June 1, it expanded into 680 probable cases and 81 deaths. In a period of less than one month, more than a sixfold increase in the numbers of SARS infections and victims was erupted rapidly in Taiwan. The rapid increase rates of reported probable SARS case-patients and deaths undoubtedly would cause a panic nationwide in Taiwan.

In addition to the rapid increase rate of reported probable SARS case-patients, the nationwide panic in Taiwan might also be resulted from a sense of the endless and uncontrolled expansion of the outbreak. As the disease was spreading so rapidly, the health authority in Taiwan enforced many stringent measures in order to contain the outbreak. In addition to thermal scanning arrivals from abroad to check for signs of fever induced by SARS, Hsieh et al. (2004) indicate two of the most important stressed measures. One measure was reporting, admitting, and hospitalizing all susceptible patients. The other was the house quarantine of people either those with contacts to the suspected case-patients or arrivals from the affected areas abroad. However, on the first hand, hospitals in Taiwan were initially unprepared for and unprotected from the SARS disease. The patient quarantine rooms, personal protective equipments for health care workers, and general infection control, etc., which had been improved and well prepared professionally later (Esswein et al., 2004), were relatively insufficient at the beginning of the outbreak. Since frequent unprotected or inadequately protected patient-to-health care worker interactions and grouping large numbers of ill persons can greatly amplify intrahospital transmission (Gopalakrishna et al., 2004), almost 73 percent of all traceable infections in Taiwan occurred in hospital settings (Hsieh et al., 2004). It caused inevitably a panic among all medical professions on the frontline in the battle against SARS. On the other hand, the home quarantine of a number of susceptible people was frequently broken (Hsieh et al., 2004). Just as the acquired immune deficiency syndrome (AIDS), it cannot be considered quarantineable not only because of medical but also because of ethical and
legal issues (Gensini, Yacoub, & Conti, 2004). Accordingly, a sense of un-
controllability was emerged publicly at the beginning of the SARS outbreak.
Furthermore, the local sensationalist media accelerated and amplified the
resulted panic from the sense of uncontrollability successfully by focusing
their attention on some intrahospital transmission and out-of-supervised
quarantine cases. This phenomenon was consistent with Mason, Grabowski,
and Du’s (2005, p. 17) description of the global media that the media were
much less interested in providing accurate information and more concerned
with selling copies of their publication through sensationalist but inaccurate
stories.

Aside from the domestic factors, i.e., the rapid increase rate of SARS-
infected cases and a sense of out-of-control, it should be noted that there
was an international factor as well. The international factor played a sig-
nificant role in the enforcement of not only a nationwide panic in Taiwan
but also a worldwide panic to the SARS epidemic.

A Worldwide Panic and the WHO-Prompted Travel Recommendations

In order to minimize the global spread of SARS, the WHO issued a series of
specific travel advisories – recommending travelers to postpone all but es-
sential travel to designated areas where the risk of exposure to SARS was
considered high – against Hong Kong, China, Toronto, and Taiwan, re-
respectively from April 2 to May 17 and especially a “general travel advisory”
to potential travelers on March 15, 2003 (WHO, 2003d). The travel advi-
sories did trigger a chain reaction of public anxiety even in areas well beyond
the outbreak sites. The announcements were unprecedented in the WHO’s
almost 45-year history, for this was the first time that the organization had
issued advisories for specific geographical areas due to an outbreak of an
epidemic (WTTC, 2003). Although the recommendations were respectively
removed by the WHO from all the designated areas to which they had
applied as the SARS outbreak was successfully curtailed in late June, the
hospitality and tourism industry in Asia had been severely hit by the out-
break of the SARS epidemic.

While it must be praised for the WHO’s substantial actions in controlling
the SARS outbreak, strong criticism from authorities of the “off-limits”
areas, tourism industry, and scholars was directed at the organization.
McKercher and Chon (2004) indicate that the WHO’s travel advisories
criticism was instrumental in triggering the almost complete eradication of
tourism in Asia. Based on the costs of canceled travel and decreased
investment in Asia, the economic costs have been estimated ranging from US$30,000 million to US$140,000 (WHO, 2003d). It is even estimated to produce costs that might rival the Asian Financial Crisis of the mid-1990s (de Lisle, 2004).

Lakshmanan (2003) (as cited by McKercher & Chon, 2004) well describes the very unusual feature of the SARS outbreak by a statement that “a panic spread faster than the disease itself.” Most likely, it was partly contributed by the participation of the global media as a role of accelerators and amplifiers in the spread of the worldwide panic. Since the WHO publicized its message about SARS and travel warning by using the global media, however, it could not write word-for-word the article or website commentary, the organization could hardly control the tone or precise nature of any media communication. Accordingly, Mason et al. (2005) point out that the way the WHO’s global health alert was reported by the world’s media is also likely to have contributed to the feeling of worldwide panic.

SARS Might Recur

Tourism industry is still threatened by the possibility of the recurrence of the infectious disease since the WHO has warned that SARS might recur. Besides, there will be new biological threats whether SARS reappears or not. Therefore, during the post-outbreak period, one of the most significant recovery efforts that marketing managers in the tourism industry can make is to know what kind of customers continued to patronize their services during the outbreak period. From customers’ different patronage decisions in response to the SARS outbreak, they can learn valuable lessons and develop a plague survival strategy for possible emerging epidemic outbreaks in the future. Particularly, if customers who continued to patronize a hospitality/tourism service during the SARS outbreak can be distinguished and identified from those who did not, marketing managers may be able to increase their efforts to attract the most potential customers in case the SARS or similar biological crises emerge someday.

Related Research on Crisis Management

Drawing on insights from crisis management literature, not only the proactive, strategic, holistic approaches to the issue of crises have been proposed and discussed (e.g., Ritchie, 2004), but generic or specific models for
analyzing and developing management strategies have also been proposed (e.g., Faulkner, 2001; Huang & Min, 2002). Aside from the underlying efforts, various crisis cases have been explored, investigated, analyzed, and discussed. Chen (2000) examined Asian outbound travelers’ consumption patterns after the 1997 Asian economic crisis and provided marketing strategies for international tourism practitioners. Blake and Sinclair (2003) examined policy responses to the September 11 terrorist attacks in the United States and suggested some ways of handling the situation to policymakers. Page, Yeoman, Munro, Connell, & Walker (2006) illustrated complex issues associated with a flu pandemic qualitatively via a case study of scenario planning exercise.

To the impacts of the SARS outbreak, a number of researchers devoted efforts to the formulation of proactive and recovery management in the tourism industry. While some (e.g., Chen et al., 2007; Dombey, 2003; McKercher & Chon, 2004; Pine & McKercher, 2004) revealed the impacts of the SARS effects on diverse aspects of the managerial functions, on various sectors of the industry, and/or on different geographical areas, some others (e.g., Chien & Law, 2003; Henderson & Ng, 2004; Tse, So, & Sin, 2006) suggested substantial processes to set up contingency and recovery arrangements for hotel and restaurant management specifically.

### Purpose of Study

The purpose of this study is to examine empirically different characteristics between theme park visitors who did and did not visit theme parks during the SARS outbreak period in Taiwan. Significant differences between the two categories of respondents on their characteristics such as age, patronage frequency in the last year, benefit sought, product involvement, and risk perception were examined. Accordingly, the following four research questions were developed:

1. Can a significant discriminant function be developed to interpret the differences between respondents who did and did not visit theme parks during the SARS outbreak period in Taiwan on the basis of their personal characteristics?
2. Which characteristics contribute to most of the inter-group differences?
3. How accurately can respondents be classified into the two categories by the developed discriminant function?
4. What marketing implications can be derived from theme park visitors’ different patronage decisions in response to the SARS outbreak?
METHODOLOGY

Sampling Design

The target population for this study was visitors to the five leading theme parks in Taiwan (i.e., Jenfusan, Leofoo, Yamay, Formosan Aboriginal Culture Village, and Window on China). Quota sampling technique was employed to select elements of the research sample from the sampling population based on the official report (Tourism Bureau, 2003) on annual attendance to domestic theme parks in Taiwan in 2002. In order to minimize respondents’ recall errors, the field survey for data collection was conducted during the period between June 25 and July 2 in 2003 since the WHO extended its travel recommendation to include Taiwan on May 8 and removed it from the list of postpone-travel areas on June 17. Junior students from a local university were trained as interviewers for data collection. Interviewers stationed near the exit gates of the five parks invited departing visitors to participate in this study. All subjects were selected based on their willingness to volunteer their personal information on site.

Research Instrument

A structured-undisguised questionnaire was developed for data collection. In addition to the information of respondents’ general demographics, their patronage frequency in the last year and whether they visited theme parks in the period of the SARS outbreak, the question content also consisted of scale items to measure “benefit sought,” “product involvement,” and “risk perception.” Ten individual benefit scale items were derived from Pearce’s (1993) Leisure Ladder Model for theme park visitors. Respondents were asked to rate each of the benefit items from “0” to “100” to indicate the extent to which the benefit motivated them to make the current visits. In the specific interests of this study, McQuarrie and Munson’s (1992) eight scale items for the measurement of consumers’ “enduring involvement” with a product were modified to measure respondents’ product involvement with theme parks in this study. The “many factors” described in the seventh scale item “I usually take many factors into account before purchasing this product” were replaced by “admission fee” and “the distance a theme park is from my home,” respectively. As a result, nine involvement measure items with a five-point Likert scale were designed in the questionnaire. Finally, respondents were asked to subjectively estimate the probability a person will be infected with
SARS in each of the three given scenarios, respectively. The given scenarios were: (1) right now in the theme parks which they had just departed from; (2) participating in outdoor recreational activities if the WHO should again extend its postpone-travel recommendation to include Taiwan; and (3) visiting a theme park in the same period of time described in the second scenario. Respondents were asked to rate the SARS-infected possibility in each of the scenarios in terms of percentage (from “0” to “100”).

Data Analysis

In order to develop a meaningful discriminant function, possible correlations between respondents’ personal characteristics had to be avoided or eliminated first. Accordingly, variables representing each of the respondents’ personal characteristics were condensed into factors by the technique of principal components analysis. Internal consistency reliability of the variables contained in each of the factors was assessed. A value of Cronbach’s alpha coefficient greater than .6 generally indicates satisfactory internal consistency reliability (Malhotra, 1999). Mean of respondents’ ratings to consistent variables contained in each of the factors served as the input score of the factor in the process of discriminant analysis. Thus, on the one hand, whether or not the respondents visited theme parks during the SARS outbreak was adopted to be the dependant (criterion) variable; on the other, respondents’ age, their patronage frequency in the last year, and the factors condensed from scale items of respondents’ risk perception, benefit sought, and product involvement were adopted to be the independent variables (predictors) in the developing discriminant function. The significance and validity of the function were assessed based on Wilks’ λ test and the percentage of cases correctly classified, respectively. SPSS 10 was utilized for data processing and the level of significance of .05 was accepted for all statistic tests in this study.

RESULTS

By using quota sampling technique, a research sample consisting of 1,255 respondents was obtained from visitors to the five leading theme parks. Table 1 shows that the distribution patterns of the respondents’ demographics were consistent with the practical observation of theme park visitors’ characteristics in the real world. Respondents’ age ranged from 11 to 51
years, with the mean age of 23.84 years (S.D. = 6.55). They had been to the five theme parks ranging from 0 to 110 times and for an average of 1.65 times (S.D. = 5.78) in the last year.

The correlation matrices of the benefit and involvement scale items in the procedure of principal components analysis were examined by Bartlett’s test of sphericity. To the benefit scale items, the approximate $\chi^2$ statistic was 3882.626 with 45 degrees of freedom, which is of .000 significance. Besides, the value of the KMO statistic (.871) was also large (> .5). To the involvement scale items, the approximate $\chi^2$ statistic was 2653.538 with 36 degrees of freedom, which is also of .000 significance and the value of the KMO statistic was .808. Therefore, the procedure of principal components analysis was considered an appropriate technique for analyzing the data in this study.

In order to differentiate between the two categories of respondents, a discriminant function was developed in this study. At first, seven independent variables for the subsequent discriminant analysis were identified through the analytical procedures of principal components analysis and Cronbach’s alpha test. Tables 2 and 3 show the results of principal components analysis. Ten benefit scale items and nine involvement scale items were condensed into two benefit factors and two involvement factors,
**Table 2.** Results of Principal Components Analysis to the Benefit Scale Items.

| Benefit Scale Item                          | Mean (S.D.)     | Factor 1 Loadings | Factor 2 Loadings |
|--------------------------------------------|-----------------|-------------------|-------------------|
| Self-esteem                                | 60.81 (29.50)   | 0.772             | 0.092             |
| Totally involved in the setting            | 65.37 (25.08)   | 0.771             | 0.135             |
| Self-development                           | 57.73 (27.40)   | 0.760             | 0.173             |
| Spiritual and peaceful feeling             | 53.94 (30.99)   | 0.713             | 0.307             |
| Experiencing the unusual and novel         | 70.69 (24.06)   | 0.704             | 0.029             |
| Enjoying a sense of escape                 | 67.23 (25.37)   | 0.648             | 0.252             |
| The fun and thrill of rides                | 77.56 (23.62)   | 0.563             | −0.103            |
| Restoration                                | 76.12 (19.63)   | 0.521             | 0.237             |
| Friendship                                 | 82.44 (20.46)   | 0.280             | −0.032            |
| Family togetherness                        | 72.09 (28.18)   | 0.043             | 0.968             |
| Variance explained (50.804%)               |                 | 38.599%           | 12.204%           |
| Eigenvalue                                 |                 | 3.860             | 1.220             |
| Cronbach’s alpha                           |                 | 0.8421            |                   |

**Table 3.** Results of Principal Components Analysis to the Involvement Scale Items.

| Involvement Scale Item                      | Mean (S.D.)     | Factor 1 Loadings | Factor 2 Loadings |
|--------------------------------------------|-----------------|-------------------|-------------------|
| I usually pay attention to ads for theme parks | 3.54 (0.86)   | 0.758             | 0.062             |
| I would read *Consumer Reports* articles about TPs | 3.46 (0.87) | 0.738             | 0.183             |
| I have compared product characteristics among TPs | 3.34 (0.90) | 0.726             | 0.010             |
| I usually talk about TPs with other people | 3.75 (0.86)   | 0.697             | 0.186             |
| I would be interested in reading about TPs  | 3.62 (0.83)    | 0.641             | 0.264             |
| I usually spend lots of time deciding which TPs to visit | 3.35 (0.89) | 0.384             | 0.359             |
| I usually take distance into account before patronage | 3.73 (0.96) | −0.004            | 0.829             |
| I usually take admission into account before patronage | 4.01 (0.90) | 0.115             | 0.795             |
| I usually seek advice from others before patronage | 3.84 (0.85) | 0.282             | 0.551             |
| Variance explained (51.955%)               |                 | 30.928%           | 21.027%           |
| Eigenvalue                                 |                 | 2.783             | 1.892             |
| Cronbach’s alpha                           |                 | 0.7751            | 0.6297            |
respectively. The values of the resultant Cronbach’s alpha coefficient for Benefit Factor 1 ($B_1$), Involvement Factor 1 ($I_1$), and Involvement Factor 2 ($I_2$) were .8421, .7751, and .6297, respectively. No internal consistency problem could be found in Benefit Factor 2 ($B_2$) since it was represented by the sole contained variable “family togetherness.” A variable representing the respondents’ risk perception ($R$) was summated by the three measures (Cronbach’s alpha = .8618) of respondents’ self-perceived SARS-infected possibilities in the three given scenarios. In sum, seven independent variables [i.e., the respondents’ age ($A$), their patronage frequency in the last year ($F$), $B_1$, $B_2$, $I_1$, $I_2$, and $R$] were examined to ensure satisfactory internal consistency reliability and then accepted into the discriminant analysis. As a result, the developed standard canonical discriminant function was:

$$Di = -0.717Ai + 0.653Fi + 0.289Ri + 0.211I_1i$$
$$+ 0.067B_2i + 0.059B_1i + 0.018I_2i$$

where if $Di > .0285$, classify individual $i$ as belonging to “visitors who did visit theme parks during the SARS outbreak”; otherwise classify individual $i$ as belonging to the other category. The eigenvalue associated with this function is .033, and it accounts for 100 percent of the explained variance. The canonical correlation associated with this function is .179. It indicates that the variance in the dependent variable is not largely explained by this model. However, the Wilks’ $\lambda$ associated with the function is .968, which transforms to a $\chi^2$ of 40.419 with 7 degrees of freedom. This is significant beyond the .05 level. In other words, the discriminant function is statistically significant. Therefore, it is meaningful to interpret the results of the discriminant analysis.

Table 4 shows the primary results of the discriminant analysis. The significance of the univariate $F$ ratios indicates that when the independent variables are considered individually, only the respondents’ age, their patronage frequency, and risk perception were significant predictors in discriminating between the groups. Besides, the pooled within-groups correlation matrix indicates low correlations between the independent variables. In this case, multicollinearity was unlikely to be a problem. Given low intercorrelations between the independent variables in Table 4, independent variables with relatively large standardized coefficients contribute more to the discriminating power of the function, as compared with independent variables with smaller coefficients. Therefore, respondents’ age and their patronage frequency in the last year contribute to most, while respondents’ risk perception also contributes to some, of the inter-group
differences. The signs of the coefficients associated with the significant predictors suggest that younger age and more experience in visiting theme parks were more likely to result in the respondents visiting theme parks during the SARS outbreak. Meanwhile, individuals who visited theme parks during the SARS outbreak were also associated with higher risk perception.

Table 5 shows the classification results based on the developed discriminant function. The percentage of cases correctly classified is 61.2 percent. The function seems to be of deficient validity if one expects the function to distinguish individuals who had been to theme parks during the SARS outbreak from those who had not, since the predictability of the function is only 11 percent greater than that obtained by chance (i.e., \(\frac{1}{2} = .50\) or 50 percent).

### Table 4. Results of Discriminant Analysis.

| Variable         | Age | Frequency | Risk | Benefit 1 | Benefit 2 | Involve 1 | Involve 2 |
|------------------|-----|-----------|------|-----------|-----------|-----------|-----------|
| Group means visited | Yes | 22.9449   | 2.4030 | 32.0862   | 68.2300   | 71.6179   | 3.5317    | 3.8599    |
|                  | No  | 24.4972   | 1.0880 | 29.3885   | 67.7033   | 72.4749   | 3.4912    | 3.8534    |
| Total            |     | 23.8398   | 1.6449 | 30.5310   | 67.9264   | 72.1119   | 3.5083    | 3.8561    |
| Group standard deviations | Yes | 6.2077   | 8.2479 | 23.2381   | 16.5124   | 27.5394   | 0.5962    | 0.6645    |
|                  | No  | 6.7109   | 2.7173 | 22.7338   | 17.1701   | 28.6187   | 0.5978    | 0.7019    |
| Total            |     | 6.5451   | 5.7841 | 22.9781   | 16.8899   | 28.1586   | 0.5972    | 0.6860    |

Pooled within-groups correlation matrix

|        | Age   | Frequency | Risk | Benefit 1 | Benefit 2 | Involve 1 | Involve 2 |
|--------|-------|-----------|------|-----------|-----------|-----------|-----------|
| Age    | 1.000 |           |      |           |           |           |           |
| Frequency | 0.056 | 1.000    |      |           |           |           |           |
| Risk   | −0.046| −0.016    | 1.000|           |           |           |           |
| Benefit 1 | −0.059| −0.120   | 0.087| 1.000     |           |           |           |
| Benefit 2 | 0.219 | −0.066   | 0.084| 0.245     | 1.000     |           |           |
| Involve 1 | 0.158 | 0.115    | −0.015| 0.099     | 0.058     | 1.000     |
| Involve 2 | 0.063 | −0.038   | 0.001| −0.023    | −0.004    | 0.375     | 1.000     |

Wilks’ \(\lambda\) and univariate \(F\) ratio with 1 and 1,240 degrees of freedom

| Variable | Wilks’ \(\lambda\) | \(F\) | Significance |
|----------|-------------------|-------|--------------|
| Age      | 0.986             | 17.281| 0.000        |
| Frequency| 0.987             | 15.862| 0.000        |
| Risk     | 0.997             | 4.190 | 0.041        |
| Benefit 1| 1.000             | 0.295 | 0.587        |
| Benefit 2| 1.000             | 0.281 | 0.596        |
| Involve 1| 0.999             | 1.397 | 0.237        |
| Involve 2| 1.000             | 0.028 | 0.867        |
FINDINGS AND DISCUSSIONS

Generally speaking, in this study, a statistically significant discriminant function was successfully developed to interpret the differences between respondents who did and did not visit theme parks during the SARS outbreak period in Taiwan on the basis of their personal characteristics. Among the seven adopted characteristics, respondents’ age and their patronage frequency in the last year contributed to most of the inter-group differences. Moreover, individuals who visited theme parks during the SARS outbreak were also associated with higher risk perception. Substantial marketing implications can be explored based on the results of the discriminant analysis, although the function seems to be of deficient validity in terms of predictability.

First of all, in case the SARS or similar biological crises emerge in the future, younger and/or frequent consumers should be the focused targets of theme park managers’ primary marketing efforts because they are more likely to continue to visit theme parks during the period of epidemic outbreak. Accordingly, a plague survival strategy can be developed with the goal of attracting consumers from the targets. Since the benefits sought by theme park visitors played only a trivial role in their patronage decisions during the SARS outbreak, contents of the promotion projects may not be associated with or restricted to particular benefits of visiting theme parks. Instead, a series of sales promotions, such as special promotional prices for the admission of large teen groups, cross-promotions with firms providing other products or services to young consumers, or discounted season passes for potential heavy-users, may help theme parks survive the period of epidemic outbreak.

One of the results of this study indicates that individuals who continued visiting theme parks during the SARS outbreak were associated with higher risk perception.

### Table 5. Correctness and Predictability of the Classification Results in the Discriminant Analysis.

| Actual Group | Number of Cases | Predicted Group Membership |
|--------------|-----------------|----------------------------|
| Did visit    | 526             | Did Visit                  |
|              |                 | 90 (17.1%)                 |
| Did not visit| 716             | Did Not Visit              |
|              |                 | 46 (6.4%)                  |

**Notes:**
1. Percent of grouped cases correctly classified: 61.2%.
2. Thirteen cases with missing values were excluded from the analysis.

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risk perception in comparison with those who did not visit theme parks. It is interesting to note that Grobe and Douthitt (1995) also obtained similar findings from their research regarding milk consumers’ risk perception of the recombinant (synthetic) bovine growth hormone (rbGH). Their findings indicated that consumers who purchase more milk perceive a greater risk than those who purchase less (p. 141). However, they did not explain the findings of their research. In fact, the theme park visitors’ continued patronage or the milk purchasers’ greater consumption resulted in, rather than resulted from, their greater risk perception. In detail, the consistent theme park patronage during the SARS outbreak and milk consumption under the purchasers’ psychological resistance to the rbGH injection seem to be caused by individuals’ relatively inelastic demands for theme parks or milk. In order to build lasting customer relationships, managers should compensate the customers with inelastic demands for their consistent patronage rather than take advantage of them since there are usually a couple of brands or selections for a particular product. Therefore, in case the SARS or similar biological crises emerge in the future, the present seems to be the perfect time to build up a valuable database consisting of the customers with inelastic demands for particular hospitality and tourism services. Thus, service providers may continuously benefit from the database.

The finding that visitors’ risk perception of the SARS infection did not largely contribute to their patronage decisions during the SARS outbreak provides indirect evidence that theme park visitors’ “risk attitude” dominated their “risk perception” in their risk response behavior to the SARS epidemic. Pennings, Wansink, and Meulenberg (2002) proposed that the behavior of consumers in a crisis situation can be explained by a combination of risk perception and risk attitude. Whereas risk attitude deals with consumers’ interpretation of the content of the risk, the seriousness of adverse consequences, or the extent of risk aversion toward a particular crisis, risk perception instead deals with consumers’ interpretation of the chance of being exposed to the content of the risk. Since individuals with greater risk perception were the ones who continued to visit theme parks while those with lower risk perception tended to avoid the patronage, risk perception does not seem to be the dominant motivator of theme park visitors. Suppose that risk attitude is the true motivator behind theme park visitors’ responses to the SARS outbreak. In such a case, Pennings et al. suggest that even if the probabilities of being exposed to the risk are small, effectively communicating these probabilities will have little influence on consumer behavior. Instead, marketers will have to focus on ways to eliminate the risk. Chien and Law (2003) suggested substantial processes to minimize hotel employees
and guests’ possibility of SARS infection and to contain the potential spread of viruses on the hotel property. The processes can also be well utilized by other businesses or services in the hospitality and tourism industry. In addition to actually implementing the processes of risk elimination, it is equally important that management should make efforts to let the potential consumers know and let the customers see, smell, hear, and feel the processes of risk elimination on the property.

Based on the findings and limitations of this study, several recommendations for further research can be drawn. First, the roles that both risk perception and risk attitude play in people’s responses to severe epidemics or similar biological crises can be further explored. Extended from the existing related literature, the following research might be expected to establish a theoretical model – consisting risk perception, risk attitude, and other significant variables – of people’s responses to disease outbreaks. Second, although the significant role of the media in the SARS outbreak has been well discussed in Mason et al. (2005) in terms of the amount of media attention given to the outbreak along the five stages of Hall’s (2002) “issue-attention cycle,” given a strong averse risk attitude toward particular epidemics or pandemics, issues regarding how and what the media can communicate effectively to the public to have significant influence on their responses to the disease outbreak can be further investigated by the following research. However, it might be even more important to know how to allure or encourage the media to cease rather than amplify social panic by the above approaches. The Singapore case – a well-trusted institute (e.g., tourist board) coordinates related media and tourism sectors to establish a task-force and working with the national health authority to produce guidelines and to have a hold over the social panic – indicated in Henderson (2003) might not work applicably in elsewhere, however, it did provide a sample of possible domestic problem-solving mechanism. Based on the basic framework, a possible international cooperation mechanism might be further discussed and developed.

**CONCLUSION**

It is clear that the international hospitality and tourism industry will always benefit from researchers’ continuing efforts to confront any possible emerging industry crises in the future. The efforts provide effective suggestions to either the management practitioners or the public policymakers during and after a certain crisis emergence in the industry.
This study reveals that younger or more frequent visitors more likely continued to visit theme parks during the SARS outbreak period. In addition to the substantial suggestions on possible adjustments of marketing mix, some implications can be emerged from the findings and discussion of this study. It should be firstly noted that, during a plague outbreak, the impact against tourism industry is primarily generated by the panic resulted from the plague rather than by the plague itself. The dominant determinant in the formulation of the plague-resulted panic tends to be the magnitude of people’s aversion (risk attitude) to the plague rather than the perceived possibility to be infected by the plague (risk perception). By the back-up of the media, the scale and spread of possible emerged panic tends to be amplified and accelerated extensively. If a panic has been prevailed, it might be an inevitable outcome that people tend to over-react in their responses to a plague outbreak. People’s over-reactions might be represented by decreasing the amount of consumption or even the collapse of regional tourism. According to the subsequence of a plague-outbreak crisis emerging from the discovery and identification of an epidemic to possible damages suffered by tourism industry, several critical points between different stages of the crisis progression can be found. In terms of crisis management, if the critical points can be well monitored and managed, the situation will be substantially better off.

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