CHAID-based Segmentation: International Visitors' Trip Characteristics and Perceptions

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This study segments inbound travelers to Hong Kong with a **CH***i-square* **A***utomatic* **I***dentification* **D***etector (CHAID) technique. Seven predictors are used to derive market segments based on their likelihood of revisiting Hong Kong. The CHAID analysis produces six segments based on respondents' travel purpose, age, income, and repeat visit status. Each segment is described according to trip characteristics, including length of stay, travel party size, total expenditure, frequency of visits, mode of travel, and post-trip perceptions. Suggestions are made based on findings from the study, and marketing implications for resultant segments are discussed.*

Keywords: *CHAID, segmentation, likelihood of return, trip/travel characteristics, perception, Hong Kong*

Tourism marketers for numerous local, national, and international destinations have endeavored to understand international travelers' behaviors as travel abroad becomes a popular leisure activity. The idea of segmentation is to divide the market into groups, or segments, of people with similar purchasing behaviors because travelers are not homogeneous in their preferences, wants, and needs (Levin and Zahavi 2001). Wyner (1995) defined market segmentation as the identification of diverse customer groups who should be treated differently. The concept of segmentation has also been used to solve marketing problems as well as to address diverse managerial issues (Fredline and Faulkner 2000). Walters (1997) stated that the heterogeneity of international markets necessitates tools that can assist marketers in identifying underlying patterns of similarity, which can provide a platform for global integration at the strategic and operational levels.

As the importance of segmentation has been highlighted, various segmentation techniques and methods have been introduced and tested in the tourism literature. A major emphasis in tourism segmentation studies has been on measuring needs and benefits related to specific product categories (e.g., destinations, hotels, restaurants, and tour services), as well as purchase/usage behaviors, demographics, psychographics, and geography/nationality (Walters 1997; Woodside and Motes 1981; Wyner 1995). Although each segmentation method has its own merits, the following literature review introduces a criterion-based segmentation method, which has been known as one of the most effective segmentation tools in the travel and tourism discipline (Wyner 1995).

LITERATURE REVIEW

While many statistical programs are available to aid researchers in conducting a criterion-based segmentation, one of the effective, but not popularly used, techniques is the **Ch**i-square **A**utomatic **I**dentification **D**etector (CHAID). The following section provides a review of the CHAID method used in various academic disciplines, including travel and tourism marketing.

CHAID

The CHAID segmentation technique (Kass 1980) is one of the segmentation approaches, in which all the predictor variables are monotonic (Magidson 1994), used in finding target markets. As the importance and popularity of direct marketing and database marketing increase, the need for improved analytical methods to find target group members has been highlighted (Baron and Phillips 1994; Wyner 1995). To address this necessity, the CHAID analysis was first developed by Kass (1980) and further utilized by Magidson (1994), and has garnered popularity as a segmentation tool in various disciplines, including consumer marketing (e.g., Baron and Phillips 1994; Riquier, Luxton, and Sharp 1997), direct marketing (e.g., Elsner, Krafft, and Huchzermeier 2003; Schellinck and Groves 2002), geography (e.g., Casas 2003), education (e.g., Grobler, Bisschoff, and Moloi 2002), and gambling (e.g., Welte, Barnes, Wieczorek, and Tidwell 2004).

According to Kass (1980), the CHAID analysis divides a population into mutually exclusive and exhaustive subgroups. The CHAID analysis allows developing predictive models, screening out extraneous predictor variables, and

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Journal of Travel Research, Vol. 46, November 2007, 207-216
DOI: 10.1177/0047287507299571

generating an easy-to-read diagram that identifies mutually exclusive segments of a population that have similar characteristics (Levin and Zahavi 2001; Magidson 1994).

Three components of the CHAID method should be examined in interpreting results.

1. Chi-square statistics with corresponding pairwise *p* values in identifying the most significant predictor, which represents the probability of the observed relationship between independent and dependent variables occurring if the two variables were independent. The predictor with the lowest *p* value is the one that is most likely to be related to the dependent variable and has the most predictive power (Casas 2003; Haughton and Oulabi 1997). If the resulting *p* value is less than or equal to a level of significance (i.e., .01), it is concluded that the Chi-square value is large enough to accept the resulting split.
2. The adjusted *p* value by Bonferroni multiplier for the set of categories for the respective predictor in ascertaining the spurious identification of significant predictors. The best predictor is defined as the variable having the lowest adjusted *p* value (Magidson 1994).
3. The merging of categories in reducing the number of classifications of the predictor variables to a more parsimonious grouping (Kass 1980). As for the merging of categories, three possible ways of merging are allowed. First, a free variable is defined as a variable measured at the nominal level without any ordering; in a free variable, any combination of categories is allowed. Second, a monotonic variable is a variable measured at the ordinal level, and only adjacent categories can be merged. Finally, a floating variable is a monotonic variable with a "don't know/no response" category. Except for the "don't know/no response," option merging is only allowed for contiguous categories (Kass 1980), which is the same as for a monotonic variable.

CHAID in Travel and Tourism Research

Segmentation studies using the CHAID analysis in hospitality and tourism literature are less common than studies using other segmentation tools (Bargeman, Joh, Timmermans, and van der Waerden 1999; Chen 2003a, 2003b; van Middelkoop, Borgers, and Timmermans 2003; Welte et al. 2004). Bargeman et al. (1999) examined the relationships between vacation choice behaviors and socioeconomic variables to classify respondents into homogeneous clusters by using a combination of CHAID and loglinear analyses. Van Middelkoop et al. (2003) identified heuristic principles for transportation mode choices with an exhaustive CHAID method. Results of the study concluded that the methodology could be applied to better understand tourist choice behavior.

Chen (2003a) segmented college students' spring break vacation decision-making with a CHAID technique. He maintains two types of segments, the actionable and nonactionable, from the resultant four segments (two of them labeled as actionable, the other two nonactionable). Subsequently, comparisons between these two segments were made with a series of supplementary analyses, including Chi-square, logit analysis, and analysis of variance (ANOVA). Findings of the study concluded that CHAID would be a useful tool to advance the segmentation methodology in travel and tourism research. Chen (2003b) also employed a CHAID analysis to identify actionable segments that were based on one's likelihood of making positive recommendations about a destination, and profiled each segment by demographic and trip characteristics. Destination satisfaction, pricing, and prompt assistance were identified as three critical factors influencing respondents' destination recommendation to others. In both studies (Chen 2003a, 2003b), he used the index score of 100 as a cutoff point to determine whether a resultant segment was actionable. A segment with an index score of 100 or above was considered an actionable (viable) market and a segment with an index score below 100 was a nonactionable (nonviable) market.

Popular Segmentation Variables

The following section focuses on the review of three variables—country of origin/residence, trip purpose, and repeat visit status—that have frequently appeared in current tourism literature. Table 1 shows the exemplary studies that used these three variables in international travel segmentation research over the last five years.

Travel segmentation studies have employed a number of variables to examine trip characteristics and traveler behaviors in both domestic and international settings. In particular, compared to domestic travel segmentation approaches, international tourism market segmentation usually includes one more crucial variable—country of origin or residence—in delineating travelers' characteristics and behaviors. According to a classification scheme for a global market developed by Walters (1997), country as a criterion is useful and significant; and studies on country clusters abound. Ronen and Shenkar (1985) found consistencies in consumers' attitudes and behaviors based on countries' geography, language, and religion as factors underlying the country clusters. In the travel and tourism context, Yoo, McKercher, and Mena (2004) investigated differences between the Mainland Chinese and American visitors to Hong Kong with regard to their trip characteristics. Results of the study indicated that geographic distance influenced trip characteristics, concluding that both culture and physical distances explained variations in the trip characteristics. Oppermann (1995) also reported significant differences in country of residence and travel purpose with respect to travel itinerary. McKercher (2001) concluded that travelers from various geographic areas had different demographic profiles and behaved differently at the destination.

Individual characteristics, either of a general or situation specific nature, offer considerable promise as segmentation criteria. Sung, Morrison, Hong, and O'Leary (2001) insisted that including trip-related characteristics, such as number of visits, trip duration, trip distance, traveler type, purpose of trip, travel mode, expenditures, and length of stay, can lead to comprehensive and meaningful results in understanding travelers' behaviors. Walters (1997) enunciated that demographic variables have obvious potential as cross-national segmentation criteria. The commonly used variables in this category include gender, age, income level, and education. Despite a traditional focus on country as a criterion,

TABLE 1
INTERNATIONAL TOURISM SEGMENTATION STUDIES

Variables	Literature	Destination setting
Country of origin or residence	McKercher (2001)	International visitors to Albury, Australia
	Lehto, O'Leary, and Morrison (2002)	British travelers bound for Asian, North American, and Oceanic destinations
	Michael, Armstrong, and King (2004)	International students in Melbourne, Australia
	Kim and Jogaratnam (2003)	Asian and Western travelers to Australia
	Crotts (2004)	Using cultural distances of U.S. leisure travelers visiting abroad for the first time
	Yoo et al. (2004)	International travelers to Hong Kong
	Rosenbaum and Spears (2005)	U.S., Canadian, Japanese, Chinese, South Korean and Australian/New Zealand tourists in Hawaii
Trip purpose	Graham and Russell (2001)	Ferry trip passengers in Scotland
	Hsu and Kang (2003)	International visitors to Hong Kong
	Suh and Gartner (2004)	International travelers to South Korea
	Toh, Khan, and Kim (2004)	Visitors to Singapore
Repeat visit status	Hsu and Kang (2003)	International visitors to Hong Kong
	Alant and Bruwer (2004)	Wine travelers in South Australia
	Anwar and Sohail (2004)	Festival attendees in United Arab Emirates (UAE)
	Petrick (2004)	Cruise line passengers
	Phillips (2005)	Visitors in the Great Britain

individual characteristics have a great deal of merit as bases for market segmentation (Walters 1997).

RESEARCH PURPOSE AND OBJECTIVES

The purpose of the study was to identify and profile market segments among international travelers to Hong Kong by employing a CHAID analysis. Specifically, two research objectives were established:

Objective 1: to examine whether the CHAID analysis is applicable in deriving market segments based on traveler characteristics (i.e., demographics, origin of visitors, trip purpose, and repeat visit status) that contributed the most to respondents' likelihood of return to Hong Kong; and

Objective 2: to identify significant differences among derived segments in travelers' trip characteristics and post-trip perceptions about visiting Hong Kong.

METHODOLOGY

Research Instrument

The questionnaire was developed based on previous research in the fields of tourism marketing and behavior. A series of traveler information, including country of residence, primary purpose of visit (i.e., business vs. pleasure), repeat visit status (i.e., first time vs. repeat), gender, age, income, and education; and trip characteristics, such as length of stay, travel party size, total expenditure in Hong Kong (apart from airfare and accommodation), and mode of travel (i.e., package vs. independent), was obtained.

To identify travelers' perceptions of their visit to Hong Kong, overall perceptions on service quality, perceived value, attractiveness, and satisfaction were assessed. Service quality was measured by asking respondents the question, "Based upon the experiences you had in Hong Kong, how would you rate the overall service quality in Hong Kong?" with 1 being very poor and 7 being very good. Perceived value for money was assessed by asking: "Do you agree that the good(s) and/or service(s) you purchased in Hong Kong is/are good value for money?" with 1 being strongly disagree and 7 being strongly agree. The attractiveness of Hong Kong was evaluated with the question, "At the present time, how would you rate Hong Kong's attractiveness as a place to visit?" with 1 being very unattractive and 7 being very attractive. Tourists' satisfaction with Hong Kong as a destination was measured by a single question, "Based upon the experiences you had in Hong Kong, how satisfied were you with this visit to Hong Kong?" with 1 being very dissatisfied and 7 being very satisfied. Likelihood of return was also included as an indicator of travelers' future behavioral intention by asking, "How likely would you be returning to Hong Kong for pleasure travel?" with 1 being very unlikely and 7 being very likely.

Data Collection

The study was part of the International Visitor Survey conducted annually to collect traveler and trip information from the seven major source markets of Hong Kong: Mainland China, Taiwan, Singapore, Malaysia, Australia, United States (U.S.), and Western Europe. The survey was conducted in the restricted departure lounge area of the Hong Kong International Airport every day from 9:00 a.m. to 10:30 p.m. over a period of one month. A team of nine interviewers, including two field supervisors, was hired to assist with the

data collection process. Each interviewer was assigned to a specific flight route predetermined to reflect the logistic flow of traffic. Only flights going to major cities of the target markets were selected. Departing passengers were approached at the boarding gate areas for interview. A convenience sampling method was used due to the unavailability of a sampling frame and lack of accessibility to all passengers. Visitors were interviewed face to face if they met the three qualifying criteria: non-Hong Kong residents, nontransit passengers, and residents in one of the seven target source markets. Field researchers were instructed to interview only one individual from a group traveling together.

Data Analysis

A total of 1,303 respondents completed the survey and their responses were used for data analysis in this study. Descriptive statistics were calculated for all survey items. Travelers from Mainland China, Taiwan, Singapore, and Malaysia were categorized as Asian visitors, whereas Western travelers were represented by those from Western European countries, the U.S., and Australia based on the categorization evidenced by the cultural distance theory (Crotts 2004; Hofstede 2001).

To derive market segments based on the predictor(s) that contributed the most to respondents' likelihood of return to Hong Kong, the SI-CHAID program (SI-CHAID® 2001) was used to analyze the data. The dependent variable, likelihood of return, was recoded into two categories (1 = less likely to return, 2 = likely to return). Those who indicated 6 (likely) and 7 (very likely) were classified as likely to return, and those whose responses were 1 to 5 were coded as less likely to return.

Van Middelkoop et al.'s (2003) recommendation that a CHAID-based algorithm requires a substantive dataset with approximately 150 to 200 observations per predictor variable was followed in determining the number of predictors entered into the analysis program. With 1,303 cases in the dataset, a maximum of 7 independent variables (175 observations $\times$ 7 variables = 1,225 cases) can be accommodated. Therefore, the seven most commonly used traveler segmentation variables as reviewed earlier, encompassing country of residence and purpose of visit as free variables; repeat visit status, gender, age, and education as monotonic variables; and income as a floating variable, were selected as predictors for the CHAID analysis. The merge level that controls the difficulty of combing predictor categories and the alpha level for predictor eligibility were both set at 5% (Magidson 1994). The eligibility level of 0.05 means that the observed relationship between the dependent variable and the set of predictors will only occur five percent of the time if the dependent variable and the predictors are not related (Ngwane, Yadavalli, and Steffens 2001). The stopping criteria were determined at a minimum size of 60 observations before and 25 after the division of the (sub)sample based on a sensitivity analysis (SI-CHAID® User's Manual 2001). Table 2 shows the variables used for the CHAID analysis with category codes and its description.

A series of Chi-square analysis and analysis of variance (ANOVA) was employed to identify differences on various trip characteristics. Additionally, a multiple analysis of variance (MANOVA) was used to examine significant differences on post-trip perception of visiting Hong Kong among the segments that emerged. Furthermore, ANOVA and MANOVA were accompanied by Tukey's HSD posthoc tests to further explore the differences among segments.

MAJOR FINDINGS

Demographic and Travel Profile

Slightly over half (55.5%) of respondents were male and in the age brackets between 26 and 45 (54.7%). Nearly three-fourths (71.6%) of respondents attained a four-year university degree or higher, and 14.1% attended college or had a 2-year degree. Income level was quite evenly distributed among the middle categories; however, 30.0% reported an annual household income of US$100,000 or more. Travelers from the U.S. accounted for nearly one-third (31.3%) of the respondents, followed by Western Europeans (14.3%) and Mainland Chinese (14.3%). Among the other Asian travelers, Taiwanese visitors represented 12.1% of the respondents, followed by visitors from Singapore (9.2%) and Malaysia (5.0%).

Regarding respondents' trip characteristics, 34.3% of them were first-time visitors to Hong Kong. The average travel party size was 3, with a mode of 1 person. The average length of stay in Hong Kong was 4.7 nights, with a mode of 2 nights. The total expenditure excluding airfare and accommodation in Hong Kong ranged from US$13 to US$26,137, with a mean of US$955. Over half (58.6%) of the respondents marked either 6 or 7 on the likelihood of return question and were categorized as the "likely to return" group.

CHAID Segmentation

In the CHAID dendogram (see Figure 1), each shaded box contains the name of a predictor that divides respondents into mutually exclusive groups with the Chi-square value, degree of freedom, and Bonferroni adjusted p value reported. Below each of the shaded boxes, there are several unshaded boxes containing four pieces of information (reading from the top): (1) the list of initial categories, which were combined (e.g., 1, 2, 3 means the combining of categories 1, 2, and 3); (2) the name of the newly combined category; (3) the number of respondents in the new group; and (4) the percentage of respondents in the group who indicated 6 or 7 on the likelihood of return question (i.e., the percentage of "Yes").

The CHAID dendogram shows that the best predictors of the likelihood of return were travel purpose ($\chi^2 = 36.39$, Bonferroni adjusted p value $< .001$), age ($\chi^2 = 26.38$, Bonferroni adjusted p value $< .001$), repeat visit status ($\chi^2 = 14.99$, Bonferroni adjusted p value $< .001$), and income ($\chi^2 = 12.25$, Bonferroni adjusted p value $< .001$) in order of their ability to explain variances. A total of six segments was formed, with the terminals or end nodes of the tree representing the final subgroups, or referred to as segments (Magidson 1994).

Specifically, travel purpose was the most important predictor entered in the CHAID model, splitting respondents into three distinctive segments: vacation/leisure and others

TABLE 2
VARIABLES USED IN CHAID ANALYSIS

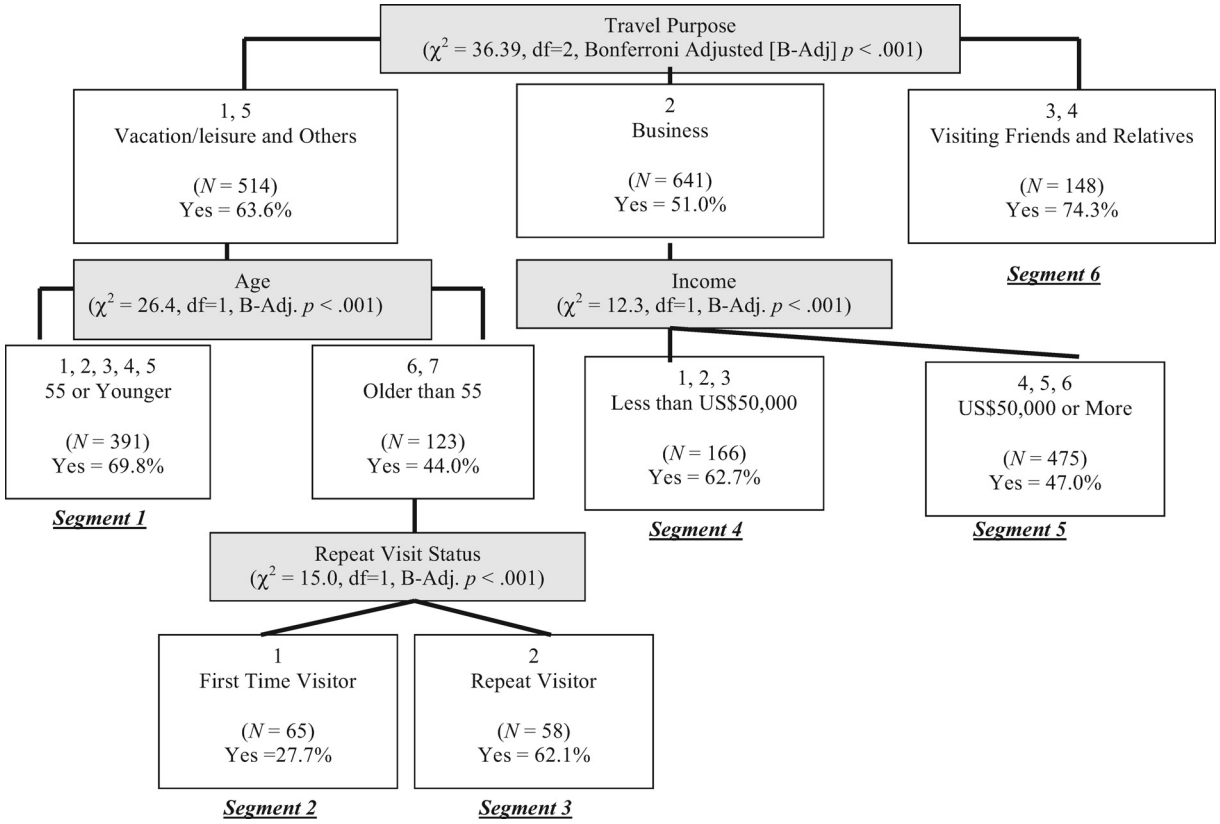
	Variable	Variable Types for CHAID	Category	Description
Dependent Variable	Likelihood of Return	N/A	1	Unlikely to return
			2	Likely to return
Predictors	Country of Residence	Free	1	Asian
			2	Western
	Trip Purpose	Free	1	Vacation/Leisure
			2	Business
			3	Visiting friends
			4	Visiting relatives
			5	Others
	Repeat Visit Status	Monotonic	1	First time visitor
			2	Repeat visitor
	Gender	Monotonic	1	Male
			2	Female
	Age	Monotonic	1	Under 18
			2	18–25
			3	26–35
			4	36–45
			5	46–55
			6	56–65
			7	66 or above
	Education	Monotonic	1	Less than secondary/high school
			2	Completed secondary/high school
			3	Some college or university
			4	Completed college/university diploma/degree
			5	Completed postgraduate degree
	Income	Floating	1	Less than US$10,000
			2	$10,000—$29,999
			3	$30,000—$49,999
			4	$50,000—$69,999
			5	$70,000—$99,999
			6	$100,000 or more
			7	'Don't know' or 'No response'

(categories 1 and 5) with 63.6% likely to return to Hong Kong for pleasure travel, business (category 2) with 51.0%, and visiting friends and relatives (categories 3 and 4) with 74.3%. Those in the vacation/leisure and other purpose segment were further divided into two groups based on age: respondents 55 or younger (categories 1, 2, 3, 4, and 5) with 69.8% likely to return for pleasure, and those older than 55 with 44.0% likely to return. Of the two age-based segregated groups, the second segment (i.e., travelers older than 55) was additionally split into two groups according to their repeat visit status. Of the first time visitor group, 27.7% provided a positive response on the likelihood to return; and 62.1% of repeat visitors were positive on the likelihood of return. The right hand side of the dendogram in Figure 1 indicates that business travelers were broken into two segments by their income level. Those who earned less than US$50,000 annually were more likely to return to Hong Kong for leisure (62.7%), as compared to those who earned US$50,000 or more (47.0%).

In summary, Segment 1 was characterized as 55 or younger travelers with the purpose of vacation/leisure or others. Segment 2 consisted of first time mature (older than 55) travelers who visited Hong Kong for vacation/leisure or other reasons. Respondents in Segment 3 were repeat mature visitors traveling for vacation/leisure or other purposes. Segment 4 was composed of business travelers who reported an annual income of less than US$50,000. Those in Segment 5 were also business travelers, but with an income of US$50,000 or more. Segment 6 consisted of travelers visiting friends and relatives in Hong Kong.

The resultant six segments were subsequently ranked according to their index scores, which give reference to the likely-to-return rate of each segment in relation to the overall likely-to-return rate (58.6%). In other words, the higher the index score was, the more likely respondents in the segment would return to Hong Kong for pleasure travel (see Table 3). The six segments were summarized with respect to their size and likely to return rate. Segment 6, travelers

FIGURE 1
MARKET SEGMENTS BASED ON LIKELIHOOD OF RETURN BY CHAID



visiting friends and relatives, was ranked first due to its high index score of 127 (74.3%/58.6%). The second highest index score was 119 for Segment 1, vacation/leisure travelers aged 55 or younger, followed by Segments 4 (107) and 3 (106). Segments 5 and 2 scored the lowest with 80 and 47, respectively.

Trip Characteristics

Chi-square analyses and ANOVAs were carried out to profile each segment's trip characteristics (see Table 4). With respect to travel mode (i.e., package vs. independent), half (50.8%) of the first-time vacation/leisure mature visitors (Segment 2) were full-package purchasers, while half (53.4%) of their repeat counterparts (Segment 3) were independent or nonpackage travelers. This makes sense because full-package trips are usually purchased by first timers (Rosenbaum and Spears 2005). Business travelers (Segments 4 and 5) and travelers visiting friends and relatives (Segment 6) were, as expected, mostly independent travelers.

The results of Tukey's HSD posthoc tests showed different trip characteristics among the six segments generated. Specifically, for length of stay in Hong Kong, travelers who visited friends and relatives (Segment 6) stayed the longest (7 nights) and first-time mature leisure visitors the shortest

TABLE 3
GAIN CHART BY PERCENTAGE DISTRIBUTION OF THE CHAID ANALYSIS

Arbitrary segment numbers	Segment size and % of size in markets	Number and % of "Likely to return"	"Likely to return" respondents as a percentage of the sample	Index Score as defined by CHAID	Rank based on index score
6	148 (11.4%)	110 (74.3%)	14.4%	127	1
1	391 (30.0%)	273 (69.8%)	35.7%	119	2
4	166 (12.7%)	104 (62.7%)	13.6%	107	3
3	58 (4.5%)	36 (62.1%)	4.7%	106	4
5	475 (36.5%)	223 (47.0%)	29.2%	80	5
2	65 (5.0%)	18 (27.7%)	2.4%	47	6

TABLE 4
TRIP CHARACTERISTICS AMONG SEGMENTS

Chi-square Results	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	χ^2
Mode of Travel							
Full Package (%)	14.6	50.8	22.4	4.2	1.3	1.7	257.8***
Partial Package (%)	15.9	13.8	24.1	18.1	7.2	8.6	
Independent (%)	59.9	35.4	53.4	77.7	91.6	89.2	
ANOVA Results	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	*F*
Length of Stay (nights)	4.2[a]	3.5[b]	4.3	4.8	4.6[c]	7.0[abc]	3.9**
Travel Party Size	3.5[ab]	4.3[cd]	2.2	2.6	1.7[ac]	1.9[bd]	8.9***
Total Expenditure (US$)	1,038[a]	584[ab]	1,249[b]	907	943	878	5.0**
Frequency of Visit in the Past 5 Years	3.6[a]	1.0[b]	6.8	7.9	13.1[ab]	8.1	8.0***

*$p < .05$, **$p < .01$, ***$p < .001$
[a-d]Tukey's HSD test: Means in the same row followed by the same superscript were significantly different at $p < .05$.

(3.5 nights). When asked about travel party size, business travelers in the higher income bracket (Segment 5) and those visiting friends and relatives (Segment 6) traveled alone or with one partner, while younger vacation/leisure visitors and first-time mature leisure visitors (Segments 1 and 2) traveled in groups.

With regards to total expenditure (excluding airfare and accommodation) in Hong Kong, repeat mature pleasure visitors (Segment 3) reported the highest expenditure with a mean of US$1,249, followed by younger vacation/leisure visitors (Segment 1) with an average spending of US$1,038. Mature repeat visitors (Segment 3) spent the most probably because of their confidence and knowledge gained from their previous experience of the destination (Reichheld 1996). On the other hand, their counterpart, mature first-timers (Segment 2), spent only US$584, possibly due to their high participation in packaged tours. With respect to frequency of visits to Hong Kong, business travelers in the higher income category (Segment 5) reported a mean of 13.1 times in the past 5 years, followed by the lower income business travelers (Segment 4) with a mean of 7.9 times, showing that business travelers in general were likely to be frequent visitors to Hong Kong. Travelers visiting friends and relatives (Segment 6) also indicated a higher frequency of 8.1 times. Interestingly, pleasure travelers in Segment 3 reported a high frequency of past visits to Hong Kong as well, with a mean of 6.8, indicating that they had visited Hong Kong more than once every year over the past five years.

Post-Trip Perception

Results of the MANOVA indicated that the six segments differed significantly on all four post-trip perception items (see Table 5). Regardless of segments, travelers' satisfaction was the highest among the four measurements, with an aggregate mean of 6.0 on a 7-point scale, followed by perceived service quality (M = 5.9). Alternatively, value for money received the lowest mark, with a mean of 5.1.

Results of Tukey's HSD posthoc tests revealed that pleasure travelers older than 55 (Segments 2 and 3) rated all four perception items most favorably based on aggregate means by segment, closely followed by younger vacationers and visitors of friends and relatives (Segments 1 and 6). The two business-traveler segments based on income level (Segments 4 and 5) showed similar perceptions throughout the four questions. Interestingly, those in Segment 2 indicated they were least likely to return to Hong Kong, but gave the highest marks on post-trip perceptions. This finding indicated that post-trip perceptions may not be used as the surrogate assessment of loyalty or related to willingness to return even though a positive relationship between perceived quality and intention to purchase has been repeatedly reported in the marketing literature (Boulding, Kalra, Staelin, and Zeithaml 1993; Cronin and Taylor 1992; Keaveney 1995). Many hospitality and tourism services have followed up with their customers by evaluating post-perceptions or satisfaction about their consumption to gauge whether they will generate future patronage. In that sense, conclusions based on satisfaction may provide misleading information on target markets' behavioral intention, and thus incorrectly forecast future demands (Hsu and Kang 2003). With the study finding in mind, tourism destinations are advised to interpret the satisfaction construct cautiously.

DISCUSSION AND CONCLUSIONS

This study examined how international visitors to Hong Kong can be segmented by using the CHAID technique. Segmentation research has proliferated in the international tourism market for the purpose of developing strategies for product design, service delivery, and promotional campaign planning (e.g., Jang, Morrison, and O'Leary 2004; Kim and Jogaratnam 2003; Sirakaya, Uysal, and Yoshioka 2003; Suh and Gartner 2004). By combining two types of objectively measured variables, demographics and travel characteristics as a segmentation base, this study generated viable international travel market segments with distinctive travel characteristics and post-trip perceptions. It should be noted that only those who indicated 6 or 7 on a 7-point scale regarding their likelihood of revisit Hong Kong for pleasure were

TABLE 5
POST-TRIP PERCEPTION AMONG SEGMENTS

Perception (1–7 ratings, 7 being the most positive)	Seg. 1	Seg. 2	Seg. 3	Seg. 4	Seg. 5	Seg. 6	*F*
Overall Service Quality (*Overall M = 5.9)*	5.9[a]	6.3[abc]	6.0[b]	5.7[d]	6.0[d]	5.8[c]	4.2**
Overall Good Value (*Overall M = 5.1)*	5.2[a]	5.7[abc]	5.2	5.0[b]	4.9[cd]	5.4[d]	6.0***
Attractiveness (*Overall M = 5.7)*	5.8[a]	6.2[abc]	5.9	5.6[b]	5.7[c]	5.8	3.4**
Satisfaction (*Overall M = 6.0)*	5.9[ab]	6.4[acd]	6.0	5.6[bce]	6.0[de]	5.9	7.8***
Aggregate Means by Segment	5.7	6.1	5.8	5.4	5.6	5.7	

Wilkes' lambda = .945
$F = 3.7$, $p < .001$
*$p < .05$, **$p < .01$, ***$p < .001$
[a-f]Tukey's HSD test: Means in the same row followed by the same superscript were significantly different at $p < .05$.

categorized as "likely to return" to achieve a more conservative estimate of the potential/feasible market.

A total of six segments emerged based on travelers' age and income (demographic variables) as well as repeat visit status and trip purpose (travel variables). Thus, CHAID is shown to be applicable in deriving market segments based on the predictor variables used in this study (Objective 1). CHAID is a useful technique for studies with monotonic variables, which are frequently the case in tourism research. While demographic and socioeconomic variables are usually collected in a monotonic format, not many proven-to-be-useful methods are available, other than post analysis descriptors. Therefore, this study demonstrated that basic demographic and generic travel characteristics could be a good starting point in understanding the multidimensional nature of various traveler behaviors.

Wyner (1995) asserted that the expansion of alternative segmentation methodology has created multiple views of the same market. In reality, several different segmentation schemes (e.g., Arimond and Elfessi 2001; Bargeman et al. 1999; Dolnicar 2004; Dolnicar and Fluker 2003; Sirakaya et al. 2003) with varying strengths could be applied to the same market. For example, some are more useful for targeted promotion, whereas others are more effective for product development. Therefore, it is advisable that multiple segmentation methods could be used for different purposes and at different points in the life cycle of a product or market. Whereas studies on inbound travelers to Hong Kong have focused on various traveler profile and behavioral characteristics (e.g., Hsu and Kang 2003; Lo, Cheung, and Law 2004; Yoo et al. 2004), this study added an additional dimension in analyzing and segmenting travelers by using a different technique that has not been used in this market, or in many other markets.

Results of the study further demonstrated significant differences among derived segments in their trip characteristics and post-trip perceptions about visiting Hong Kong (Objective 2). Several managerial implications could be derived from those differences among segments. The segment that had the highest index score (Table 3) was the visiting friends and relatives market, which usually does not require extensive marketing efforts. The segment with the lowest index score was the first-time mature leisure market, which reported the lowest expenditure and shortest length of stay, partly due to the finding that half (50.8%) of them were on full package tours. Even though this segment had the most favorable post-trip perceptions of Hong Kong, they had the lowest intention to return for future visits and their economic impact on the destination is minimal. Thus, the focus of the Hong Kong destination marketers should be on the other four segments: young leisure travelers, mature repeat visitors, and the two business-traveler groups.

The 55 or younger leisure traveler group is the most important market for Hong Kong tourism marketers because of its size (N = 391, 30.0% of the sample) and high rate of return intention (69.8%). This group also reported the second highest in spending (US$1,038) and a relatively long stay (4.2 nights). Hong Kong has appropriately positioned itself as the "City of Life," demonstrating the city's youth and vibrant image (HKTB 2002). Additional research with a focus on this group's spending patterns would be helpful in developing activities or programs that could increase frequency of visit. Because this group usually travel in a party of 3 to 4 people, travelers could be encouraged to "bring a friend" along to further enlarge the size of this market. An increase in size and visit frequency of this market would not only generate immediate economic benefits to the destination, but also lay a foundation for the future mature repeat visitor market (Segment 3).

Segment 4, business travelers with less than US$50,000 annual income, has a relatively high return intention rate (62.7%) and a moderate group size (N = 166, 12.7%), and are thus a viable market to pursue. One the other hand, the other business traveler group (Segment 5) is a much bigger market (N = 475, 36.5%) and has a higher income (US$50,000 or more), however, a much lower return intention (47.0%). Thus, marketing efforts should focus on the latter business traveler segment to encourage repeat leisure visits. Both groups of business travelers rated the "overall good value" the lowest among all segments and across all post-trip perception items. This could be a reflection of their consumption experience in Hong Kong while on business trips.

Business travelers usually stay in high-end hotels and dine in upscale restaurants on expense accounts. These outlets are indeed expensive. Marketers need to do a better job of communicating with business travelers about the variety of products and services Hong Kong can offer across various price ranges. Transforming business travelers into leisure visitors can also lay the foundation for the future mature repeat visitor market.

The current mature repeat visitor market (Segment 3) reported a healthy length of stay (4.3 nights) and frequency of visit (6.8 times in the past five years). This segment also reported the highest expenditure (US$1,249). Thus, this segment, although small at the present time (N = 58, 4.5%), could be termed as the premium loyal market. To sustain this segment, potential members of the group (e.g., individuals in Segments 1, 4, and 5 discussed earlier) should be identified and relationships cultivated to move them into this segment as they reach their mature years. Meanwhile, destination marketers should devote efforts to understand this market's motivation and preferences to maintain their activity levels.

LIMITATIONS AND FUTURE RESEARCH

Several cautions should be made in interpreting the results of the study. First, this study used only selected demographic and travel characteristics even though frequent usage and importance of these variables were noted and they represented valid criteria in segmenting international visitors by their likelihood of revisit. As the variety of questions included in both domestic and international travel segmentation studies has been improved and extended, future research could incorporate variables excluded in this study to generate a more comprehensive understanding of the topic as well as to validate and compare the findings from this study.

This study defined potential return visitors in a conservative manner (only those rated like [6] or very likely [7] as potential repeat visitors). The concept of likelihood of return/repurchase has not been operationalized accurately nor has valid measurement being developed in predicting consumer loyalty (see Huan, Beaman, and Kozak, 2003; Kozak, Huan, and Beaman 2002 for details). Along with that, future studies could include more psychological elements affecting consumers' return intentions and the return intentions could be measured more precisely by providing a timeframe (e.g., likelihood to return in the next 12 months). Also, an investigation of the influencing factors or reasons behind consumer behaviors of the identified segments, such as Segment 1, would be extremely helpful in devising marketing strategies for these groups or further dividing these markets into smaller, more homogeneous subsegments in realizing the repeat-visit intention of these markets. Future studies could also examine how and to what extent segments generated in this study respond to changes in the destination's price, promotion, media, and distribution practices so that the most effective communication tools could be developed for each segment.

While marketers continue to put efforts and resources into capturing those who are more likely to return by understanding what constitutes potential repeat visitors' characteristics, in the long term it is also crucial to identify what "barriers" prevent visitors from returning. Finally, because the sample of this study only included visitors who departed from Hong Kong airport, results are not comprehensive by excluding the opinions of visitors leaving by other modes of transportation.

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