ABSTRACT

Abstract of thesis entitled "Predicting Hotel Selection: An Analysis of Demand and Supply Perspectives" submitted by Lam Chi Yung, Sunny for the degree of Master of Philosophy at The Hong Kong Polytechnic University in February 2002.

Given the intensified competition to attract today's increasingly discerning hotel guests, it is vital for hotel managers to understand the set or bundle of hotel attributes which are demanded by the potential traveler. Unfortunately, marketing research in hotels is still mainly confined to the analysis of guest related data collected during registration or from guest comment cards. These data, however, has little merit as predictors of customer behaviour and cannot answer the "what if" questions. In recent and past research in hospitality and tourism, researchers have demonstrated the use of product attributes in predicting consumer preferences and segmenting markets (Bell and Morey 1997; Kim 1996). In undertaking this approach to behavioral study, many researchers in the field have been attracted to use conjoint attribute part worths—the judgmentally quantified *attribute values* derived from conjoint modeling. This study attempts to utilize the compositional self-explication model as a reference model to assess the comparative superiority of the conjoint model in predicting clientele preferences among travelers to Hong Kong. It also seeks to reveal subgroup preference variations by using two segmentation approaches.

In addition, the study of international travelers' hotel preferences is extended to the perspective of hotel managers, to examine their perceived hotel preferences of international travelers. The "gap(s)" between the hotel preferences sought by international travelers and

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those perceived to be sought by them from the perspective of hotel managers is estimated and discussed.

Three hundred international travelers participated in the self-explication measurement and conjoint experiment in Hong Kong. Respondents were invited to complete a two-stage rating task on hotel attribute importance as well as to rank two sets of hypothetical hotel profiles — to obtain their preference structures for the above two kinds of preference modeling. A similar measurement approach and experiment was replicated with a sample of twenty hotel managers. The relative superiority of the two models was assessed by the percentage of correct choice predictions and Spearman rank order correlations. A series of market shares simulation were demonstrated. The "a priori" and "post hoc" segmentation were conducted to discover the variations of consumers' hotel preferences. The "gaps" of hotel attributes sought revealed by international travelers and those revealed by hotel managers were evaluated by direct attributes comparison, simulated market shares comparison and analysis of hotel managers' perceptions.

The findings of this study revealed that the conjoint modeling technique has useful applications in hospitality and tourism, and suggested that variants of the basic model and alternative conditions be tested as well. It was evident from the results that the hotel choice decision of the traveler varies according to the benefits sought and the selection made is influenced by all situational, geographic and behavioral dimensions. A "gap" between hotel attributes sought by international travelers and those perceived to be sought by hotel managers in Hong Kong was also established. The policy implication of the findings is that hotel managers in Hong Kong should make use of the preference variations

in and influences on hotel choice decision along with the magnitude of the "gap" identified

to formulate strategy for the provision of better product and services to international

travelers.

ACKNOWLEDGMENTS

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CHAPTER 1 — INTRODUCTION

Section 1.1: Background of the Study

1.1.1 Choice of Hotel Accommodation - Travelers' Perspective

In visiting a foreign country, a traveler has to make various choice decisions in terms of the transportation to be used, the accommodation to stay with, the restaurant for dining, the places for shopping, and even the bank to cash his/her traveler's cheques. Among all the decisions to be made, some may require a higher-involvement evaluation process because of the underlying risk associated with a wrong choice while others may not be worth considering because of the undifferentiated nature of the available alternatives. In particular, the selection of a preferred hotel receives considerable attention in the traveler's planning process. Since the products and services offered by different hotels are different, one hotel cannot cater to all the needs of the traveler. A budget business traveler originating from Indonesia may choose a city hotel with clean guest room, fast check-in and quiet environment at an affordable price; a vacationer from New York may choose a deluxe hotel with a full range of services, facilities and amenities, conveniently located in the country side and be willing to pay a high tariff for them; while a transient scholar visitor from Nigeria may simply want to spend the night at an average hotel at close proximity to his visiting university at a mid-range room rate. The travelers value different products and services according to their own wishes and as such have different preferences on hotel selection. Therefore, during an individual traveler's hotel selection process, he is looking for the optimal combination of products and services that suit his own preferences, or suit most closely to his own preferences if the ideal one is not available. As different

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travelers may look for the same combination, there is a demand for that combination. Likewise, some other travelers may seek for other combinations and so there are various demand segments.

1.1.2 Choice of Hotel Accommodation - Hoteliers' Perspective

In planning a hotel business, a hotel investor has various dimensions to consider. These include the business form of ownership, the selection of a hotel management company, the positioning of the hotel products and services, the required return of investment, as well as the economic and political sort of business environmental issues. In order to make an investment that will be financially successful, these considerations will need to be professionally tackled by the relevant experts. Among all of them, the development of hotel products and services should be of particular interest to hotel marketers. As the offering of different products and services will require different levels of financial resources allocation, the hotelier may not afford to position his property with all products and services featuring at their best extremities. To build a hotel property at prime commercial or tourist attraction districts is a large investment; to feature a property with deluxe position will incur high labor and development costs; while the use of famous international management brand name will involve considerable management fees. However, as a basic consideration to any strategic decisions of the above, the marketer needs to understand how each of these features affect the choice of prospective hotel clientele. In other words, given a hotel with a particular set of features, it is of the marketer's concern to know the extent of its popularity, and the mix of its enthusiastic customers. To the end of these, the prediction of international travelers' hotel choice behavior as well as the investigation of each of the customer demand segments then

become indispensable. Of equally importance, it should also be of the marketer's interest to know which is the correct potential segment he/she should target.

Not unlike any other heterogeneous products and services, demand of hospitality products and services rests on the internal values (benefits sought) of consumers, which can affect the consumers' final choice decisions. Consumer choice decision is complex. In making a genuine purchase decision, the consumer has to, according to his/her own personal values, evaluate the worthiness of each attribute of each multi-attribute product alternative, sum up all these attribute values for each product and then select the one with the highest net value. The evaluation process becomes particularly difficult when the product is a hotel accommodation, as hospitality service is intangible in nature (Levitt 1981). A traveler simply cannot taste, feel or see the qualities of a hotel before making a buying decision. Furthermore, other different types of variables may also influence the traveler's decision-making process. To name a few, these dimensions include socio-demographics, motivation factors, behavioral characteristics, geographic factors and situational factors. To understand the choice mechanism behind a traveler's purchase is, therefore, not an easy task for hotel marketers. This task presents a strong challenge to hoteliers in Hong Kong where this small bustling city attracts a very diverse range of international tourists (e.g. country of residence) who visit Hong Kong for different purposes with different frequency levels. The lack of uniformity among the hotel benefits sought by such a diverse group of international travelers suggest a potential "Mis-match" of hotel attributes supply and demand, resulting in loss of hotel business and implying a need to restructure and re-plan.

Section 1.2: Statement of the Problem

The conventional approach to planning marketing strategies emphasizes the importance of understanding customers' needs. This implies a requirement for appropriate methods of collecting, analyzing and subsequently acting on the acquired information about customers' expectations (Palmer, McMahon-Beattie and Beggs 2000, p.55). In Hong Kong, some of the more well-established chain hotels (Hyatt, Mandarin Oriental, JW Marriott, etc) have been implementing different forms of information gathering activities in an attempt to better understand their guests' preferences. Unfortunately, marketing research in hotels is still mainly confined to the analysis of guests related data (e.g. socio-demographic and geographic), collected either during registration or from guest comment cards, and the likes. Although some hoteliers do use these channels to descriptively measure the service qualities or significance of various independent product attributes, in reality, however, customers consider the attributes of a product/service jointly and they do make tradeoff among attributes in the choice decision process. Therefore, it is suspected that the data obtained in this manner have little merit as predictors of customer behavior (Lewis and Pizam 1981). They simply cannot help to answer "what-if" questions. More research is therefore needed to explore how do product/service attributes can help predict customer behavior (Ferreira 1997, p.60), and this may require a more sophisticated or vigorous methodological approach.

On the other hand, a true marketing orientated organization should be able to tailor its products to the precise needs of each individual customer (Webster 1992). This requires appropriate customization and tactical differentiation of its products/services, which are, in principle, based on a clear understanding of market segments. The concept of market

segmentation and its importance are reasonably well understood and consistently recognized in hospitality research (Jurowski and Reich 2000, p.67). It has long been interpreted as a way of increasing the efficiency and effectiveness of marketing dollars (Kotler and McDougal 1983, Lewis and Chambers 1989). However, most market segmentation approaches used in the hotel industry are based on the above basic socio-demographic or geographic data. And unfortunately, a homogeneous socio-demographic or geographic group does not necessarily portend consistent buying-behavior patterns; or they may not be effective in implying causation (Lewis 1984a, p.26; Pizam and Calantone 1987; Crawford-Welch 1990; Snepenger and Milner 1990). In fact, it was argued that the existence of true market segments is based upon the concept of underlying benefits associated with product consumption (Haley 1968). Becker-Suttle, Weaver and Crawford-Welch (1994) even cited that the identification of actual benefits desired will always represent an improvement over the traditional segmentation variables. Surprisingly, their review of hospitality literature suggests that benefit segmentation itself has largely been ignored in research application. Therefore, there may be a need for the hotel industry to incorporate the dimension of benefits sought in addition to using other traditional variables to explore a more focused and meaningful segmentation strategy (Mills, Couturier and Snepenger, 1986, p. 23).

In Asia, Hong Kong is the hub for the regional offices of international hotels, and it is also home to the corporate offices of seven hotel chains that have built a worldwide reputation over the years (Lloyd, La Lopa and Braunlich 2000, p.406). It is estimated that in addition to the existing 35,420 hotel rooms, 9,875 more rooms will be added to the home inventory between 2000 to 2004 (Hong Kong Tourist Association). Given the increasingly

competitive hotel business environment, the adoption of professional marketing research in gaining actionable information becomes important. In combination with the above discussion, the availability of a practical means in explaining and forecasting traveler choice behavior as well as the formulation of an effective segmentation strategy appear to be indisputably valuable for any successful hotel marketers. The main purpose of this study is to use a rigorous approach towards predicting customers' hotel preferences and understanding market segments of international travelers visiting Hong Kong.

Another area of concern is related to the application of marketing technique from different perspectives. With the exception of the restaurant management study conducted by Palakurthi and Getty (1998), past hospitality and tourism research studies rarely measured the perception of products and services from the supply side perspective. In other words, they predominantly attempted to approach the above consumer behavioral prediction and segmentation problems from the perspective of the demand side (Wilensky and Buttle 1988; Carmichael 1996; Mattila 1999). While traditional marketing of this kind emphasis consumer-focused strategy (Kolter and McDougal 1983), it may argue that when one has insufficient knowledge on what one's competitors think (e.g. in terms of their perception on the attributes sought by travelers), one will formulate less effective strategy (e.g. supplier-focused strategy) to counter-act one's competitors. To advance one step further, having acquired the information from both the demand and supply sides, it is interesting to know whether they match or do not match, as well as if there is any underlying implications, if found to be mis-match.

In other words, the study of international travelers' hotel preferences is extended to the perspective of hotel managers, to examine their perceived hotel preferences of international

travelers. The match or mis-match of the hotel attributes sought revealed by international travelers compared to those provided by hotel managers will reveal a potential gap which will suggest important strategic planning and marketing policy implications for Hong Kong hoteliers.

Section 1.3: Theoretical Framework

1.3.1 Scope of the Study

This study focuses on consumer behavioral prediction and market segmentation in regards to the analysis of hotel attributes (benefits) sought by international travelers. The following are four aspects relevant to the major scope of this study. They are 1) the dimensions or variables to be investigated, 2) the models to be evaluated, 3) the main focused research areas, as well as 4) the sampling frame.

First, given the fact that the range and nature of hotel attributes are extremely diversified and complicated, this study will investigate a selective set of determinant attributes which will influence the consumer's purchase decision. While it is recognized that different dimensions other than hotel attributes (benefits) sought may impact or influence the hotel choice decision in varying degrees, this study cannot address all of them. Some respective domains have been chosen from the situational, geographic and behavioral dimensions for analysis. These include the *purpose of travel, country of residence* and *frequency of travel* of the international visitor.

Second, two selective multi-attribute preference models namely, conjoint model and self-explication model are chosen for comparative assessment. The former is a contemporary

approach incorporating a decompositional model which received some attention in recent hospitality and tourism research. It allows the attribute values of a product to be measured jointly. The latter is a compositional model in which all attribute values of a product are measured independently. Based on the comparative results, the model with higher predicting ability is considered to be superior and will then be used as an input model for facilitating different kind of analysis.

Third, the hotel attribute values derived from the input model will be used to conduct the "a priori" and "post hoc" segmentation analysis. Further, in order to demonstrate the practical application of applying hotel attributes in preference predictions, market shares simulation will also be carried out. The final stage of analysis will be to examine the mis-matches, if any, of the hotel attributes sought revealed by international travelers and those revealed by hotel managers.

This is an empirical research which is based on a convenience sample of 20 hotel marketing professionals and 300 international travelers collected in the year 2000 in Hong Kong — a world-renowned international tourist center with 1% GDP of the economy contributed by the hotel industry in 1999 (Chan and Lam 2000).

1.3.2 Objectives

The primary goals of this study focus on investigating the demand for and supply of hotel attributes as well as the tools used in modeling the hotel consumer choice preferences of the hotel guest room market in Hong Kong. The study investigates three main areas, a.) preferences prediction, b) market segmentation and, c) mis-matches investigation. Finally, recommendation of strategic marketing decisions will be given. The study also takes into

consideration the importance of various non-benefit dimensions (purpose of travel, country of residence and frequency of travel) which influence international travelers' hotel choice selection. More specifically, the objectives to be addressed are summarized as follows:

1. To identify the hotel attributes bundle that determines international travelers' choice selection of hotels in Hong Kong and to analyze the tradeoffs between these attributes

2. To examine whether the conjoint or self-explication model is more superior in predicting international travelers' hotel choice preferences

3. To identify and analyze the differences, if any, in the hotel attributes sought by three sub-groups: business and leisure travelers, short-haul and long-haul travelers as well as frequent and in-frequent travelers

4. To identify and analyze the differences, if any, in the hotel attributes revealed by travelers and those revealed by hotel managers

5. To recommend appropriate marketing policies and segmentation strategies for hoteliers based on the findings of the study

1.3.3 Hypotheses

Hypothesis 1

H_0: In the prediction of travelers' hotel choice, the conjoint model is not more accurate than the self-explication model

H_a: In the prediction of travelers' hotel choice, the conjoint model is more accurate than the self-explication model

Hypothesis 2

H_o: The hotel attributes sought by all international travelers are not different

H_a: The hotel attributes sought by all international travelers are different

However, when international travelers are decomposed into different categories, three separate sub-hypothesis may be postulated.

Sub-hypothesis:

(a)

H_o: Among the international travelers, the hotel attributes sought by business travelers are not different from the hotel attributes sought by leisure travelers

H_a: Among the international travelers, the hotel attributes sought by business travelers are different from the hotel attributes sought by leisure travelers

(b)

H_o: Among the international travelers, the hotel attributes sought by long-haul travelers are not different from the hotel attributes sought by short-haul travelers

H_a: Among the international travelers, the hotel attributes sought by long-haul travelers are different from the hotel attributes sought by short-haul travelers

(c)

H_o: Among the international travelers, the hotel attributes sought by frequent travelers are not different from the hotel attributes sought by infrequent travelers

H_a: Among the international travelers, the hotel attributes sought by frequent travelers are different from the hotel attributes sought by infrequent travelers

Hypothesis 3

H_o: The hotel attributes sought by international travelers are not different from the hotel attributes perceived to be sought by them as revealed by hotel managers

H_a: The hotel attributes sought by international travelers are different from the hotel attributes perceived to be sought by them as revealed by hotel managers

Section 1.4: Terms and Definitions

Conjoint Analysis

A statistical research technique that assesses different product attributes' relative weights simultaneously. See Section 3.4.

Hotel Attributes

Attributes that can be used to describe the products or services offered by a hotel. It can also be the features of the hotel that leads to be chosen by travelers among other alternatives

Part-worth

The utility estimated from conjoint modeling. It shows the value of an attribute used to define the product/service. This is the result or output of conjoint analysis. Part-worth is synonymous to utility and utility value throughout our research study

Preference Structure

A representation in terms of both the relative importance and worth of each attribute as well as the impact of individual levels within each attribute in affecting preference

Relative Importance of Attributes

A relative value of the attribute that describes its importance among other attributes

Self-Explication Model

A preference structure model in which the preference for a multiattribute alternative of an individual is computed as a weighed sum of the perceived attribute levels and the associated attribute importance. See Section 3.3

Section 1.5: Overview of Hong Kong as a Travel Destination

Hong Kong has been a British territory during 1841 to 1997. It is a cosmopolitan city covering a total area of 1074 square kilometers and located 70 miles southeast of Guangzhou, China. The territory consists of Hong Kong Island, Kowloon Peninsula and the New Territories, including 200 small outlying islands (Kelly 1986). It has almost 7 million people and around 98% of the population is ethnic Chinese.

Having limited natural resources, its economy greatly relies on its deep-water Victoria Harbour and strategic location to leverage an economic alliance with China (Kelly 1986; Taylor 1997). Hong Kong contributes to about one-third of China foreign exchange earnings annually. On the other hand, China is one of the major investors in Hong Kong (Shirk 1994). In the international perspective, it remains the most popular destination (Hong Kong Tourist Association 1990-1999a), as well as the inter-continental hub of Asia. With regards to its domestic strength, its infrastructure and facilities including its international airport, convention and exhibition facilities, hotels, city transport, telecommunications, as well as restaurants and shops are most world-class renowned.

There are a number of various aspects and attractions that different travelers have different

degree of interests in doing in Hong Kong. These included Chinese and International

cuisine dining, good/inexpensive shopping, night life, performance arts, natural scenery,

horse racing, sports, golf and hiking as well as Chinese, Western colonial heritage and

festivals, according to the International Market Research Study conducted by Hong Kong

Tourist Association in 1999.

Visitor Arrivals to Hong Kong (Figure. 1)
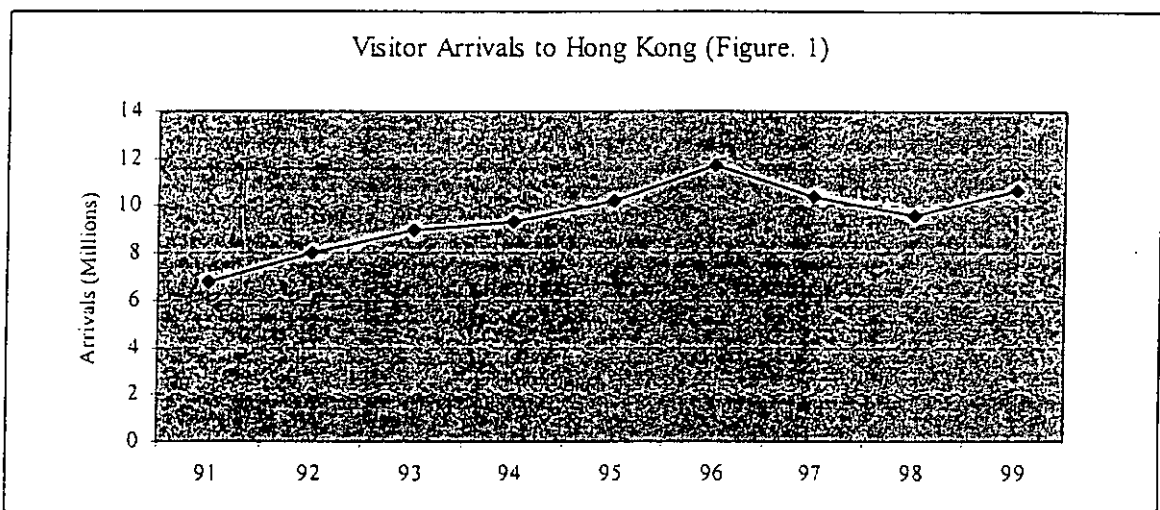
Source: Hong Kong Tourist Association

Being a popular commercial and leisure-seeking city, Hong Kong has recorded 10.7

million of international visitor arrivals in 1999, according to Hong Kong Tourist

Association (Figure 1). These visitors on average stayed in Hong Kong for 3.4 nights and

spent HK$4778 per visit. They have contributed a total tourism receipts of HK$53 billion

for the year. The Association, established in 1957 by the government as a semi-official

organization, has been keen in promoting Hong Kong as a global travel destination.

Combing its strategic business location and tourist attractions, the tourism industry now

accounts for about 5% of GDP. It is, in effect, a leading major foreign exchange earner in

Hong Kong. It's economic significance supports employment for around 10% of the local

labour force (Hong Kong Tourist Association 2000-2004).

1.5.1 The Post Hand-Over Decline and Asia Economic Turmoil

In Hong Kong, the hotel industry has enjoyed steady business growth for a number of years

as a result of the strong demand of hotel rooms. This strong demand was, as mentioned

above, due to Hong Kong's position as a financial hub and geographical gateway to China.

The hotel occupancy rates, in consistent to the number of visitor arrivals (Figure 1), was

well above 82% in 1992 and reached 88% in 1996 (Figure 2), ranking the highest in Asia

(Trends in the Hotel Industry 1996).
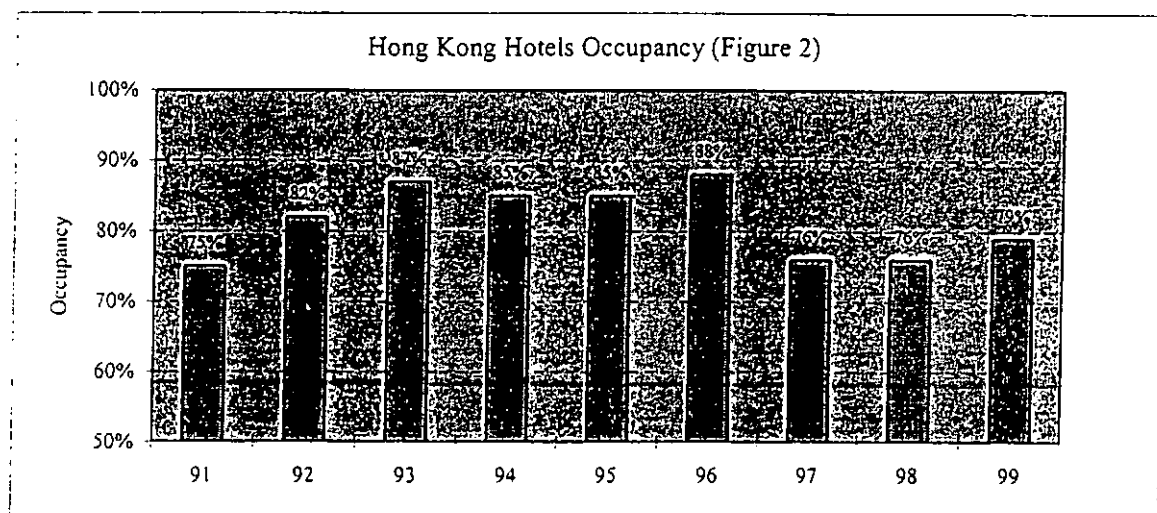
Source: Hong Kong Tourist Association

Unfortunately, the luster business environment had ended with the unexpected sharp

downturn of the 1997 hand-over year with only 76% occupancy rate recorded as shown in

Figure 2. An illustration is given by Figure 3 showing the yield performance trends (after

seasonal adjustment) of six competing hoteliers located in the same district with total

number of 4010 combined rooms which represented 12% of the total room inventory in

Hong Kong (Source: Hotel A). It was suspected that the downturn of the industry was due

to two reasons. One is the negative international perception of the re-administration of

Hong Kong by China which had feared overseas visitors to choose Hong Kong as a tourist

destination. The other could be due to the crash of the financial markets in Asia. The

latter, together with the pegging of the exchange rate of HK to US dollars, had made Hong

Kong to be most expensive to visit in the region.

Figure 3

(12-month moving average on Yield Performance)
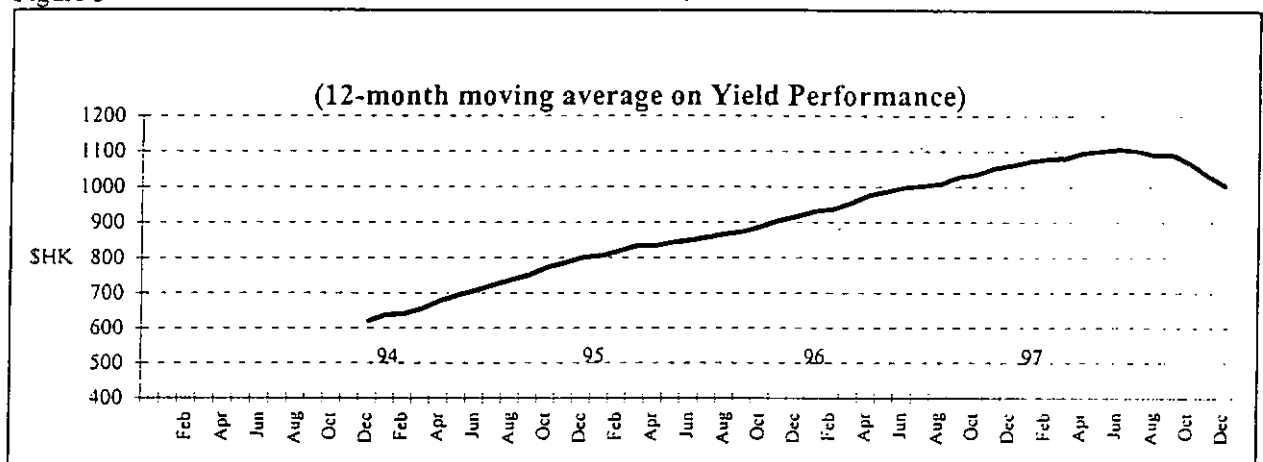
Source: Hotel A (The curve was compiled with all data supplied by Hotel A which is a High Tariff B hotel located in Hong Kong)

Thus short haul intra-Asian travelers might choose not to visit Hong Kong because of the

currency devaluation in their host countries. On the other hand, the devaluation has also

attracted long haul travelers from the west turned to visit alternative countries in the region

instead of Hong Kong. In the longer term, the profit shares in terms of occupancy and

yield received by these hoteliers will be further diluted because 9,000 more rooms will be

added to the total inventory in the coming 7 years, which is equivalent to a total increment

of 27%. Under the condition of without any significant sustainable positive factors,

hoteliers in 1997/1998 expected that the yield performance would continue to deteriorate.

In the lack-luster economic environment in 1998, the Hong Kong hotel managers had made various management responses. In order to be cost competitive, many hoteliers (Hyatt, Ritz Carlton and Regent) re-structured their organizations by reducing staffing expenses. Therefore, an average staff often had extended working hours or received extra workload without additional payment. Meanwhile, in the marketing point of view, price discounting was frequently used as a traditional means to restore occupancy drop, and as such various discounted room rates and promotional packages were offered to the marketplace. However, it may not be the only response in the long-term. In the past, international travelers probably might not have been able to afford to stay in their preferred hotels because of high tariffs. However, given the weak demand situation, they can exercise greater freedom in choosing their preferred hotels. The ability to make correct and cost effective responses to match their expectation for the ideal hotels then becomes critical. Therefore, apart from traditional price discounting, to understand how do customers make tradeoff of price against various hotel benefit offers should be valuable to the hotel managers. Together with to better understand various benefit demand segments in the market, it should be possible to identify a more positive strategic move. To the end of this, the investigation of hotel attributes then becomes indispensable and should be the key for any hoteliers to continue their presence in the industry.

1.5.2 Travel Segments of International Travelers Visiting Hong Kong

Long-Haul Versus Short-Haul Travel Segments

Hong Kong's top three markets are China (28.9%), Taiwan (18.7%) and Japan (9.6%), according to the Visitor Arrival Statistics (1999) released by Hong Kong Tourist

Association. Among the top ten visitor markets, seven are Asia/Pacific countries, including Singapore, the Philippines and South Korea. In fact, in the past ten years, the tourist arrival mix in Hong Kong has been shifting towards the short-haul market (with the exception of the Asia economic turmoil starting from mid-1997). There were about 54% short-haul visitors in 1987 whereas the proportion in 1999 has reached 76%, according to the Visitor Arrival Statistics, Hong Kong Tourist Association (1990-1999b).

It is interesting to think whether there is any significant difference in terms of the hotel attributes sought by the two segments. In fact, there has been a dramatic increase of intra-regional travel in the Asia Pacific region. In 1992, De Lapp, the Managing Director of Tourism Leisure Concepts, was quoted in Hoon (1992) as saying that close to 70% of travelers to Asia were coming from the region itself, and the predominance of Asian travelers within the region would influence the type of lodging supply. Hoon (1992) argued that travelers in the region were more content with mid-range, moderately priced hotels rather than the 5-star category. In the Horwath Beach-Oriented Destination Survey cited in *PATA Travel News* (1993), price was seen to be the dominant determinant for the intra-Asian market but not seen as important for most other markets. With the view of these argument, Bauer, Jago and Wise (1993) examined 65 regional accommodations in the supply side perspective to see whether the identified trends would affect the demand for hotel facilities in the Asia Pacific region but, however, hotel managers in the region perceived no significant difference in hotel attributes sought by the two segments.

In addition to the investigation of hotel attributes and benefit demand segments with respect to these hotel attributes, the above mentioned argument on the difference of lodging features or attributes sought by the short-haul and long-haul segments can be further

pursued in this study. While in the supply side perspective, Bauer, Jago and Wise (1993) found no significant difference for the two segments by examining hoteliers' perceptions in different Asian countries, this study will try to signify the difference, if any, again by using the domestic Hong Kong hoteliers as one test setting.

Segments of different Purposes of Visit

According to Hong Kong Tourist Association (1999), vacationers were the dominant segment (49%) while visitors traveling for business purposes accounted for 30% of total visitors in 1999. The rest were mainly those segments including visiting friends/relatives (11.8%) and en route to other destination (7.0%). The distribution for the past few years has been quite steady.

For the leisure market segment, shopping was one of the touristic activities accounting for 51% of the total visitor spending in 1999. Among all the shopping goods, garments, jewellery, leather goods, watches/clocks and souvenirs/handicrafts were the top 5 categories representing almost HK$20 billion or 77% of all shopping expenditure. In terms of tourists visiting places, Victoria Peak (44%), Repulse Bay (28%), Ocean Park (28%), some open-air market (20%) and Wong Tai Sin Temple (18%) were the top 5 popular visiting tourist attractions.

For the business travel segment, there were 253,000 attendees visiting 279 conventions and Exhibitions in 1999. In particular, 90,000 attendees visited Hong Kong for 1,112 corporate meetings (including incentive movements).

Frequency of Travel/Visit

One may expect that international travelers' frequency of travels differ from countries to countries and vary according to their purpose of visits. In terms of their visitation patterns to Hong Kong, Hong Kong Tourist Association (1999) revealed that 40% were first-time visitors, 14% were second-time visitors, 7% were third-time visitors, 4% were fourth-time visitors and 35% were fifth-time or more visitors. These international travelers indicated that they had stayed in Hong Kong for 3.4 days and over 97% of them revealed that they will or may visit Hong Kong again.

CHAPTER 2 — LITERATURE REVIEW

In the past, much effort have been undertaken by hospitality and tourism researchers to study the consumers' needs, wants and preferences in an attempt to provide accurate information for formulating strategic polices for the provision of better products and services. In the marketing research area, consumer behavioral research and segmentation studies have been the dominant areas (Bell and Morey 1997; Richard and Sundaram 1993; Kim 1996; Morgan 1993), and over half of the empirical studies in hospitality having been in this area (Bowen and Sparks 1998).

Hospitality and tourism scholars tended to focus on motivation or product attributes that are relevant to the buyers' decision making process. Such applications, when applied in the context of segmentation, are referred to as psychologically-based and attribute-based benefit segmentation respectively (Frochot and Morrison 2000, p.24). Meanwhile, researchers in the field also investigated more traditional consumer characteristics or descriptive dimensions (e.g. demographic, geographic and usage patterns) that might potentially influence the purchase decision (Becker-Suttle, Weaver and Crawford-Welch 1994; Toh, Hu and Withiam 1993). The use of different segmentation bases reflect the belief that one could not rely on one single variable to segment travel markets (Andereck and Caldwell 1994). In fact, in several major hospitality and tourism texts, the use of "multistage segmentation" (Middleton 1994 and Morrison 1996) or a "combination" (Kotler, Bowen and Makens 1998) of multiple variables rather than just one has been recommended.

With the above in mind, this literature review firstly seeks to discuss some of the hospitality and tourism consumer choice-influencing (non-benefit) and benefit-seeking dimensions that were investigated by previous researchers in behavioral and segmentation studies. Secondly, the emphasis will be focused on attribute-based dimensions and how these dimensions were utilized in relation to various traditional multivariate approaches. Thirdly, the merits of traditional multivariate approach will be highlighted and the advantage of a recent consumer-based conjoint model applied in the field will be introduced. Fourthly, a comprehensive list of past hospitality and tourism research efforts pertinent to the use the conjoint model will be given. Lastly, some under-investigated areas, which this research seeks to uncover, will also be highlighted.

Based on the above considerations, this literature review chapter is organized into eight sections, namely 1) Choice influencing (non-benefit) dimensions, 2) Origins and applications of benefit dimensions, 3) Product/service attributes bundle constituents, 4) Multivariate approaches, 5) Value of conjoint analysis in hospitality and tourism research, 6) Origins and applications of conjoint analysis, and 7) Past literature of conjoint analysis in hospitality and tourism.

Section 2.1: Choice Influencing (Non-Benefit) Dimensions

In hospitality and tourism literature, a large number of studies have examined how different dimensions influenced the choice-decision maker. These choice influences are multi-dimensional. While no attempt is made in this literature to summarize each of these dimensions, four of them have been identified as being widely used in research applications — demographic, geographic, behavioral characteristics and situational factors. They are briefly described as follows:

2.1.1 Demographic Dimensions

Demographic was one of the earliest dimension researchers interested in understanding hospitality and tourism consumers. Becker-Suttle, Weaver and Crawford-Welch (1994) conducted a comparative study between senior and non-senior citizens in full service restaurant dining. Lepisto and McCleary (1988) segmented the hotel markets based on age. Similarly, Ananth, DeMicco, Moreo and Howey (1992) investigated the lodging needs between mature and younger travelers. McCleary, Weaver and Lan (1994) reported the gender-based differences in business traveler lodging preferences. Of the multitude of skier segmentation variables considered by Carmichael (1996), age and sex being two of them. As part of the study conducted by Lewis (1984b), hotel guests' profiles in terms of age, sex and income were examined. These three variables were also employed to segment business hotel guests by Weaver, McCleary and Jinlin (1993). In addition to them, Yannopoulos and Rotenberg (1999) included education level, composition of household and marital status as descriptors of market segments.

2.1.2 Geographic Dimensions

Another early stream of segmentation studies in hospitality and tourism was based on geographic considerations. It was found that demand elasticity for international tourism varies by country-of-origin and country-of-destination (Crouch 1995). Goeldner (1989) segmented Colorado skiers in terms of in-state and out-of-state residence. Pasumarty, Dolinsky, Stinerock and Korol (1996) examined the involvement of children in the purchase of hospitality services among Brazil, India, Ireland and the U.S. The hotel market was differentiated between Korea and United States travelers (McCleary, Choi and Weaver 1998). Another study conducted by Formica and Uysal (1996) was focused on the benefits sought between residents and nonresidents in attending an international jazz festival in the Umbria region of Italy.

2.1.3 Behavioral Dimensions

Mills, Couturier and Snepenger (1986) segmented Texas snow skiers according to heavy or light expenditure on skiing. Stynes and Mahoney (1980) segmented the ski market in Michigan according to frequency of participation in skiing. As part of the study conducted by Weaver, McCleary and Jinlin (1993), the proportions of frequent versus infrequent business travelers across various investigating groups were compared. Furthermore, frequency of travel was also used as one studied descriptor of the near-home tourism market segment by Yannopoulous and Rotengberg (1999). McCleary and Weaver (1992) explored the business hotel market by examining the behavioral difference between FGP (frequent guest programme) and non-FGP members. Another study conducted by Toh, Hu and Withiam (1993) discriminated customers by using membership status of FGPs.

Similarly, membership status (members versus visitors) of licensed clubs was used as a discriminating factor by Bull and Alcock (1993).

2.1.4 Situational Dimensions

Situational factors was defined by Belk (1975) as a point in time and space; a momentary encounter with those elements of the total environment which are present at a particular point in time. Past research has indicated that situational factors do impact on purchase behavior (Belk 1975, Dickson 1982 and Mattson 1982). Koo, Tao and Yeung (1999) segmented the restaurant market by different meal purposes – family meal, business meal and tourists. Dube, Renaghan and Miller (1994) differentiated two groups of diners – business versus pleasure customers. Ferreira (1997) segmented the club member luncheon by non-special versus special lunch scenario. Morgan (1991) examined the influence of prior stay and past experience on lodging selection. Uysal, Gahan and Martin (1993) examined first-time and repeat festival visitors in South Carolina. Clow, Garretson and O'Bryan (1995) studied the leisure hotel market with three distinct buying situations – a traveler making a routine hotel choice, a dissatisfied customer selecting a new hotel and a customer in an unfamiliar environment with no experience with the local hotel offerings. Among all dimensions and variables considered by Carmichael (1996), length of trip planned was conceptualized as an intervening variable in the downhill ski market. Bryant and Morrison (1980) suggested segmenting international tourists based on purpose of the trip. Flognfeldt (1999) employed five different modes of travel as suggested by Campbell (1967) to investigate the tourist attraction visitation patterns in Norway.

Finally, other dimensions which influenced decision-making behavior in the past hospitality and tourism consumer behavioral and segmentation studies include activities (Lang, O'Leary and Morrison 1993; Hsieh, O'Leary and Morrison 1992), values (Luk, de Leon, Leong and Li 1993; Madrigal and Kahle 1994), involvement (Dimanche, Havitz and Howard 1993; Fesenmaier and Johnson 1989; Pasumarty, Dokinsky, Stinerock and Korol 1996; Josiam, Smeaton and Clements 1999), psychographic (Solomon and William 1977; Schewe and Calantone 1978; Hawes 1977; Abbey 1979; Gladwell 1990), and volume of expenditures (Pizam and Reichel 1979; Spotts and Mahoney 1991; Wicks and Schuett 1993), to name a few.

Section 2.2: Origins and the Applications of Benefit Dimensions

It was proposed by Haley (1968) that marketers should concentrate on the benefits sought by consumers since it was "benefits" that was the primary source of purchasing behavior and as such warranted being the variable upon which segmentation is based. His introduction of benefit segmentation in 1968 intended to develop a method that would provide a better understanding and prediction of future buying behavior than traditional market segmentation which used geographic-, demographic- or volume-based approaches. He criticized the latter approaches which relied on descriptive factors (or consumer characteristics) to predict behavior, and argued that the benefits approach which is based on casual factors can more accurately identify true market segments.

It was revealed by Haley (1971, 1985) that the identified benefits could be used directly as promotional messages since benefits provided deeper insights into consumption motivations. In other words, segmenting consumers by using benefits tended to improve

the communication with group(s) of consumers by capturing the prospects' attention and involving them in the advertisement. By using benefit segmentation, Haley estimated that the impact of advertising on product consumption could be increased by at least two- or three-fold.

Another advantage of benefit segmentation is its capacity of not only to classify consumers by benefits sought, but also to profile the resultant segments by using other descriptive or influencing dimensions as discussed in the previous section. His original study (Haley 1968) divided consumers into four segments (sensory, sociable, worrier and independent), and, thereafter, profiled these segments using socioeconomic, behavioral, brands favored, personality and lifestyle characteristics. A range of marketing strategies were then recommended for each segment in terms of copy directions and media choices, packaging and new product opportunities.

Since its introduction, the utilization of benefit dimensions was very well received. Apart from hospitality and tourism (Goodrich 1977; Lewis 1980; Calantone and Johar 1984; Shoemaker 1994), other examples of research areas included household cleaning products (Myers 1976), wine consumption (Dubow 1992), fund raising (Cermak, File and Prince 1994; Harvey 1990) and analysis of television news audiences (Wicks 1989), to name a few.

2.2.1 Psychologically Based Benefits

One reason for the extensive use of benefit segmentation in hospitality and tourism is its focus on travelers' motivation which has been regarded as critical in the decision making process (Cromption 1979; Lundberg 1971).

In the near-home tourism market in U.S., Yannopoulos and Rotenberg (1999) identified five benefit segments namely, Intangible Amenities, Active Materialists, Entertainment and Comfort, Cultured Materialists, and Entertainment and Shopping. Shoemarker (1994) segmented the U.S. travel market into Get Away/Family Travelers, Adventurous/Education Travelers and Gamblers/Fun Oriented Travelers. Formica and Uysal (1998) segmented the international cultural-historical event market in Italy into two distinct groups – Enthusiasts and Moderates. Uysal, Gahan and Martin (1993) identified Escape, Excitement/Thrills, Event Novelty, Socialization and Family Togetherness as the most common benefits seeking factors in attending a county festival in South Carolina. Cha, McCleary and Uysal (1995) identified Sports Seekers, Novelty Seekers and Family/Relaxation Seekers as major groups of Japanese tourism travelers in selecting a destination. Jurowski, Uysal and Noe (1993) segmented the site preferences of travelers visiting the U.S. Virgin Islands National Park into two groups – Consumptive/Tour type of travelers and Conservationist type of travelers. Carmichael (1996) incorporated the benefits sought within the ski experience to explore meaningful segmentation results. These benefits sought from skiing included Enjoyment of Outdoors, Thrilling of Skiing, Feeling of Accomplishment, Being with Friends, Being with Family, Meeting New People, Exercise of Keeping Fit, Competition and Escape from Routine. In a study conducted in Ottawa, Ahmed, Barber and d'Astous (1998) segmented the Canadian winter sun destination tourist market on the basis of product benefits sought. Six segments were identified namely, Entertainment, Active Sun and Fun, Culture Patron, Value for the Money, Sun and Comfort and Achievers.

2.2.2 Attribute Based Benefits

Lewis (1980) identified the restaurant attributes that should be stressed in advertising three different types of restaurants. These attributes included Food Quality, Menu Variety, Price, Atmosphere and Convenience Factors. Ferreira (1997) measured the impact of Price, Food Quality and Level of Service on the dining purchase decisions made by private club members. Dube, Renaghan and Miller (1994) measured the perception of a restaurant in terms of seven attributes and compared them with the preferred level in order to identify potential for strategic improvement. Knutson (1988) identified Room Conditions, Location, Service, Safety and Employees to be important factors that determine repeat visits made by frequent business travelers. McCleary and Weaver (1992) extracted 13 factors from 56 hotel attributes and studied the differences of these attributes sought by members and non-members of frequent guest programs. Toh, Hu and Withiam (1993) reported that Program membership, Agent's Recommendation, Overall Service and Readiness of Rooms were hotel attributes that differentiated members and non-members of frequent guest programs. Of various dimensions considered by Carmichael (1996), Variety of Runs, Snow Conditions, Value for Money, Staff Friendliness and Access to Home were conceptualized as attribute-based product benefits of ski resorts. In terms of organizational buying, Bell and Morey (1997) identified 8 significant important hotel attributes that influenced corporate travel managers while Schaorer, Illum and Margavio (1995) examined the relative importance of 25 hotel attributes to motorcoach tour operators.

Section 2.3: Product/Service Attributes Bundle Constituents

2.3.1 Diversity and Interrelationship of Product/Service Attributes

Hospitality and tourism products/services are diverse and interrelated. For instance, consider a hotel property which includes "price", "location", "health facilities", "room", "food & beverage outlets", "laundry services", "front desk services" and even "clinical services", to name a few of its products or services. Each of these products/services may include further sub- products/services. For example, "food & beverage outlets" may include "staff courtesy", "ambience", "food quality", "price" and "lighting"; or "front desk services" may consist of "check-in/out time", "staff courtesy", "cashier" and "concierge services". Moreover, some of them are closely interrelated. Two immediate examples follow — when "staff courtesy" is mentioned, one traveler may think of the staff courtesy in "food & beverage outlets" while another traveler may consider "front desk services"; or "price" can mean both the price of a "room" and the price of various "health facilities". Furthermore, it may not be easy to distinguish a product from a service. For instance, "toothpaste" is classified as "amenities" by industry practice but in fact it is a physical product and the provision of this product can itself considered as a service as well.

Hospitality and tourism products, as illustrated by its diversity of attributes, involve multiattributes (Lewis, Ding and Geschke 1991). These multiattributes are often conceptualized by researchers as a bundle of attributes sought by the travelers. They are also known as attributes bundle, as used by Bell and Morey (1987) or benefits bundle by Wilensky and Buttle (1988). Since marketing a product/service requires an understanding of the consumer's reaction to multiattribute alternatives or different attributes bundles, a

researcher's role should need to select an unique set of limited attributes to form an attributes bundle before proceeding to investigate the consumer's reaction. However, what is added to the difficulty in forming an attributes bundle is the interrelationship among attributes. It is, therefore, of fundamental importance to simplify these complex interrelated multiattribute data (Lewis 1994c), and be able to select an attributes bundle that is useful and appropriate to understand the hospitality and tourism consumer's behavior.

2.3.2 Nature of Product/Service Attributes

Past research indicated that there are three categories of attributes namely, "determinant attributes", "important attributes" and "salient attributes" (Alpert 1971; Lewis 1984b). For instance, a traveler usually has a set of criteria in mind when making a booking for a hotel before his trip. As such, "hotel tariff" may be his top priority while "environment" and "convenience for shopping" may rank second and third respectively. These are the "determinant attributes" that lead the customer choose one over another in his choice selection. A study conducted in Holiday Inn, London Heathrow revealed that "opportunities for relaxation", "physical attractiveness" and "value for money" are the top criteria in hotel selection (Wilensky and Buttle 1988). Another study conducted by Lewis (1984b) found that "location" was the determinant attributes for both business and leisure travelers with the degree of determinance varied among the six surveyed hotels. Toh, Hu and Withiam (1993) revealed that "convenience of location", "overall service" and "readiness of rooms" are significant attributes considered by frequent travelers in their hotel choices.

"Important attributes" are those attributes considered to be important in general sense but is simply expected. For instance, attributes such as "safety", "availability of shower" and "cleanliness of bedroom" are not of major concern in the hotel selection process. They are not determinant attributes. However, after check-in, the traveler may gain a low satisfaction for the hotel-stay when these expected attributes are found to be unavailable and so their unavailability will then become a negative determinant (Lewis 1984a) and hinder the traveler from making a repeat-visit. Using automobiles as an illustration, Lewis considered that "safety" to be an important attribute in the "intention-to-purchase" stage but not determinant attribute in the actual purchase decision. To stress safety as a promotional tool does not work because consumers do not see widely difference of cars with respect to safety. It is a "hygiene factor" and is simply expected for any cars.

There is another type of attributes called "salient attributes". It was indicated by Lewis (1984a) that these are immediately quoted products or services. For example, when a respondent is asked what is the first thing he/she thinks of in choosing a hotel F&B outlet, a popular reply was "quality of food". These salient attributes are simply "top of the mind" features but may not really be a determinant accounting for a hotel-stay. Furthermore, Lewis (1984a) claimed that salient attributes are attributes that are problematic in the decision process. They are not necessarily determinant in the choice selection process but salient beliefs are those that are easily activated and used in information processing. Thus, salient attributes can be profitably featured in advertising to get attentions.

Given the extremely complicated nature of different attributes, various marketing activities and strategies can be launched based on a thorough understanding on these attributes. In particular, understanding customers' perceptions on important attributes may help in

monitoring customer satisfaction and, thereby, increase the number of repeat business. Delivering advertising message on salient features is effective in reaching target audience. Of equal importance, understanding determinant attributes can help to design the basic optimal features of the product/service. The challenge to researchers is to find out the nature of these attributes before proceeding to generate the potential attributes.

Section 2.4: Multivariate Approaches

In applying any multivariate approaches to study consumer behavior, the identification of relevant attributes is the cornerstone of the research design and most researchers used qualitative means such as focus groups, in-depth interviews, literature review and even expert judgement to establish these attributes. Callan (1994) has established a framework to identify and narrow the amount of salient attributes to a manageable number. These results have formed a UK-specific hotel attributes basis framework, which, on one hand, can be used for future design of quantitative surveys and, on the other hand, are of value to grading organizations in appraising quality assessment. While Callan (1994) used a descriptive statistics method in narrowing down the hotel attributes, Lewis (1984c) isolated and combined the relevant attributes by using factor analysis. Factor analysis is a common multivariate technique in data-reduction. A number of hospitality and tourism researchers such as Dube, Renaghan and Miller (1994); Wilensky and Buttle (1988); McCleary and Weaver (1992); Ahmed, Barber, d'Astours (1998); Formica and Uysal (1998) have also employed the same method to reduce the amount of data for further application.

With the correct identification of the nature, definitions and number of product/service attributes to be analyzed, most researchers subsequently moved to apply more rigorous multivariate techniques or models in an attempt to understand the attribute significance, discover meaningful consumer groups and predict consumer behavior. These prominent techniques included ANOVA/MANOVA, discriminant analysis, cluster analysis, LISREL, as well as regression. In the remaining paragraphs of this section, some of the many of them are illustrated in relation to consumer behavioral and segmentation research.

A study concerning hotel frequent guest programs (FGPs) was conducted by McCleary and Weaver (1992). The researchers factor analyzed 15 attributes, and used MANOVA to compare the difference in the hotel patronage criteria used by members and non-members. Greathouse, Gregoire, Shanklin and Tripp (1996) explored what features travelers, who stop at visitor information centers, deemed as important in hotel accommodations. By factoring 46 attributes into four dimensions, and together with the use of ANOVA, the authors investigated how these dimensions differed among different demographic groupings. McCleary, Choi and Weaver (1998) applied MANOVA to determine if business travelers from Korea and United States differed in the importance placed on the criteria used to select hotels. Some of the many users of this technique were Weaver and Oh (1993); Jayanti and Ghosh (1996); Rivers, Toh and Alaoui (1991).

A discriminant analysis on frequent travelers was conducted to investigate how did a set of behavioral and attitudinal characteristics influence hotel choice decisions between members and non-members of hotel FGPs (Toh, Hu and Withiam 1993). Membership status was used as the dependent variable and the two sets of characteristics were used as independent variables. Lewis (1980) discriminated restaurant goers and non-goers under

different types of restaurant choices. Griffin, Shea and Weaver (1996) discriminated two types of hotels (mid-price versus luxury hotels) in terms of 56 hotel characteristics from the travelers' view. Lewis (1985) applied the same technique to 5 hotels and 16 previously developed attributes. Other applications of discriminant analysis included Quain, Render and Hermann (1991); Grazen and Olsen (1997); Oh and Jeong (1996).

Cluster analysis has also been widely used in hospitality and tourism research. This is a technique used to group subjects into different homogeneous segments/clusters in terms of different variables. In the same research conducted by Lewis (1985), respondents were divided into homogeneous clusters that differed from each other on the basis of opinions regarding which attributes were important when staying at a hotel. In this case, the identified clusters were benefit segments – the groups of hotel guests who sought a similar benefit bundle. The same technique was used by Wilensky and Buttle (1998) to find which hotels were most similar in terms of the perceived benefit bundles offered and therefore regarded as competitors. Other users of the technique included Muhlbacher and Botschen (1988); Carmichael (1996); Lieux, Weaver and McCleary (1994). A more comprehensive review and explanation of this technique applied in the context of hospitality and tourism was illustrated by Jurowski and Reich (2000).

LISREL is a causal modeling approach which can be applied to measure multiple dependence relationships among attributes. Richard & Sundaram (1993) used LISREL to investigate the impact of various tangible and intangible aspects of service quality on lodging choice intentions (i.e. probability of returning). Results showed that both tangible and intangible dimensions of service quality were found to be important in influencing choice intention decisions. By using the LISREL model, Clow, Garretson and Kurtz

(1994) empirically investigated the relationships among various cues hypothesized to impact hotel purchase decisions made by leisure travelers. Based on the empirical findings, different marketing and promotional strategies for retaining current customers and attracting new customers were suggested. Other hospitality and tourism literature pertaining to the application of LISREL were Gundersen, Heide and Olsson (1996); Getty and Thompson (1994); Garretson, Clow and Kurtz, (1995).

Lewis (1985) used 17 determinant attributes reduced (by factor analysis) from the 66 possible hotel attributes as predictor variables to predict customers' hotel choices in a multiple regression model. "Overall feeling", measured by the likelihood of making repeat-visit, was used as the dependent variable. Each coefficient value generated from the regression model represented its corresponding attribute's contribution to the overall feeling of the customers. Bell and Morey (1997) formulated the research problem by using a logistic regression model (binary choice) to investigate the effects of various benefits offered by the hotel on the likelihood of its being accepted by hotel corporate planners. This research targeted at corporate planners but the same approach can also be applied to individual travelers. It is similar to Lewis's regression in that both can measure the weight of a given attribute contributing to the choice decision. Other users of regression analysis in the hospitality and tourism areas included Morgan (1993); Knutson and Patton (1993); Oh and Jeong (1996), to name a few from the many.

Section 2.5: Value of Conjoint Analysis in Hospitality and Tourism Research

Since consumers' evaluation of hospitality product/service attributes often involve subjective ratings or categorical judgements that are non-metric in nature, these

characteristics may make many of the above conventional multivariate or quantitative methods difficult to apply (Lewis, Ding and Geschke 1991). Besides, the first step of these typical multivariate approaches usually involves direct asking of respondents on product's attribute importance, which are often resulted in highly skewed data. In some circumstances where the number of respondents is limited, these approaches may not be applicable. However, one more special multivariate technique has, in the last two decades, been added to the portfolio — Conjoint Analysis. This approach overcomes some of the above limitations.

The prime attraction of using conjoint analysis is that it asks the respondents to make choices between products/services defined by a pre-determined set of attributes in a way resembling what they normally do — by trading off features, one against the other. On the contrary, when asked which attributes they would like, most respondents will choose everything on the wish list. It is believed that a decision-maker does not consider each attribute of a product/service singly and independently when making a choice decision. Instead they consider the whole product/service in totality (Koo, Tao and Yeung 1999, p.242-243). Thus, the word "Conjoint", which refers to the idea that the relative values of attributes, considered jointly, can be measured when they might not be measurable if taken one at a time (Churchill 1987). Similar arguments were given by various hospitality and tourism academic authors (Renaghan and Kay 1987; Dube, Renaghan and Miller 1994). Furthermore, Lewis, Ding and Geschke (1991) concluded that conjoint analysis should be used more often in hospitality studies because hospitality products involve multi-attributes. Also, the conjoint model can turn non-metric judgmental data into metric outcome (Green and Rao 1971), even under circumstances where the number of respondents is limited.

With all the above positive reasons and evident research efforts in mind, conjoint analysis has become a popular tool in assessing product/service trade-off in hospitality and tourism research.

Section 2.6: Origins and Applications of Conjoint Analysis

The start of the conjoint measurement technique goes back to 1964 in the field of Psychology, with a seminar paper written by Luce, a mathematical psychologist and Tukey, a statistician (Luce and Tukey 1964). Since then, the technique has received much attention in the field and various publications followed with examples of Kruskal (1965) and Young (1969). The technique was further introduced to marketing research by Green and Rao (1971), with an intent to demonstrate quantifying judgmental data. The applications and development of conjoint were very well-received and mushroomed in marketing academic research journals. Some of the many earlier methodological and application development were Green, Carmone and Wind (1972); Johnson (1974); Cattin and Wittink (1976); Carmone, Green and Jain (1978), to name a few. Shortly thereafter, the technique was applied in the commercial world and this psychology-originated mathematical technique gained widespread acceptance as a method for evaluating consumer trade-offs on product and service characteristics.

In 1982, Cattin and Wittink published their paper on the commercial use of conjoint analysis. It showed that of their 17 surveyed research firms in United States in 1980, approximately 700 conjoint projects had been conducted prior to the end of the year. The survey indicated that the technique was employed in a wide spectrum of products and services marketing such as transportation, consumer goods, industrial goods, finance and

government, with application purposes ranging from new product/concept identification,

market segmentation and pricing to advertising and distribution. Some recent research are

in the areas of property (Levy 1995), credit card marketing (Kara, Kaynak and

Kucukemiroglu 1994), beef retailing (Hobbs 1996) and wine (Gil and Sanchez 1997), to

name a few. The development of conjoint continued to be popular and more recent

methodological development papers in marketing were published (Srinivasan and Park

1997; Allenby, Arora and Ginter 1995). Among them, Green and Srinivasan (1990); and

Green and Krieger (1991) are two must-to-read papers for any conjoint analysis learners.

Despite its earlier start in 1964, the conjoint technique had still been almost unheard in

hospitality and tourism for more than a decade. Until 1980, Marriott's consultants

launched a research-based product-development process to develop a new hotel

chains—Courtyard by Marriott (Interested individuals may refer to their academic

publication: Wind, Green, Shifflet and Scarbrough 1989). In 1982, the technique was

applied to design a product with optimal lodging features. Their success has subsequently

changed Marriott's approach in developing new lodging and related products nationally.

Besides, other hospitality industry applications were also evident. One example was a

conjoint analysis assignment for the Australian Federation of Travel Agents looking at the

Computerized Reservation System (CRS) issue for travel agents, a consultancy project

conducted by Horwath & Horwath Services Pty in 1989.

Section 2.7: Past Literature of Conjoint Analysis in Hospitality and Tourism

Hospitality and tourism research effort which have employed the conjoint model in the past

years may be organized into three main areas, namely 1) Restaurant and Club Management,

2) Hotel Management and 3) Choice of Destination, and are briefly discussed in the following in relation to consumer behavior and market segmentation.

2.7.1 Restaurant and Club Management

A conjoint research project conducted by Ferreira (1997) evaluated private club members' preferences on luncheon with respect to "price", "food quality" and "level of service". It was also to investigate whether a club member's preference would vary according to different dining situations — non-special versus special lunch. Research findings indicated that club members were more price sensitive in non-special lunch situation, such as a typical lunch with other club members, but were less price conscious and more food quality concerned when the lunch scenario was considered as an important event, such as business meetings. These results implied that management effort of a private club should be on pricing when the product is characterized by low level of importance/risk, and the focus should be on quality and service when the product is characterized by high level of importance/risk.

Becker-Suttle, Weaver and Crawford-Welch (1994) conducted a conjoint study to identify the differences of the benefits sought between senior and non-senior citizens in full service restaurant dining. Five restaurant attributes were generated by a focus group interview as well as borrowing from Lewis (1980)—a paper concerning benefit segmentation in restaurant dining. The conjoint model was applied to a medium sized community in Southwest Virginia. Fifty-two and fifty-three usable questionnaires for the senior and non-senior groups of respondents were finally returned. Results from the study indicated that both senior and non-senior market placed most important value on "nutritional quality".

Besides, the non-senior group valued "menu variety" and "portion size" more in comparison with the senior group. The most important implication was that conjoint analysis is a viable and effective technique in hospitality market segmentation.

Repeat-purchase intention was conceptualized as a possible post-purchase reaction upon the encountering of satisfied service attributes (Dube, Renaghan and Miller, 1994). In their study, seven restaurant service attributes identified from literature/commercial research and factor analysis were used as input attributes to the conjoint modeling. These service attributes were believed to be important to customer satisfaction and repeat purchase. In the study, subject diner respondents were asked their opinion of the likelihood of returning 16 hypothetical restaurants described by these seven attributes. As part of the research, the authors tried to differentiate two groups — business versus pleasure customers. It was to investigate whether the attributes trade-off process would be sensitive to the difference in this two purchase occasions. On the other hand, the approach for making strategic moves was illustrated by using a real restaurant called "Restaurado". This involved measuring the perceptions of Restaurado in terms of the seven attributes, transforming these measures to utility values, and compared them with the most preferred levels derived from the conjoint result to obtain an index called "potential for improvement". Lastly, it suggested restaurant managers use this information to strategically analyze the areas that, if improved, would have the largest impact on the overall customer satisfaction, with the consideration to costs and risks.

Bull and Alcock (1993) designed a conjoint study to examine the patrons' preferences of members and visitors of two large clubs: Twin Town Services Club and Twin Towns Services Sports Club, in New South Wales, Australia. The investigated attributes which

might contribute to patron preference formation were "the type of dining experience", "the type of lounge music or other free entertainment", "the physical lounge atmosphere", "bar style and price", "coin value of a poker machine bet" and "the type of charged-for entertainment". A useful result was the identification of utility contribution to patrons or patron segments for each of the above attributes. Lastly, the authors illustrated how to relate these utilities to their relevant cost of provision. Management implications on product planning, promotion and pricing could therefore be based on these cost-and-benefit analysis.

The hybrid conjoint approach — a variant of the conjoint methodological suite — was utilized by Palakurthi and Getty (1998). This is a combination of the traditional conjoint and self-explication approach which was developed by Green, Goldberg and Montemayor (1981) to streamline the data collection task when conducting a conjoint study. The authors used a convenient sample of Hotel and Restaurant Management major graduate and undergraduate students at the University of North Texas as a tested setting. All respondents had at least two years' working experience in the restaurant industry and held managerial jobs at the time of the interview. Ten most important criteria contributing to repeat business as identified by the Roper Starch Worldwide survey (1994) were adapted for conjoint modeling. Each of these individual service attribute utility contribution to the customer satisfaction was derived. "Promptness of service", "food quality" and "cleanliness" being the top three contributors. While most conjoint studies focused on the consumer side, this one has bought out a difference and the focus was on the side of the service providers — restaurant managers. The primary intent of the study was to illustrate the hybrid conjoint procedure in scaling service quality trade-offs among restaurant

managers that can be adapted to any restaurants operating under both domestic and international environment. As an important highlight, the authors would suggest expand the study by conducting similar conjoint experiment in the customer side, and then compare the conjoint results with those of the managers to determine any likely service quality gaps.

Koo, Tao and Yeung (1999) illustrated the usefulness of conjoint analysis in preferential segmentation of restaurant attributes. Nine studied attributes — "location", "type of food", "variety of food", "uniqueness", "car park", "price", "quality or taste of food", "decoration" and "service"— were generated by focus group discussions consisting of six members. All participants had plenty of dining and business entertainment experiences. By applying the conjoint model to 30 restaurant-goers, the researchers demonstrated the procedure in segmenting the restaurant market by different meal purposes (family meal, business meal and tourists) and employee groups (service sector, hotels and floating restaurant). While the study used Hong Kong restaurant-goers as one experimental setting, the research technique, as mentioned by the authors, can be generalized to restaurant choices in other countries.

2.7.2 Hotel Management

One of the most earliest conjoint-analysis approach papers in hotels was published by Renaghan and Kay (1987). "Main meeting-room size", "location of breakout rooms", "audiovisual capabilities", "climate & lighting control" and "price" were identified as five most important factors contributed to meeting planners' purchase decisions. When comparing the conjoint results to the direct ratings of these individual attributes, the

importance of "audiovisual capabilities" seemed to shrink while "location of breakout rooms" appeared to become significantly important. The authors believed that the conjoint results were more realistic since meeting planners' evaluated each facility as a "package" of features.

Sheraton Hotel and Towers in Stamford, Connecticut offered weekend packages in an attempt to secure better room revenue level in low demand days. However, the response was found to be minimal. A research was thus called for (Lewis, Ding and Geschke 1991) to investigate whether any hotel weekend packages would provide higher customer responses. Their ultimate objectives was to determine the determinant attributes in choosing a weekend package, and the weekend packages that best suited for meeting the needs of the Sheraton Stamford weekend package users. The authors, in consultation with management, had identified six attributes that might contribute to weekend package purchase. They are "type of room offered", "food and beverage attributes", "price", "amenities", "sightseeing" and "length of stay". Conjoint analysis showed that "price" and "food and beverage attributes" were two top determinants. Furthermore, by using simulation, the researchers manipulated the variable "price" and "type of room offered"; to predict how buying behavior changed with respect to the two variables. The authors suggested that Sheraton management should give their clientele a choice among different room types with food and beverage attributes only. Besides, the other focus should be on the price differences between a city room and an upgraded room. Finally, two weekend packages (one based on one-night stay and the other one was based on two-night stay) were proposed to the Sheraton management. By presenting this research, the authors hoped to stimulate interest in the powerful tool of conjoint for developing hospitality products.

Using an empirical setting of businesspeople based in Singapore, Mattila (1999) examined the trade-offs that luxury hotels' business travelers are willing to accept between functional physical environments and personalized services. "Fax equipment", "lobby" and "room layout" were conceptualized as environment dimensions while "customer requests", "personal service" and "personal recognition" were classified as service dimensions of a luxury-hotel stay. Results suggested that business travelers wanted luxury hotels to do their work efficiently rather than to provide personalized services and fancy surroundings.

Hu and Hiemstra (1996) investigated meeting planners' preferences of hotel selection by measuring the relative importance of meeting facility attributes involved in planners' decisions. The study on one side seeked to demonstrate the methodology and operation of the hybrid conjoint analysis, and on the other side was to identify the most preferred hotel profile as a reference base for further research in marketing applications. Results showed that of the six investigated attributes, "price range" was found to be most important but meeting planners, however, did not prefer the lowest price range. An interpretation was that lower price was perceived to associate with poor meeting services and thereby risking their job performance. As a consensus, corporate meeting planners viewed price as an important factor but productive meetings were the ultimate goal. The authors suggested that hotel researchers should examine more precisely on the price elasticity and evaluate which meeting package would potentially perform better.

2.7.3 Choice of Destination

Carmichael (1996) applied the conjoint technique to the choice selection of ski resorts in the downhill ski market in Victoria, British Columbia, Canada. Six key attributes of ski

resort attractiveness were: "variety of runs", "snow conditions", "value for money", "lift lines", "staff friendliness" and "access to home". In addition to examining the relative importance of these six benefits sought by skiers, information on social demographics, behavioral characteristics, skier motivation and intervening variable (length of trip planned) were also collected. With the use of "hybrid cluster" and "a prior" approach, these additional dimensions were combined with the six key attributes to explore different meaningful segmentation criteria for the ski market. As two segmentation findings, it indicated that for the short trip scenario, variety lovers were those young skiers possessing high skiing ability and strong need for accomplishment while for the long trip scenario, snow lovers were those who need to enjoy the thrill of skiing.

Muhlbacher and Botschen (1988) used open-ended unaided awareness questions to learn different competing holiday destinations of Tirol, Austria and thereafter measured Tirol's relative top-of-mind-shares among these identified target markets. Respondents were German- and English-speaking winter holiday makers in 28 different resorts spread over Tirol. Conjoint analysis was applied to examine the relative importance of five relevant holiday package features: "choice of destination", "type of accommodations", "number of nights at the destination" and "total cost per day of the trip". The authors then applied cluster analysis on the conjoint results together with the collected demographic information to reveal different consumer segments.

Multidestination travel was conceptualized as a constrained choice process, in which individuals evaluate travel alternatives as bundles of attributes (Lue, Crompton and Stewart, 1996). The research experiment was derived from a "base camp" spatial configuration, which is characterized by a distinctive primary destination that has a variety

of secondary destinations in reasonable proximity. A student sample from Texas A&M University was employed; the city of Austin, Texas, and its Hill Country area was selected as the destination area. By using conjoint analysis, each subject was given a set of six treatment scenarios composed of three pairs of multidestination trips, and was asked to indicate the likelihood of going on each trip. The three destination attributes used in the conjoint model were "tourism services and facilities", "settings for relaxation and sport" and "distance between the primary and secondary destination". Finally, it was evident that the preference for a destination was enhanced by inclusion of a combination of destinations. The implication, in other words, is that multiple destinations offer cumulative attractions within a single trip.

In reviewing the conjoint-related research in hospitality and tourism literature, solid empirical evidence in demonstrating the comparative superiority of the conjoint model has still not been recorded. One would therefore suspect that a less sophisticated statistical method maybe a well-sufficient and representative tool to approach the same problem. In fact, it was revealed by Leigh, MacKay and Summers (1984 p.456) that the ultimate goal of conjoint analysis of consumer preferences is to enable the marketer to predict behavior in the marketplace more accurately, while Green, Carroll and Goldberg (1981) indicated that the assessment of validity of the conjoint technique is one of the most important area of all for future research. It could then be easily deduced that some empirical assessments of conjoint validity in prediction are needed in the context of hospitality and tourism.

Of the 13 hospitality and tourism journal articles reviewed in this section, it is not difficult to notice that except Palakurthi and Getty (1998), the rest of them focused on consumers

(i.e. demand side). This is naturally expected since conjoint analysis is a consumer-based marketing modeling tool (Wind, Green, Shifflet and Scarbrough 1989). Therefore, more research efforts should be on extending the model to the side of service providers (i.e. supply side). Palakurthi and Getty (1998, p.18) suggested that his study can be extended in the consumer side, and further be expanded by comparing the two sides to determine the likely service quality gaps. It follows that it may likely to be a valuable goal in this study to compare the conjoint outcomes given by the demand side and supply side to determine the match and mis-match of hotel product features. Strategic recommendations based on the research results of this kind can then be given.

CHAPTER 3 — M E T H O D O L O G Y

This chapter is organized into seven sections. The first section describes the elements and two major uses of conjoint analysis — Behavioral Prediction and Market Segmentation. They form the basis of the marketing framework in relation to studying hotel attributes in this research. Section 3.2 is the overview of the methodology. This overview section outlines the major flow and the four core stages of analysis to be performed in this study. Section 3.3, 3.4 and 3.6 discuss the statistical modeling techniques that will be used throughout the four stages of analysis. Section 3.3 and 3.4 are the rationale of the self-explication and conjoint models respectively. The basic idea of each model is described with brief discussions on their individual advantages and disadvantages. In particular, the section on conjoint analysis explains the necessary steps required in conducting a conjoint study. In accomplishing each step, there are a variety of alternatives to determine, and the content involved to describe the details can be lengthy, we therefore limit our discussion to some most frequently referenced alternatives, with emphasis on the ultimate chosen alternative in each step. Section 3.6 describes the algorithms in examining the relative internal and predictive validity of the two models; to determine whether the conjoint approach is a better approach in portraying/predicting hotel preferences. It also describes the concept of choices and market shares simulations to be demonstrated in this research. Section 3.5 details the sampling process. It outlines the mechanism in sampling our surveyed respondents and the relevant measurements required to build the self-explication and conjoint models. Finally, Section 3.7 is the terminology section which states the operational definitions of some technical and statistical terms that we will use throughout the study.

Section 3.1: Elements and Major Uses of Conjoint Analysis

3.1.1 Elements of Conjoint Analysis

Theoretically, a product/service (e.g. hotel stay) can be described as a bundle of attributes. For instance, consider a product with three attributes, A, B and C as shown in Figure 4 adapted from Hu and Hiemstra (1996). Each attribute has its individual attribute levels; 3 levels (A1, A2, A3) for attribute A, 2 levels (B1, B2) for attribute B and 3 levels (C1, C2, C3) for attribute C. Figure 4 demonstrates the formation of one such product profile.
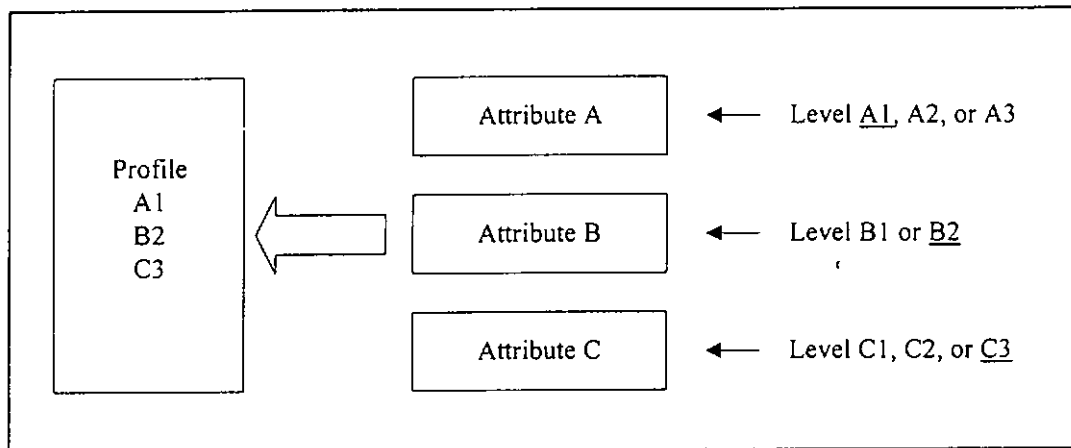
Figure 4. The Relationship Among a Profile, Attributes and Levels
(Adapted from Hu and Hiemstra, 1996)

Conjoint analysis assumes an individual has a preference or utility towards an attribute level. A fundamental task of conjoint analysis therefore is to estimate the utility value u_{ij} of each level j of each attribute i (in this case there are 8 levels and hence 8 utility values) as well as the relative importance of each attribute. They are all measured at the individual respondent level (disaggregate level) and so conjoint analysis is considered as a micro-based measurement technique. They are interpreted as the preference structure of an individual. Finally, the respondent's net utility or overall preference of the above

illustrated profile can be expressed as $U = u_{11} + u_{22} + u_{33}$ (according to the most commonly used model form) while the relative importance of the ith attribute is equal to

$$\frac{\underset{j}{Max}(u_{ij}) - \underset{j}{Min}(u_{ij})}{\sum_{i}(\underset{j}{Max}(u_{ij}) - \underset{j}{Min}(u_{ij}))} \times 100\%.$$

The set of individual utility values (or individual utilities or individual part-worths) and relative importance as such derived from the respondent are the characteristic output of the conjoint model. They form the most primitive analysis elements and are primarily used for facilitating trade-off analysis. Two widely adapted applications that make use of these individual utilities and relative importance are described as follows:

3.1.2 Behavioral Prediction - Choice & Market Shares Simulation
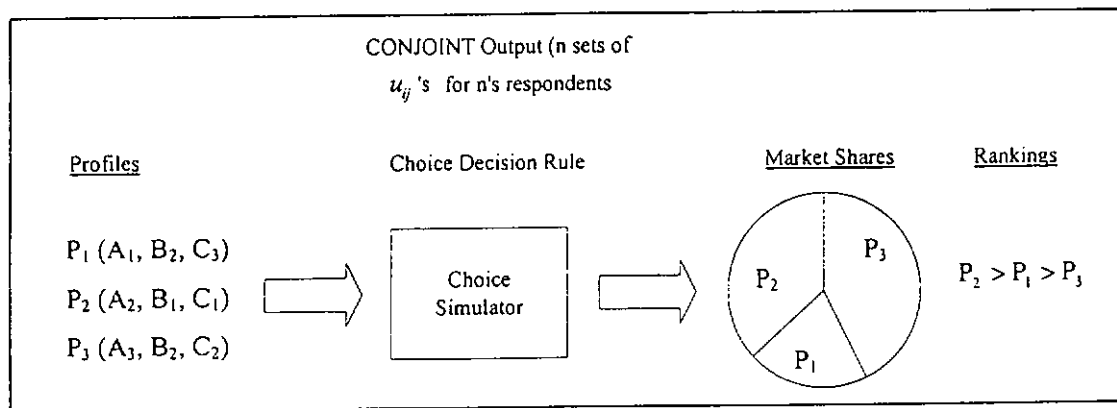
Figure 5. Choice and Market Shares Simulation

One reason accounting for the popularity of commercial conjoint application is the fact that the utility values derived can be entered into a choice simulator to predict the choice ranking or the market shares of competing products/services, as well as to answer "what-if" questions. Consider the previous illustrative example of the product with three

attributes. Also assume there are three competing products available in the marketplace with product profiles P_1 (A_1, B_2, C_3), P_2 (A_2, B_1, C_1) and P_3 (A_3, B_2, C_2) as shown in Figure 5.

For illustrative purposes, we use a simulated sample of n's respondents. Once all individual utility values u_{ij} 's for the n's respondents are derived by conjoint analysis, they can be put to the choice simulator. By using a commonly used *Maximum Utility Criteria* as a choice decision rule, a simulated respondent will pick up one out of the three profiles which gives him the highest net utility (this also means that the respondent can calculate the net utility of the other two profiles and ranks all of them). That is: the respondent will choose the profile with

$$\max \begin{Bmatrix} u_{11} + u_{22} + u_{33} \\ u_{12} + u_{21} + u_{31} \\ u_{13} + u_{22} + u_{32} \end{Bmatrix} \text{correponding to profile} \begin{Bmatrix} P_1 \\ P_2 \\ P_3 \end{Bmatrix}$$

and ranks them, for instance, in the order: $P_2 > P_1 > P_3$ if $U_2 > U_1 > U_3$. Depending on individual sets of utility values u_{ij}'s, different simulated respondents may choose (and rank) differently among the three profiles. As a result, a distribution of the ultimate chosen profiles (1st ranking) for the n's respondents can be obtained, and these are the simulated market shares among the three competing products. By comparing these market shares with the actual market shares, if possible, the accuracy of the model can be validated.

We may also change some attribute levels of, for instance, one profile (i.e. product modification), and see how does its simulated share be affected. Or, upon adding one more different profile (i.e. new product launch) to the choice simulator, we can predict the

share that it can capture as well as to investigate the effect of cannibalization on the three existing products. From a marketing point of view, for those simulated respondents choosing the new brand, we can further investigate what are the similarities that they exhibit in terms of their background characteristics. This is an important analysis trend stressed by the two conjoint software developers (Herman 1988 and Johnson 1987). Thereafter, appropriate marketing strategies can therefore be launched to reach this consumer group.

A simple market shares simulation will be demonstrated in this study. More importantly, as a major scope of our study, similar choice simulation logic will be applied to evaluate the comparative predicting ability of the conjoint model. The detailed mechanism is illustrated in Section 3.6 of this chapter. On the other hand, another aspect of this study focuses on market segmentation.

3.1.3 Market Segmentation

Since the pioneering article published by Smith (1956), market segmentation has become a dominant concept in marketing. Faced with heterogeneous markets, a firm adopting a sound market segmentation strategy usually can increase profitability (Wind 1978, p.317). While there are many analytical techniques and methodological development in this area in the marketing literature (Green and Krieger 1991; Green and Carmone 1977; Green, Carmone and Wachspress 1976), two designs originally suggested by Green (1977) are typical in research on hospitality and tourism segmentation (Becker-Suttle, Weaver and Crawford-Welch 1994; Carmichael 1996).

One of them is the "*a priori*" segmentation design. The researcher first chooses some segmentation variables of interest (e.g. buyer's gender, age, loyalty, usage pattern) and then classifies buyers according to that designation. Difference of attribute utilities or relative importance between investigating segments are then compared and examined by suitable statistical testing procedures. In this approach, the number of segments and their relative sizes are known in advance. Armed with this information, and together with the main attributes sought in each studied segment, marketers can choose which segment(s) to target subject to the available resources of his/her organization. This study has used *frequency of travel, purpose of travel* and *country of residence* as predetermined segmentation variables.

The other approach is the clustering-based or "*post hoc*" segmentation design, in which segments are determined on the basis of clustering respondents' sets of relevant variables. In the context of conjoint application, it is common to cluster respondents' sets of utilities u_{ij}'s to form various groups whose average within-group similarity is high and between-group similarity is low. In order words, each segment formed represents a homogenous benefit segment in which consumers express similar product/service preference structure. The clustering-based approach has been used in a number of tourism segmentation studies (Mazanek 1984, Davis and Sternquist 1987). As stressed by Herman 1988 and Johnson 1987, one common trend has been to cluster respondents' utilities as a type of "*post hoc*" segmentation, followed by a cross-classification of the resulting segments with respondents' background characteristics. This approach is similar to the "*a priori*" segmentation design in that the number of segments and their relative sizes can also be estimated, and hence help marketers identify the right targeted segment(s).

Both the "*a priori*" and "*post hoc*" market segmentation analysis will be conducted to explore suitable segmentation criteria in the demand side perspective.

Section 3.2: Overview of the Methodology

This research was a marketing study using a portfolio of various statistical tools. "Conjoint Analysis" is the main technique employed in this study. As mentioned in the previous section, a set of utility values and relative importance derived from this technique were used as inputs in different statistical procedures (Hair, Anderson, Tatham and Black 1995). All these aimed at testing the hypotheses which are raised in Chapter 1. Another model called "Self-explication" approach was used as a reference model to examine the presumed superiority of the conjoint model. We have applied the two models both in the supply and demand side perspectives. Figure 6 is a schematic diagram illustrating the main flow of the research process.

Five hotel attributes were considered influencing hotel choice decision. They were identified via three major channels. Firstly, a thorough content review of past academic literature was carried out to identify potential attributes. Secondly, informal interviews with hotel industry practitioners (mainly hotel sales managers) were conducted. Lastly, the author examined the sales and marketing databases of a hotel; to find out any qualitative information relevant to hotel selection (This kind of information are usually captured by the hotel property management systems showing the opinion given by hotel bookers). Combining all inputs gathered from the three channels, five hotel attributes and the levels associated with each attribute were finalized as shown by Table 1.

Table 1: Hotel Attributes and Levels

Attributes	Attribute Levels
Room type	No Harbour View Room With Harbour View Room
Room rate	Below HK$800 HK$800 - HK$1400 Above HK$1400
Location (from Office/ Tourist Destination)	Need Transportation Within Walking Distance
Brand	Unfamiliar Brand Name Familiar Brand Name
Star-rating	3 Star 4 Star 5 Star

Interviews were conducted with hotel managers (mainly directors of sales/marketing) and international travelers with question formats specifically designed for the application of the self-explication and conjoint methodologies. Respondents were requested to rank two different sets of hypothetical hotel profiles. One set of profiles was for the purpose of calibrating the conjoint model while the other set was treated as holdout sample for validity study or choice simulation (see Section 3.6). In interviewing the travelers, various background information (such as country of residence, purpose of travel, occasion of travel, etc) was collected. At the end of the sampling process, two separate databases (supply side and demand side) each detailing individual attribute preference structures (and background characteristics for the demand side) were compiled for the following four core stages of statistical analysis.
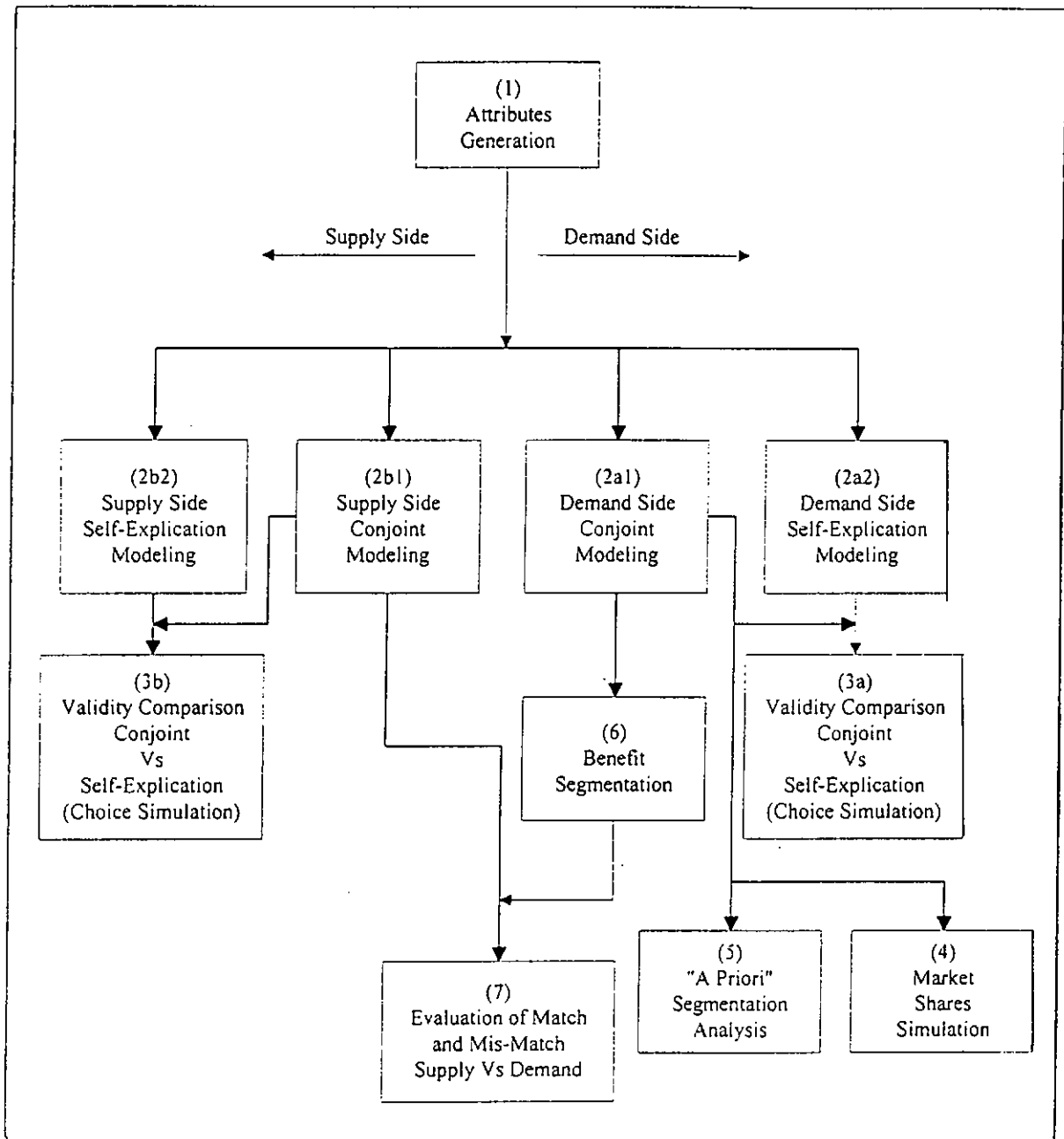
Figure 6. Outline of the Methodology

3.2.1 Stage 1 - Comparing the Relative Superiority of the Conjoint and Self-Explication Models (Choice Simulation)

For the demand side, in addition to the individual utility values derived by conjoint modeling in (2a1), individual respondents' self-explicated weights were also obtained in (2a2) through the same interview. These are the outputs or results of the conjoint and self-explication models respectively. This stage of analysis (3a) on one hand was to examine

the relative goodness of fit (internal validity) of the two different models; to see whether the conjoint method (decompositional approach) was a presumed better means in portraying hotel preferences than the self-explication model (compositional approach). On the other hand, the relative predictive validity for the two different models was also assessed; to see which of the conjoint or self-explication model was more superior in predicting hotel preferences. Both internal and predictive validity were assessed with the use of the *Percentage of Correct Choice Prediction* and *Spearman Rank Order Correlation*. The same internal and predictive validity studies were repeated for the supply side as shown in (3b). In these validity comparisons, the concept of choice simulation was also illustrated. More details can be found in Section 3.6.

3.2.2 Stage 2 – Market Shares Simulation

A series of market shares simulation was illustrated for the demand side using the output (part-worths for the conjoint model or self-explicated weights for the self-explication model) derived from the most superior model as identified from Stage 1. These simulations also involved using some arbitrarily chosen hypothetical hotel profiles.

3.2.3 Stage 3 - The "A Priori" and "Post Hoc" Segmentation Analysis

On the demand side, an "*a priori*" segmentation analysis (5) was conducted to discover the variation of consumer preferences by using 2-sample t-tests on various sets of hotel attributes relative importance generated in (2a1). The predetermined segments under examination included business versus leisure travelers, short-haul versus long-haul travelers and frequent versus infrequent travelers. Furthermore, a "post hoc" segmentation (benefit segmentation) was also carried out. Firstly, cluster analysis (Muhlbacher and

Botschen 1988) based on Ward's hierarchical clustering technique was applied in (6) with the use of the utility values generated in the demand side in (2a1). The intent of this was to form homogeneous (based on similarities distance among cases) clusters in terms of the hotel benefit-bundles sought by travelers. Each cluster thus formed was a benefit segment. Lastly, after the clustering procedure, each cluster was then profiled based on their background travel characteristics – *purpose of travel*, *country of residence* and *frequency of travel*. The segmentation results derived from these two different approaches were finally examined and used to explore meaningful segmentation criteria.

3.2.4 Stage 4 – Evaluation of the Mis-Match between Demand for and Supply of Hotel Attributes

Stage 4 (refer to 7 of Figure 6) encompassed three types of analysis:

Firstly, the aggregate and disaggregate attribute values (relative importance) between the demand and supply sides were compared directly (with the use of 2-sample t-test for the disaggregate comparison) across all five studied attributes.

Secondly, by using the market shares simulation results obtained in Stage 2 as above, and together with further application of simulation applied in the supply side, the mis-match of simulated market shares was to be evaluated.

Lastly, with the perceived preference structures of the 20 hotel managers as identified by conjoint modeling in (2b1), and based on the minimum Euclidean Distance criteria (a simple and popular criteria to be used in classification analysis), each of these 20 observations was classified into one of the clustered benefit segments as determined in (6). In this analysis, it was to identify the group(s) of travelers whose actual demand set of

hotel attributes are the same as those perceived to be sought by them from the hotel managers' perspectives. This is an alternative way to evaluate the match or mis-match of the supply and demand attributes. An unbalanced allocation of the 20 observations with respect to the distribution of the demand benefit segments' sizes would signify the mis-match, and vice versa for the match.

Section 3.3: Rationale of the Self-Explication Model

The traditional compositional approach computes the overall preference for a multiattribute alternative as a weighted sum of the perceived attribute levels and the associated attribute importance. Our study was a two-stage rating approach. Each respondent was firstly required to self-state the levels of each of the five attributes on a 5-point desirability scale. For each attribute, a weight of "5" was assigned to the most desirable level and the respondent was then asked to rate the remaining levels in terms of their desirability in relation to the most desirable level. Ties were permitted. Secondly, after all five sets of attribute levels had been evaluated, the respondent was then required to rate the importance of each of the five attributes on a 7-point scale, ranging from least important (rated 1) to most important (rated 7). Attribute weights could be obtained by multiplying the attribute level desirability scores with the attribute importance ratings. The self-explicated attribute weights were then combined to determine the overall preference for any alternatives with similar attributes structure. This is the basic idea of the self-explication approach, although the practical implementation varied across academic researchers (Huber 1974; Srinivasan 1988; Wright and Kriewall 1980). Our model may be represented as:

$$Y_m = \sum_{i=1}^{5} w_i v_{ik}^m \qquad (1)$$

where Y_m is the overall preference of the mth 5-attribute alternative, v_{ik}^m is the self-explicated desirability score for attribute level k (k = 1 to l, l = 2 or 3) of attribute i (i = 1, 2, ...5) corresponding to the mth alternative, and w_i is the importance rating of attribute i. Model (1) is a compositional self-explication model in the sense that each Y_m is "composed" rather than directly given by the respondent, and each set of v_{ik}'s and w_i's of the respondent is self-stated rather than estimated by the model.

The self-explication approach is easy and simple to use. The respondent is questioned separately on each attribute and so it places less cognitive strain on the data-supplying capabilities of respondents, especially when the study involves large number of alternatives, attributes and attribute levels (Akaah and Korgaonkar 1983). It was also argued that this approach might be sufficient, perhaps even performs better than conjoint, especially when the attributes are dichotomous (e.g. features which are either present or absent) in nature, for attributes with uncorrelated values, and for products and attributes with which the respondents are very familiar (Leigh, MacKay, and Summers 1984). However, it is not without its shortcomings.

One potential problem is that biases could result from direct questioning of respondents on the importance of socially sensitive factors, such as one of the studied factors "salary" as reviewed by Montgomery (1986). His empirical research used MBA students choosing among job offers as one setting of the conjoint application. Results indicated that his sampled MBA students ranked "salary" as the sixth most important factor whereas the

outcome derived from conjoint model showed that salary was the number one consideration.

Besides, Green and Srinivasan (1990, p.9) argued that it is highly ambiguous for the respondent to indicate the importance of an attribute because he/she may answer on the basis of his or her own range of experience over existing products rather than on the experimentally defined range of the attribute levels.

Another problem is its lack of realism and generality in comparison with the conjoint approach. The self-explication approach obtains no respondent evaluation of purchase likelihood since no full profiles (see Figure 4 of Section 3.1) are seen and provided to the respondent. This can be a serious limitation in the context of developing new products or services in which the researcher conducts simulation to obtain the average purchase likelihoods under various tested product formulations.

In the past, empirical studies in marketing research literature found mixed results when comparing predictive accuracy of the self-explication and conjoint approach (Green 1984; Wright and Kriewall 1980; Leigh, MacKay and Summers 1984). In the context of hospitality literature, although some efforts have been done to put forward conjoint analysis as a viable statistical technique in modeling consumer preferences among mult-attribute alternatives (Dube, Renaghan and Miller 1994; Becker-Suttle, Weaver and Crawford-Welch 1994; Renaghan and Kay 1987), its predicting superiority has, however, not been well demonstrated. By using the self-explication approach as a reference model, one purpose of our study is to report the results of such an assessment with the use of "hotel stay" as a hospitality product class.

Section 3.4: Rationale of the Conjoint Model

This is a unique consumer-based marketing technique which has been recommended as the best alternative in multivariate analysis for examining consumer *choice selection*—a process which involves trade-off judgement of multiattribute products (Green & Srinivasan, 1978, 1990). It's rationale rests on the theory that consumers evaluate the overall value or net utility of a product by summing up the separate utility provided by each product attribute. This model is different from other methods in which the attribute values of a product are measured jointly (hence the name "conjoint"), and presumably are more accurate than if they were measured one at a time. In the past, most conjoint advocates argued that many methods failed to portray the full complexity of the choice decision because they are too simplistic which easily lead respondents to give unreal or "top-of-the-mind" answers. However, conjoint measurement requires basic data that are not consumers' direct answers about purchase intentions, but are answers to questions with specific designed formats. A typical conjoint study often requires the respondent to give a rating or ranking on the overall preference of a product but can then decompose the preference to determine the value (utility) for each product attribute. As a result, we can measure the preference structure of each consumer or a particular consumer group in terms of various product attribute utilities and attribute relative importance.

One common difficulty encountered by a less experienced conjoint practitioner is the complicated mechanism of the conjoint approach itself. While typical multivariate models such as multiple regression or cluster analysis only require straight forward standard input data to obtain output statistics through some sort of preprogrammed statistical routines (e.g. SAS and SPSS), the conjoint model is not a single formulation but involves several

steps (both in statistical and non-statistical aspects) and several decisions along the way to obtain the outputs. Probably due to its methodological complexity, these steps are often neither exhaustively described in journal articles nor in text books. Since it is not appropriate to provide a complete picture of the conjoint methodology, our discussion will focus on the context related to our ultimate chosen alternative in each conjoint step. These chosen alternatives in this study are all underlined as shown in Figure 7. They represent the most commonly employed combinations as reflected by hospitality literature (Lewis, Ding and Geschke 1991; Carmichael 1996). To advance one step further, some important highlights will also be given in each step so as to enrich the depth of conjoint understanding of the readers. Figure 7 gives a brief outline on these methodological steps involved in developing a conjoint study. They are summarized in the following:

3.4.1 Step 1 - Attributes Identification & Attribute Levels Determination

The first step is the most critical step in developing a conjoint study, the cornerstone of the research design. It should be aware that there is a danger that it can sometimes be given second place to the technical aspects of conjoint analysis, whereas the opposite should be the case (Claxton 1987, p.519). A survey of 698 conjoint studies (Cattin and Wittink 1982) revealed that the majority of people used expert judgement to identify the relevant attributes, followed by group interview. In line with this, literature content analysis and review are the widely used channels. In addition to the above, exploration on the marketing databases of a hotel had also been made in the present study. No matter which means to be employed, it is important that the chosen studied attributes must be relevant to the choice consideration accounting for the product/service purchase. Besides, all attributes have to be easily communicated to respondents with each attribute representing

only one distinct single concept. Moreover, attention should be paid to distinguish between important versus determinant attributes since some attributes are important but do not enter the decision maker's selection process (Lewis 1984a, p.30), as they are simply expected.

A sufficient number of relevant attributes should be carefully determined to represent the true preference structure underlying actual choices. At the same time we should minimize the problem of information overload because each respondent has limited ability in processing certain amount of information. When faced with too many attributes, respondents may resort to simplifying tactics and the resulting part-worth estimates may distort their true preference structures (Wright 1975). As a compromise, a typical conjoint study usually works well when it involves no more than six attributes. The same study conducted by Cattin and Wittink (1982) also showed that the median number of attributes actually used was six or seven. For instance, a study conducted by Dube, Renaghan and Miller (1994) initially considered thirty-five attributes in measuring dinners' restaurant preferences. These thirty-five attributes were factor analyzed and the ultimate number of attributes entered to the conjoint model was finally narrowed down to seven. The employment of factor analysis can be considered as a supporting tool to be used in this somewhat intuitive nature of the conjoint attribute identification process.

```
┌─────────────────┐
│  (1) Attribute  │        (1)   - Literature review / Content analysis
│  Identification │                  / Expert Judgement / Interviews
│ & Attribute Levels│                - Factor analysis
│  Determination  │
└────────┬────────┘
         │
         ▼
┌─────────────────┐
│ (2) Basic Model │        (2)   - Additive / Interactive / Mixed Model
│  Specification  │                - Linear / Quadratic / Separate Part-worth relationship
└────────┬────────┘
         │
         ▼
┌─────────────────┐
│ (3) Data Collection,│    (3)   - Tradeoff Matrix / Full Profile
│ Stimuli Constuction │            - Full Factorial / Fractional Factorial Design
│ and Measurement │                - Rank Order / Rating
│     Method      │
└────────┬────────┘
         │
         ▼
┌─────────────────┐
│  (4) Stimuli    │        (4)   - Verbal Descriptions / Profile Cards
│  Presentation   │                / Pictorial / Interactive Computer Display
└────────┬────────┘
         │
         ▼
┌─────────────────┐        (5)   - MONANOVA / LINMAP / SPSS / Conjoint Analyzer
│  (5) Parameter  │
│   Estimation    │
└─────────────────┘

         Remark: all underlined alternatives were chosen in this study
```

Figure 7 Outline of Conjoint Analysis

For each attribute generated, careful attention should also be paid to the number and range of levels to be used. When more levels are included for an attribute, the respondent may be tempted to pay extra attention to the attribute and thereby increase its apparent importance (Wittink, Krishnamurthi and Reibstein 1990). Therefore, to use a balanced number of levels for each attribute is more preferable. It is also recommended that the

attribute ranges should be made larger than reality (which can help to improve the accuracy of the parameter estimates), but not so large as to be unbelievable in practice (Green and Srinivasan 1978, p.109). Based on the above considerations, the listing of attributes and their corresponding attribute levels that we have employed are presented in Table 1 of Section 3.2 of this chapter.

3.4.2 Step 2 - Basic Model Specification

The researcher at this step has to make two decisions. The first one is to decide which composition rule to be used. Additive Model — the model that measures main effect only and bases on adding up each individual attribute value (utility value) to obtain the overall value (net utility) — is the most simple and generally employed composition rule. This has already been illustrated in Section 3.1. Another less common rule, which is similar to the additive one but allows the existence of interacting effect among attributes, is the Interactive Model. This is an alternative model whose certain combinations of attribute part-worths can be greater or smaller than the overall value. The issue of whether to use the interactive model depends on whether the gained predictive power of including the interaction term can offset the deterioration of statistical efficiency caused by additional parameters estimated. Some empirical evidence did show that the model with interaction terms could lead to a reduction in the resultant predictive accuracy (Green 1984, Table 2). The Bretton-Clark software designers also felt from the applications perspective that interactions could "generate more heat than light" (Carmone and Shaffer 1995, p.114) and so did not include this complex design in their suite of conjoint software. When modeling hospitality consumer preferences, while more further empirical efforts should be replicated with respect to the choice of the two model forms (which is beyond the scope of this

research), our present study has, for simplicity, employed the commonly used Additive Model.

Another decision need to be made at this step is to select the type of the part-worth relationship. There are three possible alternatives to choose from, ranging from the most restrictive (that requires less number of parameters) to the least restrictive one (that requires more number of parameters). They are linear, quadratic and separate part-worth, in the increasing order of number of required parameters. The separate part-worth relationship offers more flexibility and are most widely accepted because of its higher interpretability. Another reason is due to the categorical nature of some attributes (e.g. room type and brand name), which forces researchers to use the part-worth relationship. The choice of the relationship does not affect how the stimuli are created (the following step) and the researcher can, although this is rarely the case, specify different attributes with different relationships (Mixed Model) in one conjoint study. The least restrictive one (separate part-worth) was employed in this study across all attributes.

In our study, this additive model with separate attribute part-worth relationship is represented by:

$$U_m = \sum_{i=1}^{s} u_{ik}^m \qquad (2)$$

where U_m is the overall preference of the mth 5-attribute alternative, and u_{ik}^m is the part-worth of attribute level k (k = 1 to l, l = 2 or 3) of attribute i (i = 1, 2, ...5) corresponding to the mth alternative. Model (2) is similar to model (1) as shown in Section 3.3 except without the importance rating, w_i. Furthermore, model (2) is a decompositional model in

the sense that the dependent variable U_m is directly given by the respondent and each u_{ik}^m

is estimated by decomposing U_m , rather than self-stated by individuals.

3.4.3 Step 3 - Data Collection, Stimuli Construction and Measurement Method

In terms of data collection, conjoint study is largely based on two major methods. They

are the trade-off matrix method (or two-factor-at-a-time) and full-profile approach (or

concept evaluation). The first one involves the use of trade-off matrix which requires the

respondent to evaluate TWO attributes one at a time by giving preferences to all

combinations of levels. If five attributes are involved with three levels each, ten ($_5C_2$)

trade-off matrics can be constructed. And for each matrix, the respondent is asked to rank

nine (3×3) pairs of attribute levels from most preferred to least preferred. This method is

simple to apply and place less information loading on respondents. However, it is quite

time consuming to complete 10 matrics with 9 cells each. It requires ninety (9×10)

judgements. Although some balanced incomplete block designs (Green 1974) can be used

to reduce the number of these stimuli (2-way tables), the number of required judgements is

still considerably large, especially when more attributes and attribute levels are involved.

Besides, by dividing the overall attribute set to two-at-a-time, no full profiles are seen and

so there is a sacrifice of realism. Moreover, the trade-off matrix cannot reflect a clear

picture when the attributes are correlated.

For the full-profile approach, the respondent is asked to indicate his/her preferences on a

listing (can be complete or subset) of hypothetical stimuli (profiles) with complete

descriptions among all studied attributes. Figure 4 in Section 3.1 describes the elements

relevant to this full-profile approach. In fact, a total of eighteen (3×2×3) different profiles

can be generated. The respondent's task is to indicate his/her preference by giving a ranking or rating to each of these 18 hypothetical main profiles. For our present study, five attributes with 2, 3, 2, 2 and 3 attribute levels were involved. The respondent could therefore be asked to evaluate a maximum of seventy-two (2×3×2×2×3) profiles, which is still considerably large for any conjoint studies. This approach which is similar to the trade-off method when implemented with some forms of block designs, entails less judgements to be made by respondents. One weakness of this approach is that each judgement becomes more complex and the respondent may find it difficult to consider several attributes at one time.

Various past attempts had been done to understand which of these two data collection methods was more sophisticated but mixed empirical results were evident (Alpert, Betak and Golden 1978; Jain, Acito, Malhotra and Mahajan 1978; Segal 1982). In fact, the main argument in favour of the full-profile approach is that it gives more realistic description of the actual purchase situation when including all studied attributes in the stimulus. Besides, the possible environmental correlation (i.e. correlation does exist in reality under most circumstances) among attributes in reality is automatically taken into account when using this approach. An updated survey conducted by Wittink and Cattin (1989) also found that the full-profile commercial users were the majority (61%) with the trend shifting towards using this method. We have therefore chosen this alternative in our study.

For the purpose of stimuli construction, a total of sixteen main full profiles (from a master set of seventy-two full profiles) were generated by using a technique called fractional factorial design — a design which allows monitoring orthogonality (i.e. independence) among the part-worth estimates when the number of stimuli is to be reduced. Conjoint

Designer 3.0 (1990) by the Bretton-Clark Company was employed to facilitate this design. However, a pilot testing in our study revealed that the target respondents in the demand side found serious difficulty in ranking as much as sixteen profiles. The number of stimuli finally used was thus reduced to twelve. This attempt was to increase the experimental validity and as a result some degree of orthogonality was lost.

Lastly, for the response format, there are two common measurement scales (Wittink and Cattin 1989, p.111-112). As mentioned previously, they are rating and rank-order, with each measurement having its own advantages and drawbacks. The main advantage of the former (metric method) is the potential increase of information content inherent in this scale. Another advantage is its easy self-administration and is potentially suitable even by mail. For the latter (non-metric method), it is believed to be more reliable since respondents usually find it easier to say which he/she prefers more as compared with expressing the magnitude of his/her preference. Owing to the anticipated environmental sampling restriction (on-the-street and face-to-face interview in the demand side), we have used the non-metric rank-order method as the scale of measuring the dependent variable in our study.

3.4.4 Step 4 - Stimuli Presentation

The data can be collected by using profile cards, verbal descriptions or pictorial approach. Other methods such as the paper-and-pencil approach, physical products, film chips, prototype and interactive computer display are also widely used. Among them, profile cards are by far the more popular stimulus presentation method (Green and Srinivasan 1990, p.7), and have therefore been employed in this study.

3.4.5 Step 5 - Parameter Estimation

There are some statistical routines available for estimating the attribute part-worths. One of them is an earlier most well known computer program — MONANOVA (Kruskal 1965), which is based on monatonic analysis of variance. Later on, LINMAP (Srinivasan and Shocker 1973) became available and is based on linear programming. The latest version of LINMAP is Conjoint LINMAP 3.0 (1989) given by the Bretton Clark Company. In recent years, statistical software using regression-liked estimation procedure such as Conjoint Analyzer 3.0 (1992) of the Bretton Clark Company and SPSS/PC+ Categories (Norusis 1991) are most widely adopted. Among these packages, Conjoint LINMAP allows the researcher to constrain the utilities for any features. As an illustration, if it is certain that the traveler's utility should decrease with increasing room rate or should increase with higher hotel star-rating, we can constrain these features to follow this decreasing or increasing order. It was shown by Srinivasan and Shocker (1973) that the imposition of such constraints can significantly improve the percentage of first choices correctly predicted. Since as our dependent variable is in the rank-order scale (non-metric scale), the optimization approach used by Conjoint LINMAP is considered suitable (Carmone and Shaffer 1995, p116) and has been chosen in our study for estimating part-worth estimates.

Section 3.5: Sampling

3.5.1 Surveyed Respondents

On the demand side, international travelers who have prior hotel stay experience in Hong Kong were the target respondents in this study. During January to March of 2000, fifty travelers were interviewed as a pilot survey in ten different hotels in Hong Kong. Each respondent was exposed to the self-explication measurement and conjoint experiment. A questionnaire was used as a sampling instrument. Based on the feedback from the interviewers, the conjoint experimental design was revised. A formal survey was subsequently carried out. All subject respondents were required to complete three major steps. In Task 1, the respondent was exposed to the self-explication measurement, which was a two-stage "rating" task. In Task 2, he/she was given six holdout cards to rank, from most preferred to least preferred (Experiment One). In Task 3, he/she was then exposed to the conjoint experiment (Experiment Two) that required a similar but was a two-stage "ranking" task. All ranking observations from the two experiments were recorded and marked on the questionnaire in free format. Various travel characteristics and background variables of the travelers were collected at the same time. The interviewers had made visits to twenty hotels on different days of the week and at different times of the day to get a representative cross-section of the hotel consumer market. They were standing on the street but located near to the entrance of the surveying hotel. Finally a convenience sampling of three hundred face-to-face interviews was conducted in a 6-week period.

On the supply side, we had contacted twenty different hotels (not necessarily the same twenty hotels as above) for participation. One respondent was required for each hotel.

These target respondents were holding senior managerial positions in their respective hotels' sales/marketing departments (almost all are directors of sales/marketing) at the time of the survey (During July to September 2000). It was to ask them how important each studied attribute is to the travelers in choosing among hotel-stay offers. In other words, the cue in this supply side survey was to obtain the hotel preference structures of international travelers as perceived and revealed by hotel managers. Each interview was accomplished by replicating Task 1 to Task 3 as similar to surveying international travelers.

3.5.2 Task 1 - Self-Explication Measurement

We obtained the self-explicated multiattribute preference structure for each respondent (both travelers and hotel managers) by using the outlined methodology in Section 3.3. In order to reduce the anchoring problem, subject respondents were firstly asked to read through all attributes and attribute levels before giving their desirability scores and importance ratings. On average, the duration for this part of interview was approximately four minutes.

3.5.3 Task 2 - Validation (Holdout) Sample Measurement

After the self-explication measurement, subject respondents were required to rank six hypothetical hotel profiles. These rankings became the holdout samples for comparing the predictive validity between the self-explication and conjoint models via choice simulation. It was reported that an average respondent took less than two minutes to complete this part of validation measurement. By placing this validation task in between the self-explicated and full-profile conjoint tasks, we minimized biasing the results in favor of either procedure.

3.5.4 Task 3 - Conjoint Experiment

After obtaining the self-explicated and validation related data, each surveyed respondent was further asked to rank twelve hypothetical (main) profiles. This ranking became the calibration sample for estimating attribute part-worths and hence the preference structure of the respondent. We had used a 2-stage ranking procedure. In the first stage, the respondent was required to sort the twelve profiles into two piles — primary pile and secondary pile. The primary pile represented a more preferable set of hotel profiles than the other. In the second stage, the respondent was asked to rank all profiles from most preferred to least preferred within each individual pile. The two piles were merged to form a complete ranking of the twelve profiles from most to least preferred. Finally, the respondent was then asked to check the final rank order to see if there were any adjustments needed. It was reported that it took about eight minutes to complete this part of the data collection process. By using a 2-stage ranking procedure, we minimized the problem of information overloading on the respondent and hence avoided disturbing the validity of the conjoint results.

Section 3.6: Assessment of the Relative Internal and Predictive Validity of the Two Models (Choice and Market Shares Simulation)

As mentioned in the analysis in Stage 1 (section 3.2.1), one objective of our study was to examine whether the conjoint model is presumably more sophisticated than the self-explication model, or the reverse is true. This was achieved by assessing their relative internal and predictive validity via choice simulation. Figure 8 outlines the detailed algorithms and is illustrated in the following paragraphs.
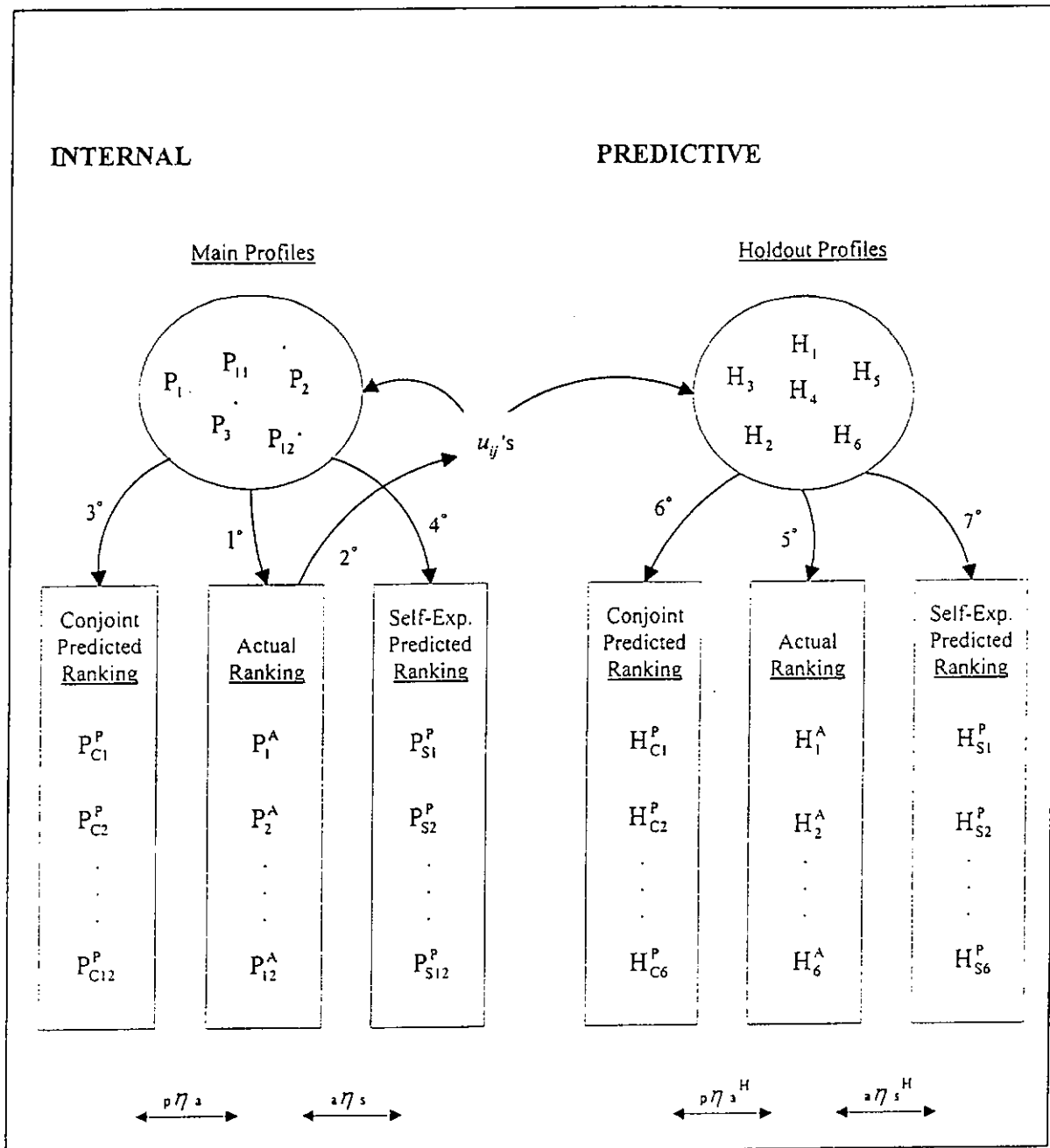
Figure 8 An Illustration of
Conjoint Vs Self-Explication Model Validity Comparison and
Choices Simulation

3.6.1 Internal Validity Assessments

For each traveler or hotel manager, he/she was required to rank twelve main profiles

(calibration sample) and the actual ranking was thus obtained (1°). The conjoint model

was then applied to this actual ranking to generate the individual attribute utilities u_{ij}'s for

this respondent (2°). When this set of u_{ij}'s were applied to the twelve main profiles

(Model 2 of Section 3.4), the conjoint predicted ranking was followed (3°). The goodness-

of-fit of the conjoint model could be examined by comparing these two sets of rankings

(i.e. Actual Ranking versus Conjoint Predicted Ranking). This was facilitated by using a

statistical measure namely *Spearman Rank Order Correlation* $_p\eta_a$. Large value of $_p\eta_a$

suggests good representation of the model and hence implies high internal validity.

Moreover, by applying the self-explicated weights obtained in the same interview to the

twelve main profiles (Model 1 of Section 3.3), the self-explication ranking was derived

(4°). This ranking was also compared with the actual ranking to calculate the correlation

$_a\eta_s$. Without loss of generosity, $_p\eta_a > _a\eta_s$ would demonstrate the robustness of the

conjoint model, and vice versa for the self-explication model. This hypothesis was

statistically tested by the paired t-test across all sampled respondents. The other

assessment of internal validity was the *Percentage of Correct Choice Prediction*. P_1^A is

the actual first choice evaluation of the respondent while P_{C1}^P and P_{S1}^P are the first choices

predicted by the conjoint and self-explication models respectively. This indicator was to

investigate, in terms of percentages, how much respondents whose $P_{C1}^P = P_1^A$ and how

much respondents whose $P_{S1}^P = P_1^A$. Large percentage suggests higher superiority. The

similar philosophy was applied to the second, third, ..., twelfth choices.

When considering the left hand side of Figure 8, the respondent's set of u_{ij}'s was derived

by using the calibration sample (i.e. the rank-order of the twelve main hotel profiles in the

system). The u_{ij}'s as such generated in the system were used to make ranking predictions

on the same twelve original profiles within the same system. That is: the parameters estimation and prediction procedures are conducted within the internal system, and hence the measurement name "internal validity". Further to evaluating the internal validity, cross-validations were also conducted to investigate how good was the conjoint model in predicting the dependent variable (profile evaluation ranking) in the real world. This was to assess its "predictive validity".

3.6.2 Predictive Validity Assessments

In the survey carried out, each respondent had further evaluated six holdout profiles in the same interview (5°). The u_{ij}'s previously generated (2°) were applied to these six holdout profiles to obtain the conjoint predicted ranking (6°), as shown in the right hand side of Figure 8. This is a process of choice simulation. Similarly, the self-explicated weights were also applied to simulate the self-explication predicted ranking. Finally, two correlation measures $_p\eta_a^H$ and $_a\eta_s^H$ were computed to indicate the fitness of the conjoint and self-explication model respectively. To determine which model was more accurate in choice prediction, the paired t-test and *Percentage of Correct Choice Prediction* were once again employed.

3.6.3 Choices and Market Shares Simulation

As mentioned in section 3.2.1, the procedure of conducting predictive validity (or even internal validity) study can be regarded as a choice simulation process. For the interviewed travelers, we had obtained their u_{ij}'s. Consider Figure 5 of section 3.1.2 and the right hand side of Figure 8. Now, we have entered six tested profiles (competing

hotels) to the simulator. For each of the simulated respondents, he/she would, according to the maximum choice criteria, give the first rank order to the one among these six hotel profiles that give him/her maximum utility (Model 2 of Section 3.4). The outcome distribution of all simulated respondents in terms of their simulated first ranked choices reflects the market shares among the six simulated hotels. Similarly, the outcome in terms of the remaining ranked choices indicates a complete set of simulated hotel choice behavior. In the present research study, instead of using the six holdout profiles, five additional hypothetical hotel profiles have been utilized to demonstrate this market shares simulation exercise.

Section 3.7: Terminology

Additive Model

A model that based on the additive composition rule. It simply adds up the part-worths of each attribute to gain an overall or total worth to indicate preference. This model measures the main effect and as such also known as "main effects model"

Attribute Level

It is a specific value of an attribute variable. Each attribute variable must be represented by two or more levels, either metric or non-metric

Calibration Sample

A set of evaluated stimuli given by respondents for model parameters estimation

Choice Simulation

This is a process designed to answer "what-if" questions. For each studied stimulus under consideration, choice simulation is run to predict individual and/or aggregate choices of respondents based on their conjoint part-worth estimates

Cluster Analysis

A statistical technique to group individuals or objects into clusters such that objects in the same cluster are more like one another than they are like objects in other clusters

Compositional Approach

A class of multivariate approach, in which the dependent variable is composed or calculated by respondent-supplied independent variables. Traditional examples are regression and discriminant analysis

Composition Rule

Rule used to combine the relative values (utilities) of the attributes of the product (or service) to produce the overall value of the product

Decompositional Approach

This is in direct contrast to the compositional approach. This class of approach requires the respondent to give an evaluated value (usually in the form of rating or ranking) to the dependent variable. The independent variables are then obtained by relating to and decomposing the dependent variable

Disaggregate Level Analysis

One traditional approach to interpret conjoint analysis is disaggregate; that is, each respondent is modeled separately, and the fit of the model is examined for each respondent. Most parts (except Table 14 of Section 4.4) in this study were analyzed disaggregately. On the contrary, for **Aggregate Level Analysis**, the model estimation is made on a set of respondents; the analysis fits one model to the aggregate of the responses

Euclidean Distance

This is a similarity measure. In this study, it refers to the square root of the sum of square difference (in terms of the five attributes) between two points

Factor Analysis

A statistical technique utilized to examine the underlying patterns or relationships for a large number of variables and then reduces them by removing redundancy from related variables, which are then represented by a smaller set of factors

Fractional Factorial Design

A design tools uses only a subset of all possible stimuli to estimate the results based on the assumed composition rule. Its primarily task is to reduce the number of evaluations by respondents in order to increase the validity while maintaining orthogonality among the part-worth estimates. If all possible stimuli are used, it is a **Complete Factorial Design**

Full Profile Method

A method of presenting stimuli to respondents. It requires the respondent to indicate his/her preferences on a listing of hypothetical stimuli with complete descriptions across all attributes. The number of stimuli can be all or a subset of all possible stimuli

Holdout Sample

A set of evaluated stimuli given by respondents for model validation uses

Interactive Model

It is similar to the additive model but allows the existence of interaction terms among attributes. As such some combinations of attribute levels part-worths are more or less than the total sum

Internal Validity

This is the basic minimum that must be present for an acceptable model. It tests the goodness of the model

Market Share Simulation

This is similar to choice simulation. The percentage number of total respondents choosing a given stimulus is the simulated market share of that stimulus

Maximum Utility Criteria

A criteria used in conducting choice simulation which is based on the assumption that the respondent chooses the stimulus with the highest predicted utility score

Metric Scale

Data scale which is quantitative in nature

Mixed Model

If more than one of the part-worth relationship is used in a conjoint study, it is said to be employing a mixed model

Nonmetric Scale

This is contrast to metric scale and refers to qualitative data

Orthogonality

This is a mathematical constraint that requires part-worth estimates to be independent of each other

Percentage of Correct Choice Prediction

The percentage number of correct matching between the predicted rank order (using modeling results) and the actual evaluated rank order of a given profile

Predictive Validity

This is concerned with the generalizability of the model. It refers to the correlation between predictions based on the scores on some *test* and some *outside criterion variable of interest*

Spearman Rank Order Correlation

The correlation between the predicted and actual rankings of a set of stimuli

Stimulus

A combination of selected attribute levels (one per each attribute) from some or each attribute of a product (or service) under studied. This is referred to the product profile evaluated by respondents

Trade-off Matrics Method

A method of presenting stimuli to respondents by using trade-off matrics. It requires the respondent to evaluate two attributes once at a time by giving preferences in terms of ranking to all level combinations of the two attributes

Ward's Hierarchical Clustering Technique

A clustering technique where the similarity used to join clusters is calculated as the sum of squares between the two clusters summed over all variables. Clusters with the greatest similarity are combined at each stage

CHAPTER 4 — R E S U L T S

Section 4.1: Preliminary Findings

Of the 300 completed questionnaires collected from traveler respondents, 4 of them were rejected in data analysis primarily because the profile rankings of either sampling Task 2 or Task 3 were not adequately recorded by interviewers. As such there were only 296 usable questionnaires which represent 26.3% business travelers and 73.7% leisure travelers; 58.2% infrequent travelers (traveled 3 times or below in the past two years) and 41.8% frequent travelers (traveled 4 times or more in the past two years); 71.6% short haul and 28.4% long haul travelers. Table 2 below summarizes the demographic profile of the respondents.

Table 2: Demographic Profiles of Respondents

Gender:					
Male	55.3%	Female	44.7%		
Age:					
16-25	13.0%	26-35	42.5%	36-45	33.2%
46-55	10.6%	Above 55	0.7%		
Occupation:					
Senior white collar	23.2%	Junior white collar	51.2%	Blue collar	11.1%
Housewife	6.9%	Others	7.6%		
Education:					
Primary school	3.8%	Secondary school	29.1%	College	37.3%
University	29.8%	Others	0.0%		
Monthly Income:					
HK$15,000 or below	40.6%	HK$45,001 - $60,000	10.2%		
HK$15,001 - $30,000	29.0%	Above HK$60,000	3.8%		
HK$30,001 - $45,000	16.4%				

Section 4.2: Results on Model Validity Comparison (Stage 1)

This section assesses the relative superiority of the conjoint versus self-explication model in predicting consumer choice behavior. Two statistical measurements namely, *Percentage of Correct Choice Prediction* and *Spearman Rank Order Correlation* are employed. Since consumer choice evaluations from both the international travelers' (demand) and hotel managers' (supply) perspectives are being investigated, both measurements will be applied to the demand as well as the supply side. In achieving the above, the attribute values in the individual-respondent level are the primary elements to be used.

4.2.1 Demand Side Model

Internal Validity (Demand Side)

Percentage of Correct Choice Prediction:

The purpose of measuring internal validity is to assess the model's ability in predicting the dependent variable (profile evaluation) within the system. One assessment is to use the *Percentage of Correct Choice Prediction*. To do this, the 12 non-holdout profile predictions for each respondent (traveler) were transformed into a rank order, ranging from most preferred (1st) to least preferred (12th), according to their derived overall preferences. This predicted rank order was then compared with the corresponding actual rank order of the 12 non-holdout evaluations (Task 3 of the sampling process). A frequency distribution was then developed across the 296 respondents in terms of the number of correct first-,

second-, third-, fourth-, ..., twelfth-choice predictions. The same procedure was carried

out separately for each model and their comparative results are shown in Table 3.

Table 3: Summary of Correct Choice Predictions of
Non-Holdout Sample Evaluations: Internal Validity (Demand Side)

Model	Choice Evaluations												Total
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	
Self-Explication	31	48	42	38	67	42	67	51	57	47	18	33	541
	10.5%	16.2%	14.2%	12.8%	22.6%	14.2%	22.6%	17.2%	19.3%	15.9%	6.1%	11.1%	15.2%
Conjoint	164	159	148	155	183	189	221	162	192	135	171	161	2040
	55.4%	53.7%	50.0%	52.4%	61.8%	63.9%	74.7%	54.7%	64.9%	45.6%	57.8%	54.4%	57.4%

Interpretation: Out of the 296 respondents, 31 or 10.5% of all first choice evaluations can be correctly predicted by the self-explication model. Similar interpretation can be derived for other choice evaluations as well as for the conjoint model.

The conjoint model reveals higher *Percentage of Correct Choice Prediction* for each

choice evaluation as compared with that of the self-explication model. Overall, the self-

explication model and conjoint model correctly predicted 15.2% and 57.4% of total

evaluations respectively. It appears that the comparative internal validity is clear-cut and

clearly in favor of the conjoint model. Furthermore, the *Percentage of Correct Choice*

Prediction for the conjoint model, even for the worst choice (10th), is 45.6%, as compared

with 8.3% (100%/12) which would be expected from random selection (the prediction

accuracy based on pure chance). However, the *Percentage of Correct Choice Prediction*

for the worst choice (11th, 6.1%) for the self-explication model is below this random level.

Spearman Rank Order Correlation:

For each model and for each respondent in our study, the predicted rank order and actual

rank order of the 12 non-holdout profile evaluations were used to compile the *Spearman*

Rank Order Correlation. A large correlation value would suggest the robustness of the

corresponding model. Finally, 296 pairs of these correlations ($_a\eta_s$ for actual versus self-explication and $_p\eta_a$ for actual versus conjoint) were obtained, and their corresponding means were calculated as shown in Table 4.

Table 4: A Summary of the Paired T-test on the
Difference of Spearman Rank Order Correlation:
Internal Validity (Demand Side)

	Self-Explication	Conjoint
Mean	0.458	0.948
Paired t-test	28.781	
P-value	0.000	

The mean correlation for the conjoint model (0.948) is found to be much greater than that of the self-explication model (0.458), and so appears that the former is more superior in terms of internal validity. A paired t-test was used to establish statistical support for this claim. The paired t-test provides significant evidence that $_p\eta_a > _a\eta_s$. Therefore, in this case, with the use of the given measurement, the conjoint model reveals higher internal validity in predicting consumer choice behavior on the demand side.

Predictive Validity (Demand Side)

Percentage of Correct Choice Prediction:

In Task 2 of the sampling process, the 6 holdout hotel profiles were arbitrarily created for the purpose of assessing predictive validity. Predictive validity is to assess the model's ability in predicting the dependent variable in the real world. The results are displayed in Table 5.

Table 5: Summary of Correct Choice Predictions of
Holdout Sample Evaluations: Predictive Validity (Demand Side)

Model	Choice Evaluations						Total
	1st	2nd	3rd	4th	5th	6th	
Self-Explication	87	98	99	92	89	67	532
	29.4%	33.1%	33.4%	31.1%	30.1%	22.6%	30.0%
Conjoint	100	147	87	169	151	143	797
	33.8%	49.7%	29.4%	57.1%	51.0%	48.3%	44.9%

The mechanism in compiling Table 5 is similar to that of Table 3, except that all actual

and predicted comparisons were based on the 6 holdout profiles instead of the original 12

non-holdout profiles. The outcomes are somewhat similar to that of the internal validity

and with higher predicting accuracy recorded for the conjoint model. The overall

Percentage of Correct Choice Prediction for the self-explication and conjoint model are

30.0% and 44.9% respectively. Both of them show improvement when compared with the

results from the random selection level of 16.7% (100%/6).

Spearman Rank Order Correlation:

An assessment of predictive validity was conducted by using the paired t-test on the

difference of *Spearman Rank Order Correlation*. A summary is shown in Table 6.

Table 6: A Summary of the Paired T-test on the
Difference of Spearman Rank Order Correlation:
Predictive Validity (Demand Side)

	Self-Explication	Conjoint
Mean	0.507	0.683
Paired t-test	7.049	
P-value	0.000	

Again, the results show significant evidence that $_p\eta_a > _a\eta_s$. Therefore, it indicates that with the use of the given measurement, conjoint model has higher predictive validity in predicting consumer choice behavior on the demand side.

4.2.2 Supply Side Model

Each of the twenty hotel manager respondents surveyed was asked to separately rank order 12 non-holdout and 6 holdout hypothetical hotel profiles according to what they thought that international travelers would prefer (from most prefer to least prefer). The respondent was also asked to think (using desirability scores and importance ratings) which factors and factor levels were considered to be important to the traveler. The preference structures (in terms of conjoint part-worths and self-explication weights obtained from conjoint and self-explication modeling respectively) derived from the above collected data were then used to facilitate the following internal and predictive validity comparisons of the perspective of hotel managers.

Internal Validity (Supply Side)

Percentage of Correct Choice Prediction:

Table 7: Summary of Correct Choice Predictions of
Non-Holdout Sample Evaluations: Internal Validity (Supply Side)

Model	Choice Evaluations												Total
	1st	2nd	3rd	4th	5th	6th	7th	8th	9th	10th	11th	12th	
Self-Explication	2	2	8	0	2	0	5	2	2	3	2	6	34
	10.0%	10.0%	40.0%	0.0%	10.0%	0.0%	25.0%	10.0%	10.0%	15.0%	10.0%	30.0%	14.2%
Conjoint	13	11	11	12	15	16	18	13	16	10	8	16	159
	65.0%	55.0%	55.0%	60.0%	75.0%	80.0%	90.0%	65.0%	80.0%	50.0%	40.0%	80.0%	66.3%

Interpretation: Out of the 20 respondents, 2 or 10.0% of all first choice evaluations can be correctly predicted by the self-explication model. Similar interpretation can be derived for other choice evaluations as well as for the conjoint model.

Similar to the results on the demand side, the conjoint model (as shown in Table 7) applied to the supply side assessment reveals higher *Percentage of Correct Choice Prediction* for each choice evaluation as compared with that of the self-explication model. These results, again, demonstrate a stronger internal validity in the conjoint model. Overall, the self-explication model and conjoint model correctly predict 14.2% and 66.3% of total evaluations respectively.

Spearman Rank Order Correlation:

Table 8: A Summary of the Paired T-test on the
Difference of Spearman Rank Order Correlation:
Internal Validity (Supply Side)

	Self-Explication		Conjoint
Mean	0.523		0.973
Paired t-test		5.794	
P-value		0.000	

According to Table 8, the comparative results, again, give significant evidence that $_p\eta_a >$ $_a\eta_s$. Therefore, with the use of the given measurement, we can conclude that the conjoint model performs better in portraying consumer choice behavior in the supply side perspective.

Predictive Validity (Supply Side)

Percentage of Correct Choice Prediction:

Table 9 shows that not all choice evaluations are in favor of the conjoint model. The *Percentage of Correct Choice Prediction* for the two 1st choice evaluations is a tie while for that of the 2nd choice evaluation, the self-explication model performs better. However,

for the remaining 4 choice evaluations, the conjoint model performs better. In terms of overall performance, the self-explication model and conjoint model correctly predict 27.5% and 35.8% of total evaluations respectively, indicating a slightly higher superiority for the conjoint model.

Table 9: Summary of Correct Choice Predictions of
Holdout Sample Evaluations: Predictive Validity (Supply Side)

Model	Choice Evaluations						Total
	1st	2nd	3rd	4th	5th	6th	
Self-Explication	8	9	2	6	5	3	33
	40.0%	45.0%	10.0%	30.0%	25.0%	15.0%	27.5%
Conjoint	8	5	5	12	8	5	43
	40.0%	25.0%	25.0%	60.0%	40.0%	25.0%	35.8%

Spearman Rank Order Correlation:

The mean correlation for the conjoint model gives a larger value as compared with that of the self-explication model. Similarly, a paired t-test was conducted to examine the difference between the pairs of *Spearman Rank Order Correlation* ($_a\eta$ s for actual versus self-explication and $_p\eta$ a for actual versus conjoint).

Table 10: A Summary of the Paired T-test on the
Difference of Spearman Rank Order Correlation
Predictive Validity (Supply Side)

	Self-Explication		Conjoint
Mean	0.471		0.649
Paired t-test		1.689	
P-value		0.054	

Results on Table 10 shows that the t-test (one tailed) is insignificant at $\alpha=0.05$ but significant at $\alpha= 0.1$. As a result, with the use of the given measurement applied in the

supply side perspective, we can conclude that the conjoint model performs slightly better as compared with the self-explication model.

4.2.3 A Preliminary Summary of Model Validity Comparisons

For all assessments in the demand side, both internal and predictive validity were found to be in favor of the conjoint model with the use of the *Percentage of Correct Choice Prediction* and *Spearman Rank Order Correlation*. For the supply side, the internal validity indicated that conjoint model out-performed the self-explication model by using both types of validity measurements. In terms of predictive validity, both validity measurements showed a slight (although not significantly) improvement for the conjoint model as compared with that of the self-explication model. Therefore, as all assessments in both the demand side and supply side show favorable results for the conjoint model, we may reject the null hypothesis of Hypothesis 1, and conclude that the conjoint model is more accurate. As such all subsequent analysis will be based on the part-worths and relative importance values derived from the conjoint model.

Section 4.3: An Illustration on Market Shares Simulation (Stage 2)

With the disaggregate preference structures (part worths and relative importance of attributes) identified for each of the 296 respondents, we proceed to input them into the choice simulator. Based on the maximum utility criteria as the choice decision rule, the objective is to estimate the market shares of the three hypothetical competing hotels (Scenario 1). These hypothetical hotel profiles are arbitrarily chosen for the purpose of illustration. They are shown in Table 11.

Table 11: Three Hypothetical Competing Hotels (Scenario 1)

Hotel 1	Hotel 2	Hotel 3
No Harbour View Room	With Harbour View Room	With Harbour View Room
HK$800 - HK$1400	Below HK$800	HK$800 - HK$1400
Within Walking Distance	Need Transportation	Within Walking Distance
Unfamiliar Brand Name	Familiar Brand Name	Familiar Brand Name
5 Star	4 Star	4 Star

With the help of Conjoint LINMAP, the market shares for the 3 competing hotels are simulated and shown as follows:

Figure 9: Market Shares of Three Simulated Hotels (Scenario 1)

Hotel 1 27.70%

Hotel 3 28.89%

Hotel 2 43.41%
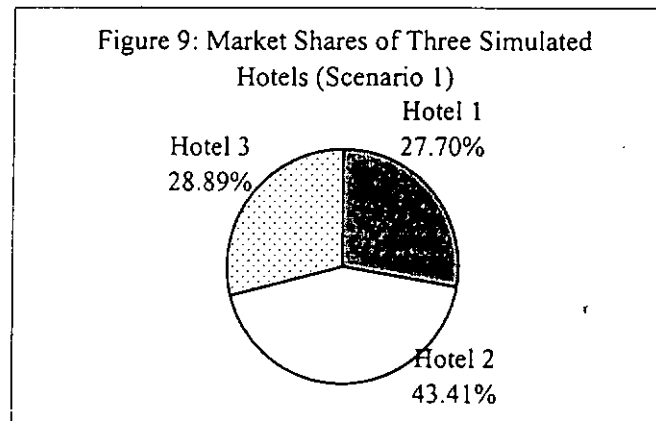
Among the 296 travelers, Hotel 2 is most popular followed by Hotel 3 and Hotel 1. One can envisage that faced with the unpleasant position encountered, the hotel manager of Hotel 1 may want to reposition his/her hotel property. This may be achieved by manipulating some level(s) of the 5 attributes. While the hotel manager may not be able to afford a relocation of its property or the development of harbour view products, he/she could focus on attributes such as Room Rate, Brand or Star Rating. Assume that he/she now repositions the hotel from 5 Star to 4 Star, and as such also charges their customers a rate below HK$800 instead of the range between HK$800 and HK$1400. In order words, the modified scenario becomes:

Table 12: Modified Hypothetical Competing Hotels (Scenario 2)

Hotel 1	Hotel 2	Hotel 3
No Harbour View Room	With Harbour View Room	With Harbour View Room
Below HK$800	Below HK$800	HK$800 - HK$1400
Within Walking Distance	Need Transportation	Within Walking Distance
Unfamiliar Brand Name	Familiar Brand Name	Familiar Brand Name
4 Star	4 Star	4 Star

With this repositioning, the simulated market shares are given as follows:

Figure 10: Market Shares of Three Simulated Hotels (Scenario 2)

Hotel 1 32.43%

Hotel 3 39.53%

Hotel 2 28.04%
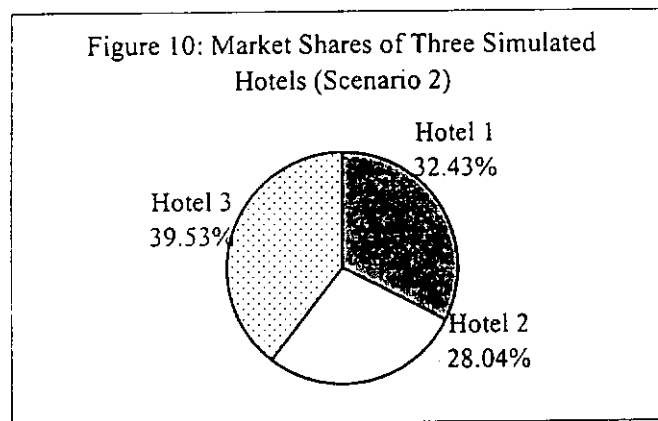
By repositioning Hotel 1, Hotel 1 now has gained some shares (at the expense of Hotel 2). Its relative position has been moved from the third to the second. Moreover, the repositioning has also benefited Hotel 3, by up-scaling it to the top position from the second. Therefore, this shows that the repositioning of one player can affect the relative market shares of all other players. A player can be negatively affected or positively benefited upon the repositioning of another player.

Another interesting issue of concern may be the consequence of new market entrants. Hotel managers may want to know upon adding one more hotel to the choice consideration set of the travelers, how will their captured shares be affected. Assume that we now introduce one more hotel (Hotel 4) to the marketplace. The new scenario becomes:

Table 13: Four Hypothetical Competing Hotels (Scenario 3)

Hotel 1	Hotel 2	Hotel 3	Hotel 4
No Harbour View Room	With Harbour View Room	With Harbour View Room	No Harbour View Room
Below HK$800	Below HK$800	HK$800 – HK$1400	Below HK$800
Within Walking Distance	Need Transportation	Within Walking Distance	Within Walking Distance
Unfamiliar Brand Name	Familiar Brand Name	Familiar Brand Name	Familiar Brand Name
4 Star	4 Star	4 Star	3 Star

Upon entering these 4 hypothetical hotels to the choice simulator, the simulated market shares are as follows:

Figure 11: Market Shares of Four Simulated Hotels (Scenario 3)

Hotel 1 12.84%
Hotel 2 23.82%
Hotel 3 35.47%
Hotel 4 27.87%
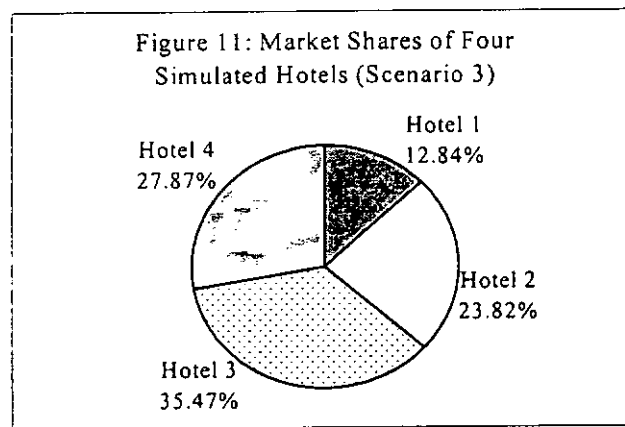
The entrance of Hotel 4 has cannibalized the shares of all Hotel 1, Hotel 2 and Hotel 3. It now occupies the second position among the four hotels. In particular, the cannibalization effect on Hotel 1 is much significant, with market shares reduced from 32.43% to 12.84%.

Section 4.4: Results on Segmentation Analysis (Stage 3)

The aggregate results of conjoint analysis for all traveler respondents are displayed in Table 14. The pie chart reveals that the most important attribute is Room Rate (33.8%), followed by Star Rating (29.4%). Location and Brand are of moderate importance (17.6%

and 15.6% respectively) while Room Type (3.7%) is of least importance to the travelers. The ranking is in the following order:

Room Rate > Star Rating > Location > Brand > Room Type(Aggregate Ranking)

Table 14: Aggregate Part Worths and Relative Importance of Hotel Attributes

Attribute Part Worths					
Room Type					
No H/V	-0.92	With H/V	0.92		
Room Rate					
Below $800	7.65	$800-$1400	1.57	Above $1400	-9.22
Location					
Need Transport	-4.39	Walking	4.39		
Brand					
Unfamiliar	-3.09	Familiar	3.09		
Star Rating					
3 Star	-6.96	4 Star	-0.75	5 Star	7.71

Relative Importance of Attributes

A closer examination of each attribute part worth reveals that the aggregate international travelers exhibit quite typical consumer behavioral characteristics. As shown in Table 14, a traveler, in general, prefers a hotel having harbour view rooms, with room rates below HK$800, conveniently located within walking distance from the main destination, possesses a familiar brand name and belongs to the deluxe 5-Star category. On the other hand, the traveler appears to have the lowest preference for staying in a hotel which has no harbour view rooms, with room rates above HK$1,400, requires transportation to go to the main destination, possesses an unfamiliar brand name and belongs to the budget 3-Star category. The direction and magnitude of these attribute part worths and their relative importance form the consumer's preference structure.

However, the above only demonstrates the aggregate preference structure for all international travelers. As their needs are diverse, it is unlikely that all of them will have the same hotel preference structure. From the marketing perspective, a one-size-fits-all targeting approach may not be most effective. As such it is to the hotel marketers' interest to know if there is any sub-group preference differences among the international travelers. The remaining part of this section will examine the different categories — *Purpose of Travel, Country of Residence* and *Frequency of Travel* — as three segmentation variables (or travel characteristics) to explore the existence of sub-group preference variations.

4.4.1 The "A Priori" Segmentation Analysis

This traditional approach employs a pre-determined variable of interest and divides the respondents into two or more groups. The differences, if any, on the attribute relative importance (or part worths) between groups are analyzed.

I. Purpose of Travel – Business Versus Leisure Travelers

Table 15: Aggregate Part Worths and Relative Importance of
Hotel Attributes for Business and Leisure Travelers

Attributes/ Attribute Levels	Business Traveler		Leisure Traveler		Differences of Relative Importance	
	Part Worths	Relative Importance	Part Worths	Relative Importance	t-test	p-value
Room Type		2.19%		4.10%	-2.36	0.02 *
No H/V	-0.63		-1.02			
With H/V	0.63		1.02			
Room Rate		9.94%		46.43%	-4.40	0.00 *
Below $800	-2.44		11.09			
$800-$1400	3.27		0.93			
Above $1400	-0.83		-12.02			
Location		21.63%		15.05%	1.53	0.13
Need Transport	-6.21		-3.75			
Walking	6.21		3.75			
Brand		24.78%		11.38%	3.81	0.00 *
Unfamiliar	-7.11		-2.83			
Familiar	7.11		2.83			
Star Rating		41.46%		23.04%	3.09	0.00 *
3 Star	-13.22		-4.78			
4 Star	2.64		-1.91			
5 Star	10.58		6.69			

* significant at $\alpha = 0.05$

The results are shown in Table 15. It can be seen from this table that the attribute Star Rating (41.5%) is considered to be the most important from the viewpoint of business travelers. The attribute Brand (24.8%) ranks second, Location (21.6%) ranks third, followed by Room Rate (9.9%) and Room Type (2.2%). The ranking order is as follows:

Business: Star Rating > Brand > Location > Room Rate > Room Type

A comparison of this ranking with the Aggregate Ranking reveals an obvious difference. That is: the attribute Room Rate ranks fourth in this instance while it is of highest rank based on the Aggregate Ranking. Furthermore, Table 15 reveals that business travelers do not prefer the lowest price range. One possible explanation may be that a lower price is associated with poorer quality. For leisure travelers, the ranking order is as follows:

Leisure: Room Rate > Star Rating > Location > Brand > Room Type

It appears that the relative importance of the five hotel attributes differ between business and leisure travelers. The significance of the difference for each attribute was further analyzed by using two sample t-tests. For each test, one attribute was taken at a time for study. Each test compared the difference of the mean attribute relative importance between business versus leisure travelers (each respondent has individually 5 attribute relative importance). Except for the attribute Location (ranked moderately important for both types of travelers), all t-tests were significant at $\alpha = 0.05$. Compare with leisure travelers, business travelers value the attributes Star Rating and Brand more importantly, and place less importance on Room Rate and Room Type.

Based on the above findings, it is to reject the null hypothesis of Hypothesis 2 (a) and conclude that the hotel attributes sought by business travelers are different from the hotel attributes sought by leisure travelers.

II. Country of Residence – Short Haul Versus Long Haul Travelers

Table 16: Aggregate Part Worths and Relative Importance of
Hotel Attributes for Short Haul and Long Haul Travelers

Attributes/ Attribute Levels	Short Haul Traveler		Long Haul Traveler		Differences of Relative Importance	
	Part Worths	Relative Importance	Part Worths	Relative Importance	t-test	p-value
Room Type		0.32%		11.92%	-0.79	0.43
No H/V	-0.09		-3.04			
With H/V	0.09		3.04			
Room Rate		45.13%		14.15%	3.40	0.00 *
Below $800	11.70		-2.56			
$800-$1400	0.34		4.67			
Above $1400	-12.04		-2.11			
Location		15.95%		19.16%	-1.83	0.07
Need Transport	-4.20		-4.89			
Walking	4.20		4.89			
Brand		14.29%		16.71%	-1.01	0.31
Unfamiliar	-3.76		-4.27			
Familiar	3.76		4.27			
Star Rating		24.30%		38.06%	-1.82	0.07
3 Star	-5.43		-10.82			
4 Star	-1.92		2.20			
5 Star	7.35		8.62			

* significant at $\alpha = 0.05$

The rankings of the relative importance of attributes for short haul and long haul travelers are, according to Table 16, as follows:

Short Haul: Room Rate > Star Rating > Location > Brand > Room Type

Long Haul: Star Rating > Location > Brand > Room Rate > Room Type

The two sets of ranking order appear to be somewhat different and the ranking order for short haul travelers is also similar to the Aggregate Ranking. When t-tests were applied to the above two groups, only Room Rate was found to be significant. The results show that

short haul travelers tend to be more price sensitive and long haul travelers do not prefer the lowest price level.

As one of the five attributes was found to be significantly different among the long-haul and short-haul travelers, the null hypothesis of Hypothesis 2 (b) is rejected. And it is to conclude that the hotel attributes sought by long-haul travelers are different from the hotel attributes sought by short-haul travelers.

III. Frequency of Travel – In-Frequent Versus Frequent Travelers

Table 17: Aggregate Part Worths and Relative Importance of
Hotel Attributes for Frequent and In-Frequent Travelers

Attributes/ Attribute Levels	In-Frequent Traveler		Frequent Traveler		Differences of Relative Importance	
	Part Worths	Relative Importance	Part Worths	Relative Importance	t-test	p-value
Room Type		3.35%		3.83%	-1.34	0.18
No H/V	-0.92		-0.89			
With H/V	0.92		0.89			
Room Rate		50.74%		9.71%	5.68	0.00 *
Below $800	13.50		-0.85			
$800-$1400	0.88		2.67			
Above $1400	-14.38		-1.82			
Location		14.02%		22.25%	-1.22	0.22
Need Transport	-3.85		-5.14			
Walking	3.85		5.14			
Brand		11.43%		21.94%	-2.22	0.03 *
Unfamiliar	-3.14		-5.07			
Familiar	3.14		5.07			
Star Rating		20.46%		42.26%	-3.86	0.00 *
3 Star	-5.01		-9.71			
4 Star	-1.22		-0.12			
5 Star	6.23		9.83			

* significant at $\alpha = 0.05$

This part of the study investigates the difference of the hotel attributes tradeoffs between frequent and in-frequent travelers. The rankings of the relative importance of attributes for infrequent and frequent travelers are, according to Table 17, as follows:

In-Frequent: <u>Room Rate</u> > Star Rating > Location > Brand > Room Type

Frequent: <u>Star Rating</u> > Location > <u>Brand</u> > Room Rate > Room Type

Results confirmed by t-tests show that in-frequent travelers are more price conscious while frequent travelers comparatively prefer to stay in deluxe 5-star hotels with familiar brand names. It is noted that, in this instance, frequent travelers do not prefer the lowest price.

Similarly, based on the above findings, it is to reject the null hypothesis of Hypothesis 2 (c) and conclude that the hotel attributes sought by frequent travelers are different from the hotel attributes sought by infrequent travelers.

IV. A Preliminary Summary of the "A Priori" Segmentation Analysis

It is interesting to note that the order of ranking for leisure travelers, short haul travelers and in-frequent travelers are the same. Moreover, business travelers, long haul travelers and frequent travelers also exhibit somewhat similar attribute ranking order (except the reverse position of Brand/Location for business travelers).

Infrequent / Short Haul / Leisure Travelers:

Room Rate > Star Rating > Location > Brand > Room Type

Frequent / Long Haul / Business Travelers:

Star Rating > Location $\approx$ Brand > Room Rate > Room Type

That is: those budget visitors in Hong Kong usually travel less who visit Hong Kong for leisure from a neighborhood country. And those deluxe 5-Star hotel loving visitors in Hong Kong are usually frequent travelers who visit Hong Kong for business from a distant country.

4.4.2 The "Post Hoc" Segmentation Analysis

A cluster analysis was performed using the Conjoint Segmenter (1993) by Bretton-Clark Company to separate the respondents into mutually exclusive groups. Each group or cluster represents a benefit segment, within which all respondents exhibit similar preference structure. Four homogeneous clusters (based on similarities among cases) were identified to be suitable and are shown in Table 18 as below:

Table 18: Aggregate Attribute Relative Importance of Clusters and their within Clusters' Travel Characteristics

Attributes	Cluster 1	Cluster 2	Cluster 3	Cluster 4	All Respondents
	Relative Importance of Attributes				
Room Type	3.54%	16.61%	3.11%	5.37%	3.70%
Room Rate	25.87%	7.60%	66.59%	57.85%	33.76%
Location	4.07%	22.14%	10.88%	24.57%	17.58%
Brand	14.86%	33.18%	3.75%	3.51%	15.62%
Star Rating	51.66%	20.45%	15.67%	8.70%	29.35%
Total No. of Respondents (%)	30.74%	25.34%	23.65%	20.27%	100.00%
Travel Characteristics	Percentage of Respondents				
Purpose of Travel					
- business	50.6%	35.1%	11.7%	2.6%	100.0%
- leisure	24.1%	22.2%	27.8%	25.9%	100.0%
Ratio:	2.1	1.6	0.4	0.1	
Country of Residence					
- long haul	42.9%	35.7%	7.1%	14.3%	100.0%
- short haul	25.9%	21.2%	30.2%	22.6%	100.0%
Ratio:	1.7	1.7	0.2	0.6	
Frequency of Travel					
- Frequent	43.1%	31.7%	13.0%	12.2%	100.0%
- In-frequent	22.2%	21.1%	31.0%	25.7%	100.0%
Ratio:	1.9	1.5	0.4	0.5	

Interpretation: Cluster 1 has captured 51% of total business respondents as well as 24% of total leisure respondents. Their relative value or the ratio of them for the cluster indicates the percentage domination of either travel characteristics. A ratio closes to 1 suggests that the cluster captures equal share in both characteristic types (25% by chance for each cluster). A ratio greater than 1, as in the case, indicates that Cluster 1 is characterized by business travelers as compared to other clusters. A simple ratio of this kind is employed because the sample has unequal proportion of business versus leisure travelers. Similar interpretation applies to the rest of the travel characteristics.

Cluster 1 represents 30.7% of the 296 respondents. They consider Star Rating (51.7%) to be of utmost important, followed by Room Rate (25.9%). When considering their travel characteristics, half of the business travelers fall into this cluster. Among the long haul as well as frequent travelers, the majority of them (43% for both) also belong to this category. Therefore, basically, these *5-Star Hotel Lovers* tend to be frequent-long haul-business travelers.

Cluster 2, which represents 25.3% of total respondents, are characterized by frequent-long haul-business travelers (all ratios are greater than 1). The findings show that these individuals exhibit somewhat similar preferences for the attributes, Room Type, Location, Brand and Star Rating. They give the highest ranking to Brand but pay little attention to Room Rate (7.6%). It appears that this segment is a *Wealthy Balanced Type Group*.

Cluster 3 accounts for 23.7% of total respondents. They regard Room Rate (66.6%) as an outstandingly important criterion in hotel selection and may, therefore, be labeled as *Budget Travelers*. This segment is dominated by infrequent-short haul-leisure travel characteristics (all ratios are less than 1).

Cluster 4 is dominated by infrequent-short haul-leisure travel characteristics and represents 20.3% of total respondents. They also place a high importance on Room Rate but at the same time also value Location. This segment can be regarded as a group of *Economy and Convenience Seekers*.

Section 4.5: An Evaluation of the Mis-Matches of the Demand for and Supply of Hotel Attributes (Stage 4)

This section identifies and analyzes the gap between the hotel attributes sought by international travelers and the hotel attributes sought by them as perceived by hotel managers. Three approaches are used to analyze the results. Firstly, by using the conjoint estimated aggregate and individual attribute values derived from each of the demand and supply perspectives, the relative importance of each of the 5 hotel attributes is compared directly between the two sides. Secondly, by utilizing the simulation results obtained in Section 4.3, and together with further application of simulation applied in the hotel managers' perspective (the same set of hypothetical hotels are used), the match or mis-match of simulated shares between the two perspectives are evaluated and presented. Finally, based on the perceived preference structures of the 20 surveyed hotel managers as well as the 4 benefit segments as identified in section 4.4.2, a classification analysis will be illustrated.

4.5.1 Direct Comparison of the Demand for and Supply of Hotel Attributes

Based on the aggregate relative importance of attributes for the demand and supply sides as shown in Table 19, the rank orders of attributes for them are given by:

Demand: Room Rate > Star Rating > Location > Brand > Room Type

Supply: Room Rate > Location > Star Rating > Brand > Room Type

The orders of ranking for them are similar except the reverse position of Star Rating and Location. Both international travelers and hotel managers consider Room Rate to be of number one criteria in making a hotel purchase while Room Type is of least importance.

Table 19 reveals, in an aggregate sense, that the magnitude of the attribute relative importance between the demand and supply sides appears to be somewhat different for Room Type, Location and Star Rating while Room Rate and Brand do not show visual discrepancies.

Table 19: Aggregate Part Worths and Relative Importance of
the Demand for and Supply of Hotel Attributes

Attributes/ Attribute Levels	Demand		Supply		Differences of Relative Importance	
	Part Worths	Relative Importance	Part Worths	Relative Importance	t-test	p-value
Room Type		3.70%		9.27%	-0.46	0.65
No H/V	-0.92		-4.06			
With H/V	0.92		4.06			
Room Rate		33.76%		32.47%	1.41	0.17
Below $800	7.65		11.64			
$800-$1400	1.57		5.18			
Above $1400	-9.22		-16.81			
Location		17.58%		24.23%	-1.95	0.07
Need Transport	-4.39		-10.61			
Walking	4.39		10.61			
Brand		15.62%		16.62%	-0.98	0.34
Unfamiliar	-3.09		-7.28			
Familiar	3.09		7.28			
Star Rating		29.35%		17.42%	2.10	0.05
3 Star	-6.96		-8.52			
4 Star	-0.75		1.79			
5 Star	7.71		6.74			

Test at $\alpha = 0.05$

In order to establish statistical support, the significance of the difference of each relative importance of attribute pairs was further analyzed disaggregately with the use of the 2-sample t-test. It can be seen from this table that all t-tests are insignificant at $\alpha = 0.05$. This part of analysis indicates that in general there is no significant gap between the hotel attributes sought by international travelers and the hotel attributes sought by them as perceived by hotel managers.

4.5.2 Comparison of the Simulated Market Shares between the Demand and Supply Sides

Further to the series of market simulations conducted in Section 4.3, similar simulations have also been conducted in the supply side perspective. A comparative analysis of the simulation results is displayed in the following table.

Table 20: A Comparative Analysis of Simulated Market Shares
Between the Demand and Supply Sides

	Hotel 1	Hotel 2	Hotel 3	Hotel 4	Total
	Market Shares				
Scenario 1					
Demand Side	27.70%	43.41%	28.89%	-----	100.00%
Supply Side	25.00%	15.00%	60.00%	-----	100.00%
Discrepancy	2.70%	28.41%	31.11%	-----	62.22%
Scenario 2					
Demand Side	32.43%	28.04%	39.53%	-----	100.00%
Supply Side	20.00%	15.00%	65.00%	-----	100.00%
Discrepancy	12.43%	13.04%	25.47%	-----	50.94%
Scenario 3					
Demand Side	12.84%	23.82%	35.47%	27.87%	100.00%
Supply Side	7.50%	15.00%	62.50%	15.00%	100.00%
Discrepancy	5.34%	8.82%	27.03%	12.87%	54.06%

Based on the estimated preference structures of international travelers as revealed by them, each scenario of the above (rows of demand side) portrays the estimated shares distribution of the examined hypothetical hotels. Similarly, based on the estimated preference structures of international travelers as revealed and derived from the hotel managers' perceptions, each scenario of the above (rows of supply side) shows the estimated percentage distribution of hotel managers. This distribution reflects the variations of hotel managers' perception on international travelers' preference structures.

In fact, this part of the analysis measured a " derived gap" transformed from measuring hotel attributes mis-matches to measuring hotel market shares mis-matches. When a hypothetical hotel is analyzed by the simulator (separately for each individual supply and demand side), a gap (discrepancy) is formed as a result of the difference of its market shares captured in each side. It was conceptualized that the higher the discrepancy value (three hotel discrepancy values and one overall value for each of the Scenario 1 and Scenario 2; four hotel discrepancy values and one overall value for Scenario 3, according to Table 20), the higher the mis-match of the hotel attributes revealed by the two sides. If the simulated market share captured by a given hotel profile on the supply side perspective is greater than that from the demand side perspective, this would indicate that the hotel is "over focused" by the hoteliers and as such may imply that new hotels with a similar profile should not be developed by investors. Conversely, if the simulated market share captured from the demand side perspective is greater, this may imply that a hotel in a similar profile has not been gaining adequate attention by the hoteliers, thereby indicating lucrative potential for development by prospective investors. Finally, Table 20 shows that each of all three simulated scenarios showed an overall discrepancy value of more than 50% — 62.22% for Scenario 1, 50.94% for Scenario 2 and 54.06% for Scenario. In particular, Hotel 3 consistently captured higher market shares from the supply side perspective. This was a hotel with harbor view room, in the price range of HK$800 – HK$1400, conveniently located within walking distance from the main destination, with a familiar brand name and belonged to the 4-star category. Hotel investors may interpret this as an "over focused" hotel that has limited potential for development.

4.5.3 Analysis of Hotel Managers' Perceptions

This part of the study identifies the group(s) of hotel managers whose perceived demand set of hotel attributes sought by travelers matched most closely with those revealed by international travelers. This is achieved by classifying each of the 20 hotel manager observations into the clustered benefit segments according to their perceived preference structures towards international travelers. The table below displays the centroids for each clustered benefit segments in the traveler perspective:

Table 21: The Centroids of the Relative Importance of the
Four Clustered Benefit Segments on the Demand Side

Benefit Segment	Room Type	Room Rate	Location	Brand	Star Rating
Cluster 1 (91):	8.50%	36.60%	7.99%	11.78%	35.14%
Cluster 2 (75):	15.53%	18.94%	21.92%	21.10%	22.51%
Cluster 3 (70):	8.79%	58.07%	10.35%	5.20%	17.59%
Cluster 4 (60):	13.34%	37.79%	20.64%	8.10%	20.13%

Remark: ( ) represents number of respondents

Based on the minimum Euclidean distance criteria, the distribution of the classified 20 hotel manager respondents, together with the distribution of demand benefit segment sizes, are shown in Table 22. The table reveals that there are large discrepancies for Cluster 1 (20.74%) and Cluster 2 (19.66%), and small discrepancies for Cluster 3 (3.65%) and Cluster 4 (4.73%). Overall, there is 48.78% total discrepancy. This resultant unbalanced allocation of hotel manager respondents with respect to the distribution of the demand benefit segment sizes may suggest that Cluster 2 (Balanced Type Group) might have been over focused while Cluster 1 (5-Star Hotel Lover) have not been receiving sufficient attention.

Table 22: A Comparison of the Distribution of
Respondents in the Four Benefit Segments:
Demand Versus Supply Sides

	Cluster 1	Cluster 2	Cluster 3	Cluster 4	Total
Demand Side	91	75	70	60	296
	30.74%	25.34%	23.65%	20.27%	100.00%
Supply Side	2	9	4	5	20
	10.00%	45.00%	20.00%	25.00%	100.00%
Discrepancy (%)	20.74%	19.66%	3.65%	4.73%	48.78%

Interpretation: Cluster 1 is a homogeneous preference structure group comprising 30.74%
of total traveler respondents. Only 10.00% of total hotel manager respondents perceived
and revealed that international travelers are of the similar preference structure. Similar
interpretation applies to the other three clusters.

4.5.4 A Preliminary Summary of the Mis-Matches of the Demand for and Supply of Hotel Attributes

The direct comparison of hotel attributes failed to signify the mis-matches while both

market shares simulation and classification of hotel managers' perceptions both revealed

obvious discrepancies. Hypothesis 3 is inconclusive in this study.

CHAPTER 5 — D I S C U S S I O N

Section 5.1: Comparison of Model Validity

Some observations may be drawn from the combined results from Table 3 to Table 10 in the preceding chapter. They are primarily related to 1) the models' predicting accuracy, 2) the comparison between internal and predictive validity, and 3) the superiority comparison between the conjoint and self-explication models. To facilitate the comparison, major findings from Table 3 to Table 10 are reproduced in summary form in Table 23.

Table 23: Summary of Model and Validity Comparisons

	Internal Validity (Non-holdout Profile Predictions)		Predictive Validity (Holdout Profile Predictions)	
	%Correct Choice	Mean Correlation	%Correct Choice	Mean Correlation
Conjoint				
Demand	57.4%	0.948	44.9%	0.683
Supply	66.3%	0.973	35.8%	0.649
Akaah and Korgaonka (1983)	-	-	24.2%	-
Self-Explication				
Demand	15.2%	0.458	30.0%	0.507
Supply	14.2%	0.523	27.5%	0.471
Akaah and Korgaonka (1983)	-	-	20.0%	-

A thorough search of the related literature reveals the absence of past hospitality and tourism research which addresses the prediction superiority of conjoint versus self-explication models. Since there is a lack of precedents in the related area with which to

compare, some relevant results extracted from the study of a non-hospitality/tourism related study by Akaah and Korgaonka (1983) are referred to for comparison. Their study is an empirical research using health maintenance organization (HMO) plan as a multiattribute choice object for analysis. The extracted results are also summarized and shown on the above table.

5.1.1 Model Predicting Accuracy

With the use of the *Percentage of Correct Choice Prediction*, the predicting accuracy of both conjoint and self-explication models in this study were found to be quite strong when compared with those from the study of Akaah and Korgaonka (1983).

The conjoint model in this study (main-effects only) correctly predicted 44.9% / 35.8% (demand / supply sides) of total holdout choice evaluations, compared with only 24.2% found in the study of Akaah and Korgaonka (1983). For the self-explication model, this study correctly predicted 30.3% / 27.5% of total holdout choice evaluations whereas in the study by Akaah and Korgaonka (1983), this figure was only 20.0%.

One explanation for the superior validity found in this study might be due to its employment of fewer attributes and attribute levels. In contrast with 6 attributes and 18 attribute levels used by Akaah and Korgaonka (1983), this study examined only 5 attributes and 12 attribute levels. This simplification achieved with the use of fewer attributes and attribute levels resulted in lower demands on the data and placed less cognitive strain on respondents. It is argued that this simplification outweighed the gain in predicting power caused by additional attributes/attribute levels used. The situation also favored the conjoint model since only 12 non-holdout stimulus profiles were utilized

instead 27 non-holdout stimulus profiles employed by Akaah and Korgaonka (1983). The administration of less non-holdout stimulus profiles, along with the utilization of the 2-stage ranking procedure, contributed to minimizing the information overloading on respondents, and hence avoided the distortion of their true preference structures.

Another possible reason accounting for the superior validity of the conjoint model might be due to different nature of product classes and characteristic of data banks under investigation. The fact is that higher involvement with a given object (product class) would provide the subject respondents with a relevant framework for identifying preferences. Following the logic of this argument, a "hotel stay" served well as a choice selection object that required higher level of travelers' (or hoteliers') involvement than that of the "HMO Plan" used by the study of Akaah and Korgaonka (1983) and therefore provided higher validity.

5.1.2 Comparison between Internal and Predictive Validity

Two interesting results related to the direction and magnitude of the changes of the *Percentage of Correct Choice Prediction* and *Mean Correlation* were observed when predictions on profile evaluations were switched from the non-holdout profiles to holdout profiles. The first observation is that the *Percentage of Correct Choice Prediction* declined for the conjoint model (similar phenomenon was seen for the conjoint study conducted by Hu and Hiemstra 1996) but increased for the self-explication model. The second one is that the *Mean Correlation* dropped sharply for the conjoint model but remained more or less stable for the self-explication model. The results for both the

demand and supply perspectives show consistent patterns. A table showing the comparison is displayed below.

Table 24: Explanation of Validity Comparisons

Change			Effect On the Observations Due to	
From Internal Validity (12 Profiles) To Predictive Validity (6 Profiles)			Increase of the Chance of Random Selection	Nature of Validity Computation (Built-In Advantage)
% of Correct Choice (First Observation)				
Conjoint	Dropped	=	Increase	Decrease
Self-Exp.	Increased		Increase	-
Mean Correlation (Second Observation)				
Conjoint	Dropped	=	-	Decrease
Self-Exp.	Stable		-	-

Remark: a) The chance of random selection is applicable to the percentage of correct choice prediction in either models, b) The built-in advantage is applicable to conjoint modeling in either validity assessments

There are two prior considerations pertinent to explaining the above observations. The first consideration is that in applying the *Percentage of Correct Choice Prediction*, if the number of holdout profiles, as in usual case such as in this study, is less than the number of non-holdout profiles, one can expect the *Percentage of Correct Choice Prediction* (1st, 2nd, 3rd, ..., total) to increase because of the increase of the chance of random selection. In fact, the random level in this study has doubled (from an internal validity of 8.3% to a predictive validity of 16.7% for each single choice prediction) since there were 12 non-holdout profiles versus 6 holdout profiles. The second consideration is related to the nature of validity computation. Using conjoint estimated preferences derived from one set of stimulus (non-holdout profiles) evaluations to predict stated preferences of the same set of stimuli (predictions made within the internal system) has a built-in advantage for

conjoint modeling over the use of the self-explication model. In other words, in the context of self-explication modeling, respondents are required to make their self-stated evaluations in rather "general" terms, which is unrelated to the stimulus evaluations. The importance of the attributes and the desirability of their levels obtained are then used to predict the non-holdout profiles evaluations (and holdout profiles as well for predictive validity). Therefore, it is likely, although not absolutely, that the conjoint model yield better internal validity for the two assessment measures.

For the first observation, the above mentioned built-in advantage has disappeared when it was to predict holdout profiles evaluations (predictions made outside the system and in the real world) by using the conjoint model. Its disappearance outweighed the effect due to the increase of the chance of random selection, and hence gave rise to the overall drop of *Percentage of Correct Choice Prediction*. However, for self-explication modeling, one might expect that there should be no apparent validity drop or increase since there were no built-in advantages in predicting either profiles evaluations. Therefore, it is likely that the apparent increment of the *Percentage of Correct Choice Prediction* was due to the increase of the chance of random selection. In fact, for each of the demand and supply sides, the *Percentage of Correct Choice Prediction* has more or less doubled (from 15.2% to 30.0% for demand side and from 14.2% to 27.5% for supply side), and this is consistent to doubling the chance of random selection.

For the second observation, the effect of the chance of random selection did not apply here for conjoint modeling and so it is likely that its respective correlation drop was due to the loss of the built-in advantage (again similar phenomenon was seen for the study of Hu and

Hiernstra 1996). For self-explication modeling, both the built-in advantage and effect of the chance of random selection did not apply and so the correlation appears to be stable.

5.1.3 Comparison between the Conjoint and Self-Explication Models

As summarized in the results chapter, by applying the two assessment measures in both the demand and supply analysis, the conjoint model either compared favorably or demonstrated a statistical clear-cut edge of superiority over the self-explication model in terms of internal and predictive validity. These findings present fresh empirical evidence to demonstrate the robustness of the conjoint model applied to the hospitality and tourism industry. Referring to Table 23, our results are also consistent to those of Akaah and Korgaonka (1983) since they also found statistical significant superiority of the conjoint over the self-explication model.

However, the above results cannot be generalized to conclude the universal superiority of the conjoint over the self-explication model applied in the hospitality and tourism industry. In fact, a study conducted in non-hospitality and tourism areas by Leigh, MacKay and Summers (1984) failed to demonstrate greater validity for the conjoint analysis techniques, and conversely, even showed favorable results for the self-explication modeling approach. Based on predicting actual choice behavior, which is the most rigorous test of predictive validity (Green and Srinivasan 1978), Srinivasan and Park (1997) also found that the self-explication approach yielded better performance than that of the conjoint approach. Like all other methods, conjoint is no different in that its use is opened to abuse (Lewis, Ding and Geschke 1991, p.90). The availability of relevant rules and/or the accumulation of more empirical knowledge would help hospitality and tourism researchers avoid the use of

expensive, complex and time-consuming methodological techniques when a simple, inexpensive and easy-to-understand approach might provide as good as, or even better, predicting power.

One reason for the higher conjoint validity found in this study was because of the sequence in obtaining respondents' data. Providing the self-explicated data first could has created a learning effect. It is possible that the respondents learned about their preferences by firstly completing the self-explicated task and as such enhanced their abilities to provide more valid conjoint data. Conversely, one could also argue that providing the self-explicated data first had a detrimental effect on the respondents' performances on the conjoint tasks by causing them to become bored and/or fatigued. Which of them could give more profound effect should warrant further investigation. The former is a reason to explain the current results favorable to the conjoint approach.

Section 5.2: Hotel Attributes: Demand Perspective

The discussion in this section is mainly based on the findings from Table 15 to Table 18.

5.2.1 International Travelers

It was found that international travelers, in general, consider Room Rate to be the most important criteria in choosing their preferred hotels, followed by Star Rating, Location, Brand and Room Type.

The high level of importance of Room Rate found in this study is consistent with the results obtained by Ananth, DeMicco, Morea and Howey (1992), Lewis (1984b, 1985) and

Lewis, Ding and Geschke (1991). Also, this study reveals that in considering the attribute Room Rate, international travelers generally prefer the lowest price range. This result suggests that today's international travelers are price conscious and consider Room Rate to be a determinant factor when making their hotel purchase decisions. One reason which may account for this was due to the continuous deterioration of economic environment after the Asia financial crises. That is the pegging of the exchange rate of HK to US dollars had made Hong Kong to be most expensive to visit in Asia. This is particularly relevant for the regional travelers resided in Asia because of the currency devaluation in their host countries.

For Room Type, it has been defined specifically in this study as the availability of harbour view room. This definition is based on the fact that almost one third of the hotel inventory in Hong Kong are located along the Victoria Harbour. An examination of the marketing database of the Hong Kong's busiest hotel, which compiles qualitative information regarding hotel guests' preferences as revealed by corporate bookers (they are decision makers or "influencers" in a purchase decision), provided more evidence to support this definition of Room Type. However, international travelers in general consider Room Type to be of least importance, and assigned very low relative importance to it as well. Since these results may indicate a difference in opinion (gap) on the importance of harbor view products as revealed by travelers and corporate bookers, hotel managers should consider bridging this gap to target travelers and corporate bookers accordingly if the gap exist. Further exploration is needed to better understand the existence of this gap as well as the way(s) to obtain full benefit from it, for strategic formulation.

5.2.2 The "A Priori" Segmentation

When segmentation was analyzed using the "a priori" approach, the findings revealed that not all travelers preferred the lowest price range. It appears that consumers expressed a preference for the lowest price in association with a stated quality of products/services. This probably can be explained by the belief that the lowest price is associated with poorer quality. The consumer groups (sub-groups) with apparent atypical consumer behavior are the frequent, long haul as well as business travelers. Similar findings were evident in the study for the meeting market. Hu and Hiemstra 1996 examined the price tradeoff of meeting planners (in the aggregate sense) in hotel selection. The implication from their study was that meeting planners do not want to trade off a lower price for poor meeting services and thereby risking their job performance. This study might also suggest that "Price" would be taken by frequent, long haul and business travelers as a kind of risk reduction strategy. These consumer groups are prepared to pay a higher price to secure better services.

In-frequent travelers, short-haul travelers and leisure travelers were found to be more price sensitive than that of business travelers, long-haul travelers and frequent travelers. One reason why business travelers are less price sensitive might be that business travelers make trips at company expenses whereas leisure travelers have to spend on their own money for travel. Also, one reason which accounts for short-haul travelers' price sensitivity is that short-haul travel is less expensive compare to long-haul travel. Therefore, the more price conscious short-haul travelers opt for short-haul trip rather than long-haul trip, and vice versa. Besides, one intuitive explanation for the lower price sensitivity of frequent travelers is that frequent travelers may be part of the business traveler set. Another

possible reason is that for a traveler who can afford to travel frequently, he/she is likely to be less price conscious.

Brand and Star Rating are both considered as being more important for frequent or business travelers than that of infrequent or leisure travelers. This suggests that a hotel with familiar Brand and/or in 5-Star category is more preferable by the former consumer group. This is not unexpected since a familiar Brand in 5-Star category is often associated with higher Room Rate, and this is, as discussed, more affordable to the frequent or business travelers.

Room Type, the least important attribute for all pre-determined subgroups, was found to be more important for leisure travelers than business travelers. This might suggest that business travelers travel mainly on business purpose and do not have significant intention or motivation to seek touristic activities such as sightseeing (e.g. harbor view). However, leisure travelers visit Hong Kong mainly for seeking touristic activities. Therefore, one may think that Room Type is more important for them, especially the sightseeing tourists. More research effort is needed to establish such kind of evidence.

5.2.3 The "Post Hoc" Segmentation

One interesting finding is that *5-Star Hotel Lover* (Cluster 1) gave extremely low relative importance value to Location (4.1%), and that this clientele group has a higher composition of long-haul, frequent and business travelers (Table 18). This may be explained by the fact that Hong Kong is a small city with most commercial offices and 5-star hotels located in close proximity within the city center. Therefore, it may be argued that even if a business traveler (5-star hotel lover) may not be able to reach his/her prime

destination (e.g. partner office) by walking, he/she does not need to spend long time in travelling from the hotel to the place of business. As a result, he/she is more inclined to be indifferent to location preference. This explanation has added weight if he/she is a frequent traveler, as he/she might then has visited Hong Kong many times and acquired a high degree of familiarity with the Hong Kong locality.

The *Wealthy Balanced Type Group* (Cluster 2) gave very low relative importance to Room Rate and assigned a very high value to the attribute Brand. This may suggest that this group of long-haul, frequent and business travelers incline to stay in their preferred (or loyal) hotel brand without much price considerations. Also, because of their balance in seeking hotel benefits, they value the harbor view aspect of the hotel more (16.6%) when compared with other clusters. More importantly, the size (by %) of this cluster was found to be the second largest (25.3%) among the four clusters (Table 18). Therefore, the underlying rationale is that even under the economic downturn, there is still a considerable group of brand loyal customers seeking for high-level attributes. Hoteliers should, therefore, put more effort towards identifying these customers, enhancing their loyalty, retaining them and making use of their price insensitivity to maximize their hotel revenue.

Both *Budget Travelers* (Cluster 3) and *Economy & Convenience Seekers* (Cluster 4) are characterized by their high sensitivity of price. These two groups are infrequent short-haul leisure travelers. It is not unexpected that leisure travelers are more price sensitive since they travel at their own expenses. This factor is particularly relevant since hotel room rates in Hong Kong tend to be much higher in comparison to other Asian countries such as Taiwan, Indonesia and Thailand (Trends in the Hotel Industry 1996). Moreover, the cost-of-living in these Asian countries other than Hong Kong are generally lower.

5.2.4 Comparison of the "A Priori' and "Post Hoc" Approaches

The above demonstrates that for each of the five hotel attributes examined, the extent (in terms of relative importance and/or ranking) to which it is being sought varies across clusters and/or pre-determined segments. Moreover, it was consistently found from the two approaches that short-haul, infrequent and leisure travelers are generally seeking for lower price whereas frequent, long-haul and business travelers are generally seeking for other non-price attributes in terms of Star Rating and Brand.

In other words, both segmentation approaches used in this study are able to explain the discrepancies of the hotel attributes sought by international travelers. They both produce meaningful, distinguishable and consistent market segments. These findings were different from a past conjoint study conducted by Carmichael (1996). Her study used ski resort as a choice selection object, and only the "a priori" approach was found to reveal meaningful market segments.

Section 5.3: Hotel Attributes: Hotel Managers' Perspective

In examining the supply side perspective, it was found that hotel managers perceived Room Rate as the most important hotel attribute, followed by Location, Star Rating, Brand and Room Type (Table 19).

This result corresponds with the demand side since hoteliers do not consider Room Type to be of high importance. It seems to be an interesting finding. Both international travelers and hoteliers believe that Room Type is not important whereas the importance of harbor view was often cited as important by corporate bookers (according to the qualitative

information examined from the busiest hotel's database as mentioned in section 5.2.1). This may be due to the fact that harbor view room has often been a marketable item to hoteliers in targeting corporate clients. As this item is often included as a packaged element, corporate bookers may unconsciously believe that this item has more tangible value than it actually has. This further infers that hoteliers should market their harbor view products to corporate clients more vigorously than to their referred guests (i.e. international travelers).

Also, as similar to the demand side, hoteliers consider Room Rate to be most important. This may again due to the fact that in the downturn economy, hoteliers perceive that international travelers in general become more price conscious. Besides, as more marketing strategies are focused on pricing, hoteliers may unconsciously believe that this attribute becomes more important than it was in the past.

Section 5.4: Matching the Demand for and Supply of Hotel Attributes

While most hospitality and tourism research examined the choice selection from the consumer perspective (demand side), Palakurthi and Getty (1998) focused on the service provider perspective (supply side). However, to the author's knowledge, there is no known study which investigates the service gap between the demand and supply perspectives. Also, our present methodologies used in signifying the gap(s) are more intuitive in nature. With the lack of precedent results for meaningful comparative assessment, the discussions on the three kinds of mis-matches analysis will be intuitively explained in terms of their methodologies utilized and/or related to the real world

perspective. Finally, this section will be concluded by highlighting the possible reasons

for the mis-matches in the hotel industry.

5.4.1 Direct Comparison of Hotel Attributes

The first part of the discussion relates to the direct comparison of each of the five

corresponding hotel attributes of the two sides. From Table 19, the relative importance of

hotel attributes reviewed from both perspectives in general appear to suggest some

discrepancies (i.e. Room Type and Star Rating). However, when evaluated by using a 2-

sample t-test (using disaggregate relative importance of hotel attributes) the discrepancies

were not significant — indicating the failure of the gap detection. This might be explained

by the <u>diversity in hotel choice preferences</u> (characterized by large variation or standard

deviation of hotel attribute relative importance) discussed below.

Table 25: A Comparison of the Aggregate and
Disaggregate Relative Importance of Hotel Attributes

Relative Importance		Room Type	Room Rate	Location	Brand	Star Rating
<u>Demand Side</u>						
Aggregate		3.70%	33.76%	17.58%	15.62%	29.35%
Disaggregate	Mean *	11.33%	37.44%	14.64%	11.84%	24.75%
	Std Dev	9.42%	20.90%	12.06%	12.13%	15.56%
<u>Supply Side</u>						
Aggregate		9.27%	32.47%	24.23%	16.62%	17.42%
Disaggregate	Mean *	12.28%	31.21%	21.23%	15.42%	19.87%
	Std Dev	8.50%	18.97%	14.76%	16.00%	9.59%

Remark: * used for the comparison of the difference of means by the 2-sample t-test

Table 25 displays the results obtained from both the demand and supply perspectives, showing the aggregate relative importance as well as the means and the standard deviations of the disaggregate relative importance of hotel attributes.

In both instances, the above table reveals that the aggregate versus mean disaggregate relative importance of hotel attributes appear to be somewhat different. This is an expected outcome in conjoint analysis. The former measures the aggregate preference structure across a group of respondents while the latter represents the average preference structure of individual respondents. However, it was the latter (mean disaggregate relative importance) in each of the attribute demand-supply comparison that was used for carrying out the t-test. The above table apparently suggests that the mean disaggregate pairs in general matched more closely than that of the aggregate pairs (e.g. comparing the differences in terms of Room Type and Star Rating). More importantly, because of the relatively large standard derivation (indicates heterogeneity of hotel choice preferences) in each case (demand and supply), it is not unexpected that each testing on the difference of the mean disaggregate relative importance was insignificant.

The above phenomenon (large standard deviations) can be explained by the fact that the hotel preferences of today's international travelers are diverse. In the results section, it was shown that there exists a spectrum of various meaningful sub-segments/clusters (business versus leisure travelers, long-haul versus short-haul travelers, 5-Star Hotel Lovers, Budget Travelers, etc). One may expect that the hotel preference variation within a particular segment/cluster would be lower than the overall preference variation. In other words, travelers exhibit similar hotel preference structures (preference homogeneity) within the segment/cluster and exhibit different preference structures (preference

heterogeneity) across segments/clusters. A similar explanation can be applied in the supply side perspective. That is as indicated by their corresponding large standard deviations, different hoteliers (chained hotels versus independently owned hotels, 3-star hotels versus 5-star hotels, international hotels versus domestic hotels, etc) might in fact also perceive differently towards international travelers' needs.

As the hotel preferences and perceived hotel preferences from each side were found to be so heterogeneous, to directly evaluate the difference of each of the attribute sought across the entire demand and supply sides could, as revealed by this study, produce less meaningful results. Intuitively, one may expect to conduct similar comparative analysis by firstly defining more precisely the sub-segments in each side. This may be a suggestion for further research.

To summarize, we have attempted to detect the mis-match (gap) by using the direct comparison of the relative importance of hotel attributes between the entire demand and supply perspectives. And the comparison of this kind suggested no significant gap with the use of the 2-sample t-test. However, it was also found that the hotel choice preferences (on either side) were highly heterogeneous, and at least with distinguishable sub-segments as evident on the demand side. Therefore, to directly evaluate the entire demand and supply sides without considering these sub-segments seems to be less meaningful. As such we would not conclude or assume the genuine absence of the gap based on the above mentioned 2-sample t-test results. This also means that we would not discuss the absence of the gap in relation to the real world industry phenomenon. Rather, the gap in relation to the real world terms will be discussed in the subsequent mis-match analysis discussion sections.

5.4.2 Comparison of Simulated Market Shares

The second part of the reported analysis (section 4.5.2) illustrated how the gap of demand and supply of hotel attributes can be interpreted and quantified in relation to predicting market shares. It measured a "derived gap" transformed from measuring hotel attributes mis-matches to measuring hotel market shares mis-matches.

From the supply side perspective, it was revealed in Table 20 that Hotel 3 (a hotel with harbor view room, in the price range of HK$800 – HK$1400, conveniently located within walking distance from the main destination, with a familiar brand name and belonged to the 4-star category) captured relatively stable and high market shares in the three simulation scenarios (60.0%, 65.0% and 62.5% respectively). However, from the demand side perspective, the market shares captured by Hotel 3 remained consistently lower than that of the supply side in the three simulation scenarios (28.9%, 39.5% and 35.5% respectively). One reason for this might be that Hotel 3 (configured in higher attribute levels in Room Type, Location and Brand as well as medium level in Room Rate and Star Rating) has been a popular hotel profile only for certain customers, for instance, the *Balanced Type Group* (Cluster 2, see Table 18). However, a higher proportion of hotel managers might have considered this hotel profile to be a highly preferred hotel for international travelers, and particularly for loyal customers (next section will give consistent interpretation to this), and therefore resulted in the large gaps from the two different perspectives (31.1%, 25.5% and 27.0% respectively).

In comparing Hotel 3 with Hotel 2, the attribute levels for Room Rate and Location are one level lower for Hotel 2 (priced below HK$800 and require transportation). Since in

general, Room Rate is most important from both the demand and supply perspectives, one may expect that Hotel 2 to have captured a higher market share than Hotel 3 given the same scenario (Scenario 1). However, this was true only for the demand side but not for the supply side in Scenario 1. One reason might be due to the higher attribute ranking of Location for the supply side (section 4.5.1). In other words, hotel managers in general believe that a hotel located in an inconvenient location is a significant disadvantage, especially when all other competitors (Hotel 1 and Hotel 3) do not exhibit the same disadvantage. This also helps to explain why Hotel 2 has captured only very low market shares in all three simulation scenarios.

In Scenario 3, the simulation aimed at investigating the impact upon the entrance of a new hotel, Hotel 4 (a hotel with no harbor view room, in the price of below HK$800, conveniently located within walking distance from the main destination, with a familiar brand name and belonged to the 3-star category). In terms of Brand Name, it is better than Hotel 1 while in terms of Location, it is better than Hotel 2. In terms of Room Rate, it is more attractive than Hotel 3. Therefore, one may expect that it may cannibalize some, if not significant market shares of Hotel 1, Hotel 2 and Hotel 3. In fact, as shown on Table 20, Hotel 4 has only cannibalized some shares of all Hotel 1, Hotel 2 and Hotel 3 in the demand side perspective. From the supply side perspective, only the shares of Hotel 1 has been cannibalized while Hotel 2 and Hotel 3 have experienced no apparent effects. This might be due to the fact that hoteliers in general believe that a 3-star hotel without harbor view room (i.e. Hotel 4), even with a convenient location and lower price, is not better than a 4-star hotel with harbor view room (i.e. Hotel 2 and Hotel 3). However, their perceptions change when one additional attribute is missing — no Familiar Brand Name

(Hotel 1). As such Hotel 4 has cannibalized the shares of Hotel 1 from the supply side perspective.

The discussion in this part could largely be dependent on the combinations of all simulated hotel profiles. The above illustrations are just three examples of possible scenarios reflecting the existence of the "derived gap", which in turn can be interpreted as the existence of the "gap" of the demand and supply of hotel attributes. The reasons for the mis-match of hotel attributes are to be discussed in section 5.4.4.

5.4.3 Analysis of Hotel Managers' Perceptions

The resultant unbalanced allocation of hotel manager respondents with respect to the sizes (by %) of various traveler respondent clusters suggests the existence of mis-matches (refer to Table 22). The mis-matches suggests that Cluster 2 (Wealthy Balanced Type Group) might have been over focused on while Cluster 1 (5-Star Hotel Lover) have not been receiving sufficient attention from hotel managers. It is interesting to see that both groups of travelers are characterized by frequent long-haul business travelers with comparable sizes (25% for the Wealthy Balanced Type Group and 31% for the 5-Star Hotel Lover). However, a relatively large proportion of hotel managers (45%) believe that international travelers are seeking for a wide range of hotel benefits. Only 10% of the hotel managers perceive that international travelers are seeking for 5-Star deluxe accommodations.

The over focus on the *Wealthy Balanced Type Group* by hotel managers as mentioned above may be attributable to the increasingly competitive environment and lack-luster economic climate in Hong Kong. Confronted with a difficult business situation, hoteliers would strive to retain loyal (frequent) customers to secure a business base. In fact, Tepeci

(1999) cited in Reichheld's book that loyalty can help to maintain profit, reduce marketing cost, increase per-customer revenue growth, decrease operating cost, increase referrals, increase price premiums and provide competitive advantage. It follows that it is more profitable to retain existing customers than constantly seeking new customers to replace lapsed ones (Reichheld and Sasser 1990; Hamilton and Howcroft 1995). These hoteliers may think that so long as the various aspects (hotel attributes) are provided, these loyal customers (possibly characterized by frequent long-haul business travel with price insensitive behavior) will continue to make repeat visits with their hotels. Our findings reveal that a relatively large proportion (45%) of hotel manager respondents pay attention to this consumer group.

The lack of focus on the *5-Star Hotel Lover* may be explained by the fact that after the Asia financial crises, most hotel development projects in Hong Kong tended to cater to the lower-end or 3-star category (e.g. Newton Inn, Island Pacific and Century Harbour). The increase of the 3-star product supply could create a perception that Hong Kong has limited demand for the 5-star category. This pessimistic perception seems to be consistent to the decline in hotel occupancy rates of the 5-star category (e.g. Peninsula, Mandarin Oriental and Grand Hyatt) as well as the continuous downturn of the worldwide economy. However, our findings suggest that the 5-star hotel market was still there and has not been receiving much attention from hotel managers.

5.4.4 Plausible Reasons for the Mis-Match

The direct comparison of attributes failed to reveal mis-matches whereas both market shares simulation comparison and evaluations of hotel managers' perception indicated

certain degree of mis-matches. The former finding was primarily due to the large variations of hotel attribute relative importance (heterogeneity of preference structures). For the latter finding derived from the two types of analysis, the identified mis-matches were probably due to the hotel managers' wrong perception on the preference structures of the travelers. The ultimate reasons for their wrong perceptions could be multi-dimensional. They are summarized below in terms of the hotel managers' insufficient research focus on the needs and wants of the international travelers.

Firstly, as mentioned in the introduction chapter, the hotel industry prior to 1997 was experiencing good business years owing to the shortage of hotel room supply and the continuous influx of tourists before the re-administration of Hong Kong by China. Hoteliers in that boom period focused only on routine daily operations or room inventories control to cope with the high customer arrivals. Thus, little attention was devoted to setting up better marketing information systems to understand the genuine needs of the international travelers. This culture might have continued and eventually led to the mis-match identified in this study.

Secondly, the marketing strategy of hotel marketing departments in Hong Kong has been focused mainly on the business market (e.g. corporation, association and travel agent clientele) rather than the consumer market (i.e. end users). Sales managers have been appointed to handle their account portfolios. These sales managers, as required by their traditional job responsibilities, tended to concentrate their efforts on establishing a relationship with their account bookers (e.g. prime contacts, decision-makers, influencers, etc) to maximize their account productivity. The genuine needs of these bookers' referral

guests (i.e. end users) might have therefore been ignored. This might account for the mismatches of the travelers' hotel preferences perceived by Hong Kong hotel managers.

Thirdly, the major information gathered by hoteliers related mainly to non-benefit dimensions (e.g. historical data obtained during reservations or check-in). These data, unlike primary data on benefit seeking have little merit as predictors of customer behavior (Lewis and Pizam 1981) and do not reveal distinctive buying-behavior patterns (Lewis 1984a). The information derived from these in-house captured data may even become irrelevant since they fail to reflect the consumer spending patterns of the whole hotel market in Hong Kong. Therefore, the marketing decisions made or strategies formulated by hotel managers might not be based on complete information revealed by international travelers, and this leads to the mis-matches.

Fourthly, the sales function has been the dominant function of any hotel marketing departments in Hong Kong whereas most hotels to date still have no delegated personnel to assume the marketing research function. As hospitality industry has lagged behind many other industries in applying market research (Lewis 1983), it is not unexpected that hotel managers in Hong Kong are lack of understanding of international travelers. This again may have contributed to the mis-match revealed in this study.

Lastly, another hotel in-house information collection issue is related to the unsophisticated Knowledge Management. Knowledge management is the practical use of knowledge (e.g. data and information) to accomplish some organization objectives through the structuring of people, technology and knowledge contents. However, it is too often that knowledge management efforts are imposed on people who have other jobs to do and whose

performance is measured against objectives unrelated to knowledge management. It is in effect a time conflict issue. That is a sales manager may prefer spending time on sales visits rather than staying in the office to input sales call information; a reservation staff may refuse to keypunch all booking information in order to free more time to minimize abandoned calls; a conference service manager may find it too busy to locate the most suitable market segment code from her market segment list for her materialized catering function. In fact, hotel property management systems are often underutilized, although they serve to capture data and information. Knowledge management is practiced by "accident". As a result, the improper or inaccurate information as such collected cannot fully facilitate decision-making process. This may contribute to the mis-matches.

CHAPTER 6 — CONCLUSIONS AND IMPLICATIONS

One major purpose of this study was to evaluate the relative superiority of two consumer preference models namely, Conjoint Model and Self-Explication Model in the hotel choice selection process of international travelers visiting Hong Kong. The comparative results, as measured by the *Percentage of Correct Choice Prediction* and *Spearman Rank Order Correlation*, revealed that the decompositional conjoint model (based on attribute part-worths) has both higher internal and predictive validity in comparison with the compositional self-explication model (based on self-explicated weights). This implies that the conjoint model is more superior in explaining and forecasting hotel consumer choice behavior than that of the self-explication model. This applies to both the international travelers' and hotel managers' perspectives. As a result, Objective 2 of this research study have been accomplished. In examining the appropriateness of the use of the conjoint model in the study of travelers' choice of hotels, this study provides some concrete empirical evidence to demonstrate the robustness of the conjoint model. While the empirical results derived from this study should encourage the utilization of the conjoint modeling technique in revealing hospitality and tourism consumer choice behavior, it is believed that existing understanding on conjoint model validity in the field is still in its infancy. Its applicability and appropriateness under different conditions must await further empirical testing.

This study has demonstrated an illustrative and superior tool which can be utilized to derive valuable information on the tradeoffs of hotel attributes that international travelers are willing to make in hotel choice decisions (Objective 1). The part-worths and relative importance of hotel attributes (these are the conjoint estimated preference structure) with

respect to all aggregate, sub-group and individual international travelers are the primitive analysis elements. They are the quantitative output of the conjoint model. When incorporating them with other consumer decision influencing dimensions (e.g. situational, geographic and behavioral), they can offer suitable analysis capability to industry marketing researchers in consumer behavioral predictions and segmentations. To be more specific, these quantified attribute values, as demonstrated by this study, can help to 1) facilitate the "a priori" and "post hoc" segmentation analysis, 2) predict preferences and market shares, as well as to 3) measure the discrepancies of the product/service attributes sought as revealed from the demand and supply perspectives. The above are some of the useful marketing research and analysis activities pertaining to the formulation of effective marketing strategies. Conjoint analysis provides an exciting opportunity to understand market behavior, not just for hotel visitors, but within other contexts and for other touristic activities.

The "a priori" segmentation results show that there are discrepancies in the hotel attributes sought by business versus leisure travelers, long haul versus short haul travelers as well as frequent versus infrequent travelers. In particular, frequent, business and/or long-haul travelers are less price-sensitive than those of the infrequent, leisure and/or short-haul travelers. Hotel marketers should consider the former as high yield customers. When designing new hotel products or launching marketing campaigns, they may focus on their most valued attribute "Star Rating" (and even "Brand" for frequent travelers) and position themselves at above average price in order to boost the hotel room revenue. A similar philosophy may be applied to the low yield and typical consumer behavioral groups — infrequent, short haul and/or leisure travelers.

By using the "post hoc" segmentation approach, four homogeneous benefit segments, namely *5-Star Hotel Lovers*, *Wealthy Balanced Type Group*, *Budget Travelers* and *Economy & Convenience Seekers* of comparable sizes (number of respondents) were identified. The first two segments are characterized by frequent-long haul-business travelers while the last two segments are characterized by in-frequent-short haul-leisure travelers. These findings also provide valuable information to the hoteliers in Hong Kong which will assist in the formulation of business strategies pertaining to the arena of product design, market segmentation and positioning. For an instance, *5-Star Hotel Lovers* are those seeking for deluxe hotels and are characterized by frequent-long haul-business travelers. Therefore, a deluxe hotel marketer may consider enhancing their long-haul guests' loyalty by offering exclusive frequent guest programme benefits or extra bonus rewards to them. This may be communicated via the daily rate-sheets sending to their respective corporate bookers or business partners. For another instance, *Economy and Convenience Seekers* are those seeking for good value of money and locational convenience, and are characterized by in-frequent-short haul-leisure travelers. Therefore, a 3-Star property hotelier can think of inducing new short-haul business by offering a special package (with inclusion of transportation vouchers to distant tourist attractions) for any first time property visitors resided in a neighboring city. This may be achieved via joint promotional efforts with local transportation companies and/or travel agencies.

The preceding two paragraphs show that both segmentation methods with the use of conjoint input data are viable technique for future design of hospitality and tourism services. As a result, Objective 3 is accomplished.

Based on the estimated preference structure of each of the 296 international travelers visiting Hong Kong, a series of three simulation scenarios (refer to Table 11-13) have been demonstrated. Scenario 1 is a basic scenario. It predicted the frequency distribution of the "preferred hotel" (first choice selection) in a consideration set of 3 hypothetical competing hotels. Scenario 2 demonstrated the impact of product modification (a simple modification of Scenario 1). Illustration was made on how would the predicted frequency distribution or market shares be affected upon changing the levels of 2 attributes (Price and Star Rating) of a given 5-attribute configured hotel. Scenario 3 presented an interesting phenomenon. It showed the effect of cannibalization on the 3 hotel shares upon the entrance of a new market player.

The results of the simulation offer important application to hotel marketers and investors. Firstly, a marketer may want to know his/her hotel position (i.e. market share) relative to its major competitors. With the use of the conjoint preference data, a simple simulation procedure can be carried out to provide useful answers. Secondly, having identified the hotel relative position, the marketer can apply simulation to answer "what-if" questions (sensitivity analysis). Lastly, when a hotel investor is planning a hotel project in a particular location, he/she will be interested to find out the right feature combination of the entrant. That is: given an entrant with a specified configuration, the investor will be interested to know what would be its relative business performance and impact to its locational competitors. The simulation as demonstrated in Scenario 3 of the above has already illustrated a procedure in deriving the needed predictions. Therefore, the conjoint-based market shares simulation can be considered as a valuable tool that provides actionable input to hotel marketers and investors.

The existence of the mis-matches of the demand and supply of hotel attributes has been evaluated and signified via three different approaches. Firstly, the direct comparison of the hotel attributes tradeoffs as revealed by and derived from the demand and supply sides failed to reveal significant discrepancies. Secondly, a series of three illustrative simulation scenarios were run. The comparative simulated market shares as revealed by and derived from the two sides signified an overall discrepancy of more than 50% in each scenario. Lastly, for the analysis of hotel managers' perception, an overall discrepancy of 48.8% was found. Frequent, long-haul and business travelers (Cluster 1 and Cluster 2) signified higher discrepancies than in-frequent, short-haul and leisure travelers (Cluster 3 and Cluster 4). Attention should therefore be given to the consumer group(s) with large discrepancy (i.e. incorrect perception). As the directions and magnitudes of the discrepancies revealed that *5-Star Hotel Lovers* (Cluster 1) are not receiving proper attention by hotel managers while the *Wealthy Balanced Type Group* (Cluster 2) is over focused, this may imply that a shift of marketing effort to target *5-Star Hotel Lovers* is an advantageous strategic move. The completion of the above analysis means that Objective 4 is accomplished.

The above has recommended the Conjoint Model as a superior tool to understand hotel consumer behavior and suggested how does this tool be usefully utilized to assist in formulating marketing strategies. Also the author believe that hotel managers will find the above recommendations based on the segmentation findings as well as the discrepancies of hotel attributes mis-matches to be of relevance to their management decisions. Objective 5 of this study has therefore been accomplished.

CHAPTER 7 — LIMITATIONS AND SUGGESTIONS FOR FURTHER RESEARCH

In this chapter, some limitations in this research study are explained in Section 7.1. They are mainly related to the sampling and model applicability issues as well as the coverage of different travel segments. Further recommended research studies will mainly be directed towards these three areas, and they are discussed in Section 7.2.

Section 7.1: Limitations of the Study

7.1.1 Sampling

One drawback of this study relates to the lack of randomness in the nature of the sampling method. The convenience sample collected from interviewing the 300 international travelers at 20 hotels (including all 3- to 5- Star hotels) in the short time period (ignorance of seasonal factors) could be a source of potential bias. In other words, the reported findings may be treated as exploratory in nature. Caution should therefore be paid in interpreting the relative size of each segment and its associated travel characteristics.

The other source of primary data was based on a convenience sample size of 20 hotel marketing professionals in 20 different hotels who had agreed to participate in the self-explication and conjoint experiments. These 20 hotels represent approximately 20% of total number of hotels in Hong Kong. However, in conducting the 2 sample t-test (demand and supply in section 4.5.1), this limited sample size could be problematic. Non-parametric tests would have been more appropriate. Also, in comparing the simulated shares between the two sides or in conducting classification analysis, this limited sample

size could provide sensitive results. The removal, addition or replacement of one or two manager respondents may lead to changes in the overall results. Again, the reported findings here should be regarded as exploratory and it can be viewed to be illustrative as to how the gap of demand and supply of hotel attributes can be interpreted and quantified in relation to predicting market shares.

The hotel purchase decisions of international travelers involve many complex attributes and levels. It is common to expect that it should not be solely dependent on five determinant attributes as described in this study. Unfortunately, it was not appropriate to request very detailed data supply from respondents owing to the anticipated surveying environmental restriction (travelers were intercepted and interviewed near the entrance of each surveyed hotels). Moreover, past studies have shown that respondents have difficulty in evaluating large number of variables at once (Miller 1956). According to Green & Srinivasan (1990, p.8), the full-profile method of conjoint analysis works much better when there are only a few (say, six or fewer) attributes studied. Thus, this investigation limited the study to examining only five attributes. More complicated and detailed sampling design is needed in order to obtain more in-depth information from international travelers.

7.1.2 Model Applicability

Conjoint modeling is a subjective modeling technique. It is not a single formulation but involves several steps and several decisions (Figure 7 of Chapter 3) along the way to obtain the output. It may be possible that when another alternative in a given conjoint step is used instead (using interactive instead of additive model, using two-factor-at-a-time

instead of full-profile approach, using MONANOVA instead of LINMAP estimation procedure, etc), the obtained output will be different (Jain, Acito, Malhotra and Mahajan 1978; Segal 1982). Therefore, the findings with regards to preference predictions, segmentations and evaluations of mis-matches may be different.

Another limitation relates to model applicability in terms of the types of model used in market shares simulations. The currently employed First Choice Model, which is based on the maximum utility criteria, is simple and straight forward. However, this model implicitly assumes that there is no error in the utility data and that all important attributes under studied are included in the conjoint design.

7.1.3 Travel Segments

Different dimensions such as socio-demographics, motivation factors, behavioral characteristics, geographic factors and situational factors may influence the hotel attributes sought by international travelers with varying degrees. In order words, different travel segments in terms of different combinations of the above dimensions may seek different hotel benefits. Owing to the highly segmented nature of international travelers, our research scope in the demand-side perspective has considered only a small subset of these travel segments. On the other hand, our research study in the supply-side perspective has not considered any non-benefit dimensions. That means this part of the study has been limited to portraying the needs of the general international travelers as perceived by hotel managers.

One of the limitations stemmed from the present study is related to the subjective categorization of the "a priori" segmentation criteria used. The *purpose of travel* was

conceptualized as either for business or for leisure. Some other possible categories such as for transient or for visiting relatives/friends have not been taken into consideration. For *country of residence*, we had only categorized respondents into either long-haul or short-haul. Lastly, those respondents who, at the time of the interview, had expressed that having traveled three times or below in the past two years were regarded as infrequent travelers while those traveled four times or more in the past two years were classified as frequent travelers. This classification could be varied.

In view of the above limitations, the findings of this study should be interpreted with caution. They should not be generalized to represent the full picture of the hotel preference mix of international travelers visiting Hong Kong as revealed by travelers and hotel mangers. However, this study represents an initial attempt to better understand both parties, hotel guests and hotel managers, with respect to the hotel benefits being sought (or perceived to be being sought) in Hong Kong. Future research effort is needed to measure more accurately the preference mix and the mentioned gap as revealed and derived from the two parties. The next section will outline some of the relevant suggested research areas.

Section 7.2: Suggestions for Further Research

7.2.1 Sampling

In anticipation of the existence of seasonality factors, the research may be replicated by using a more vigorous sampling strategy to collect samples in different seasons according to different visitation patterns. And in cases where large attribute sets are involved, a

technique called "bridging" can be employed. A module called "Bridger" from the Bretton-Clark's suite of conjoint software can support the required statistical routine (one such conjoint study involving complex attributes was well demonstrated by Wind, Green, Shifflet and Scarbrough 1989). In order to overcome the environmental restriction in sampling and facilitate a more sophisticated statistical design, closer collaboration with industry practitioners may be needed, especially when the supply side respondents, as was in the present case, are limited. Alternatively, the study may be replicated in different cities or even with different subject hospitality and tourism product classes (e.g. restaurants) in order to obtain more representative respondents from the supply side.

7.2.2 Model Applicability

The comparison between the conjoint and self-explication model was an empirical study based on the product class "hotel stay". It would be interesting to know whether the comparative result will be sensitive to other hospitality and tourism products/services, or whether it is universally in favor of the conjoint approach in the field. Further efforts in investigating the model superiority applied in different hospitality and tourism product classes would be instructive.

In the past two decades, two developed approaches — Hybrid Conjoint Analysis (Green, Goldberg and Montemayor 1981) and Adaptive Conjoint Analysis (Johnson 1987) — which combined the self-explicated task with aspects of the full-profile conjoint analysis received much attention in marketing research literature. Limited research applications on the former were evident in the hospitality area (Hu and Hiemstra 1996; Palakurthi and Gretty 1998). Another approach that requires similar multiple methods combination called

Customized Conjoint Analysis was also proposed recently (Srinivasan and Park 1997) in marketing research literature. It can been seen that the application of conjoint variants is extremely rare in the field of hospitality and tourism, and more empirical research efforts are needed to understand their performance in measuring consumers' preference structure in the field.

The conjoint modeling approach has been regarded as an appropriate statistical technique in the hospitality industry since hospitality products involve mulitattributes (Lewis, Ding and Geschke, 1991). It has also been recommended as the best method for examining the tradeoffs consumers are willing to make between different products with various attributes (Green & Srinivasan, 1978, 1990). However, advertising and promotional activities launched by hotel marketers, which are traditionally outside the bound of product attributes in conjoint analysis, can influence hotel consumers' decisions. One future research focus may be on how to incorporate these influencing factors in the conjoint modeling approach.

The sensitivity of our findings with regards to preference predictions, segmentations and mis-match evaluations can further be investigated with the application of different conjoint step combinations. Similarly, the market shares simulation (link up to mis-match evaluations) can be replicated by using different simulation models (e.g. Probability Models and Bayesian Simulations) to investigate different results, if any.

7.2.3 Travel Segments

In undertaking a consumer behavioral study, different situational factors and other influential forces should be carefully considered and thoroughly analyzed (McCleary, Weaver and Hutchinson 1993; Filiatrault and Ritchie 1988). This implies that more

exploration is needed to understand what are these different situational factors and influential forces as well as how do they impact the international travelers in their hotel purchase desires in Hong Kong. On the other hand, hotel managers, in reality, may be able to reveal deeper segment-level attributes sought information, for instance, the attributes that are relevant for the travelers in different trip decision situations (i.e. business versus leisure travel). In fact, it was argued that conventional segmentation questioning about the product without a specific usage occasion would provide meaningless information (Young, Ott and Feigin 1978, p. 406). This can become another topic called for further explorations.

One possible future research area is related to the categorization of the "a priori" segmentation criteria. The *purpose of travel* can further be conceptualized as for transient or for visiting relatives/friends. For *country of residence*, it is recommended that future research be implemented to identify the hotel benefits sought by more detailed sub-segments, i.e., Japan, South Korea, USA/Canada, Western Europe, Australia/New Zealand, Mainland China, etc. Lastly, future studies may examine how does the *frequency of travel* affect the hotel benefits sought by travelers.

In regards to a hotel purchase, it may, as discussed, not solely be the traveler's decision. In particular, the business clients market may warrant further attention. As travel increases and the incurred expenses become substantial, some corporations (i.e. high yield business segment) introduce formal travel programs and compile corporate travel directories with lists of approved hotels. These corporate travel planners can give certain degree of corporate influences on travelers or may even assume the dominant role in hotel purchases. Therefore, it is imperative for hotel marketers to know more about the hotel attributes

sought by corporate travel planners in order to make sure their hotels be included in the directories of their respective targeted corporate accounts portfolio (Bell and Morey 1997). To extend further, it may be a challenging job for both hotel marketers and academic researchers to determine when should be the right timing to target corporate travel planners (bookers) and under what circumstances they should focus on their referral guests (end users).

We have identified four benefit segments. However, as the travel industry is dynamic and volatile (e.g. there has been an increasing number of short-haul travelers visiting Hong Kong), the desired benefits or sizes of these benefit segments may vary over time (Calantone and Sawyer 1978). Therefore, in formulating advertising and promotion strategy, one should consider the stability of the targeted segment. A volatile segment may only require a shorter term marketing effort while a stable segment may justify allocating marketing dollars with longer promotion time frame. Conjoint analysis is basically a static and steady-state preference measurement technique (Green and Krieger 1991, p.28). It aids to identify and measure benefit segments in a particular point in time. Understanding the stability of them is obviously essential to warrant further research efforts.

The above are only some of the possible suggestions that may initiate further explorations. Relevant research opportunities are numerous, both in the conceptual and technical frameworks. For instance, one more extended step is to explore the way(s) and implication(s) of bridging the gap of the hotel attributes demand and supply. On the other hand, the author also believe that the methodological approach of this study can provide insights for future research study in relation to consumer behavioral prediction and market segmentation in the hospitality and tourism areas.

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APPENDICES

Hypothetical Hotel Profiles for Surveyed Respondents
- International Travelers and Hotel Managers

For Experiment ONE

	Card 13	Card 14	Card 15	Card 16	Card 17	Card 18
Room Type	H/V	No H/V	No H/V	H/V	H/V	No H/V
Room Rate	$800-$1400	Less than $800	More than $1,400	Less than $800	More than $1,400	$800-$1400
Location	Walking	Transport	Walking	Walking	Transport	Transport
Brand	Unfamiliar Brand	Familiar Brand	Familiar Brand	Familiar Brand	Unfamiliar Brand	Un-familiar Brand
Star rating	4 star	4 star	5 star	3 star	4 star	5 star

For Experiment TWO

	Card 1	Card 2	Card 3	Card 4	Card 5	Card 6
Room Type	No H/V	H/V	H/V	No H/V	H/V	H/V
Room Rate	$800-$1400	Less than $800	$800-$1400	$800-$1400	More than $1,400	More than $1,400
Location	Walking	Transport	Walking	Transport	Transport	Walking
Brand	Unfamiliar Brand	Familiar Brand	Familiar Brand	Familiar Brand	Familiar Brand	Familiar Brand
Star rating	5 star	3 star	3 star	3 star	5 star	4 star

	Card 7	Card 8	Card 9	Card 10	Card 11	Card 12
Room Type	H/V	No H/V	H/V	No H/V	H/V	No H/V
Room Rate	More than $1,400	Less than $800	Less than $800	Less than $800	$800-$1400	More than $1,400
Location	Transport	Transport	Walking	Walking	Transport	Transport
Brand	Unfamiliar Brand	Unfamiliar Brand	Unfamiliar Brand	Familiar Brand	Unfamiliar Brand	Unfamiliar Brand
Star rating	3 star	4 star	5 star	3 star	4 star	5 star

A Survey on Hotel Preferences of International Tourists

Good morning/afternoon, I am conducting a survey on the hotel industry with the Hong Kong Polytechnic University. I would be grateful if you can spare 10 minutes in filling my questionnaire.

1. Are you a visitor or stay/work permanently in Hong Kong?

    ☐ Visitor   ☐ Non-visitor (Terminate the interview)

2. i. Which country do you come from ?

    ☐ Japan   ☐ Korea   ☐ Indonesia   ☐ Malaysia   ☐ Philippines ☐ Singapore
    ☐ Thailand   ☐ India   ☐ Taiwan   ☐ PR China   ☐ UK   ☐ Germany
    ☐ France   ☐ Italy   ☐ Africa   ☐ South & Central America
    ☐ USA   ☐ Canada   ☐ Australia/New Zealand   ☐ Others_____

    ii. What is your nationality?

    ☐ Japanese   ☐ Korean   ☐ Indonesian ☐ Malaysian   ☐ Filipino   ☐ Singaporean
    ☐ Thai   ☐ Indian   ☐ Taiwanese   ☐ Chinese   ☐ British   ☐ German
    ☐ French   ☐ Italian   ☐ African   ☐ South & Central American
    ☐ American   ☐ Canadian   ☐ Australian/New Zealander   ☐ Others_____

3. Did you stay in a hotel on this trip ?

    ☐ Yes   Please give the name of the hotel _____
    ☐ No   Have you ever stayed in a hotel in Hong Kong ?
            ☐ Yes   ☐ No (Terminate the interview)

4. What is the main purpose of your trip ? (Please choose one only)

    ☐ Business / Meeting   ☐ Sight seeing / Vacation   ☐ Others (Terminate the interview)

5. Inclusive of this trip, how many overseas trips have you made within the past 2 years ?

    ☐ 3 or below   ☐ 4 - 7   ☐ 8 - 11
    ☐ 12 - 15   ☐ 16 or above

6. In your travel to an overseas country, typically who decides on your choice of hotel?

    ☐ Myself   ☐ Family member / Relatives / Friends
    ☐ Company   ☐ Travel agent
    ☐ Business Partner   ☐ Others _____ (Please specify)

7. i. Suppose you are going to select a hotel to stay in Hong Kong for the purpose you indicated in question 4. You think five factors listed below are important. These factors are "Room Rate", "Room Type",...(Please lead the interviewee to read all factors and options prior to the scoring). Each factor has 2 or 3 options. For **each** factor, please indicate which is your most preferred option by giving a "5" on it. Continue to give your scores to the remaining options by using "1", "2", "3" or "4". Scoring a "1" means that you least prefer that option.

Factors	**Options**	Key:

Key:
(least preferred)   (most preferred)
     1   2   3   4   5

1. Room Rate:
     Below HK$800 _____
     HK$800 - HK$1400 _____
     Above HK$1400 _____

2. Room Type:
     With Harbour View Room _____
     No Harbour View Room _____

3. Location (from Office/ Tourist Destination)
     Need Transportation _____
     Within Walking Distance _____

4. Brand:
     Familiar Brand Name _____
     Unfamiliar Brand Name _____

5. Star-rating:
     5 star _____
     4 star _____
     3 star _____

ii. For the five factors, which of them you consider to be most important? Please indicate by rating (circling) each of them. Use 1 - Not Important and 7 - Very important

	Not Important					Very Important	
1. Room Rate	1	2	3	4	5	6	7
2. Room Type	1	2	3	4	5	6	7
3. Location	1	2	3	4	5	6	7
4. Brand	1	2	3	4	5	6	7
5. Star-rating	1	2	3	4	5	6	7

- - - - - - - - - - - - - - Conduct Experiment ONE and TWO - - - - - - - - - - - - - - - -

Demographic Section

Sex :   ☐ Male   Age :   ☐ 16 - 25   ☐ 26 - 35   ☐ 36 - 45
       ☐ Female   ☐ 46 – 55   ☐ Above 55

Occupation: ☐ Senior white collar   ☐ Junior white collar   ☐ Blue collar
           ☐ Housewife   ☐ Others_____

Education: ☐ Primary school education   Personal Monthly come: ☐ HK$15,000 or Below
          ☐ Secondary school education   ☐ HK$15,001 - $30,000
          ☐ College education   ☐ HK$30,001 - $45,000
          ☐ University   ☐ HK$45,001 - $60,000
          ☐ Others_____   ☐ Above HK$60,000

---------- Thank you for your cooperation ----------

A Survey on Hotel Preferences of International Tourists

Part A

1. Suppose a traveler is going to select a hotel to stay in Hong Kong. You think five factors listed below are important to them. These factors are "Room Type", "Room Rate",...(Please lead the interviewee to read all factors and options prior to the scoring). Each factor has 2 or 3 options. For **each** factor, please indicate which you think is the traveler's most preferred option by giving a "5" on it. Continue to give your scores to the remaining options by using "1", "2", "3" or "4". Scoring a "1" means that you think the traveler least prefer that option.

Factors	Options	Key: (least preferred) 1 2 3 (most preferred) 4 5
1. Room Type:	No Harbour View Room	_____
	With Harbour View Room	_____
2. Room Rate:	Below HK$800	_____
	HK$800 - HK$1400	_____
	Above HK$1400	_____
3. Location (from Office/ Tourist Destination)	Need Transportation	_____
	Within Walking Distance	_____
4. Brand:	Unfamiliar Brand Name	_____
	Familiar Brand Name	_____
5. Star-rating:	3 star	_____
	4 star	_____
	5 star	_____

2. For the five factors, which of them you think the traveler consider to be most important? Please indicate by rating (circling) each of them. Use 1 - Not Important and 7 - Very important

	Not Important					Very Important	
1. Room Type	1	2	3	4	5	6	7
2. Room Rate	1	2	3	4	5	6	7
3. Location	1	2	3	4	5	6	7
4. Brand	1	2	3	4	5	6	7
5. Star-rating	1	2	3	4	5	6	7

Part B

3. You are given 6 hotel profiles (as shown). Which of them you think is the traveler's most preferred hotel? Which is the second one? ....

4. i. You are now given 12 hotel profiles (as shown). Please divide them into two groups (not necessarily in 6-6). One group are those hotels which you think are more preferred than the other by the traveler, and therefore the other group is a less preferred group.

   ii. For the most preferred group, please rank them from most preferred to least preferred.

   iii. For the least preferred group, please rank them from most preferred to least preferred.

   iv. The 12 hotel profiels are now in this order, please indicate any changes you want to make, if any.

---------- Thank you for your cooperation ----------