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CONJOINT ANALYSIS AND ITS APPLICATION IN THE HOSPITALITY INDUSTRY

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ABSTRACT

As a relatively new marketing research tool, especially in the hospitality industry, conjoint analysis is a powerful technique for determining the trade-offs that consumers make in making purchase decisions, and in developing pricing strategies for product lines. Conjoint analysis also allows for simulations and price elasticities for any product configuration, that permits analyses of market shares in various benefit bundle alternatives.

The use of conjoint analysis in marketing research has been increasing rapidly in the last 10 years in marketing research. This has led to development of different models for use in different situations and with increasing rigor in producing valid and reliable results. Although academic research journals have reported on these developments, they have been largely constrained to sophisticated statistical analysis that makes conceptualization and application difficult for non-statisticians. This article presents conjoint analysis in two different perspectives. First, it presents conjoint in a largely qualitative framework for ease of understanding the application and the principles under which it operates. With canned programs that are available today, one does not need to be a statistician to use conjoint analysis. On the other hand, as with any quantitative method, one does need to understand the principles and limitations as, like any other quantitative process, abuse and misuse is easily practiced unwittingly. Second, this article uses hospitality examples so as to apply the use of conjoint to this specific industry.

Conjoint analysis is first explained and then elaborated as to the four different models which are in common use today and which are available in canned software. Following this, an application is made in the hospitality industry using one of the models and demonstrating a fairly simple use, the development of weekend packages for a hotel. The explanation and the application should start the interested researcher in the direction of further information and utilization in research projects.

KEY WORDS: conjoint, trade-off analysis, non-metric measurement, utility scores, pairwise, full profile, hybrid, and multinomial logit models, orthogonal array, attribute choice, simulation.

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part of their separate thesis work.

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The modeling of consumer preferences among multiattribute product alternatives has long been a major area of interest to marketing researchers. While the Fishbein type of multiattribute attitude model (Fishbein, 1967) has prevailed as the theoretical mainstream in this area, a new experimental technique, conjoint measurement, has developed from its origin in a branch of mathematical psychology and psychometrics into a powerful quantitative method that can be used to effectively predict the consumer's choice and trade-offs among multiattribute product alternatives.

Unlike the Fishbein model in which the measures of belief for an alternative are weighted by the measures of importance and then summed to predict the overall preference for the alternative, the conjoint model decomposes a product into a few major attributes and each attribute into a number of different levels. These attributes and their levels can be non-metric in form. The product attributes and their different levels are then reassembled into a set of factorially synthesized combination alternatives. The respondent's evaluations of each of these multiattribute stimuli are used to derive a set of part-worths (called "utilities" in conjoint analysis) for the individual attributes indicating the degree of importance of each attribute to the respondent in selecting the product.

One of the most significant characteristics of conjoint analysis is that it provides the marketing manager with valuable information about the relative importance of various attributes of a product, and about the values of different levels of a single attribute (Green and Wind, 1975). This means that the results of conjoint measurement will allow the marketing manager to not only rank the importance of each component of a multiattribute product, but also to find out how a trade-off can be justified when different attributes are combined in a certain manner.

Conjoint measurement has received very limited literature attention in the hospitality industry. As a marketing research tool, however, its strong predictive power of consumer choice among multiattribute product alternatives should not be overlooked, as the consumer's choice of a hospitality product frequently involves trade-offs among multiattribute product alternatives and a majority of the product attributes are non-metric in form. This use was demonstrated by Marriott Corporation in the design of Courtyard by Marriott (Wind, Green, Shifflet and Scarbrough, 1989), and later in the design of Fairfield Inns. Muhlbacher and Botschen (1988) demonstrated the use of conjoint in selecting holiday travel packages while Renaghan and Kay (1987) used it to measure meeting planners' tradeoffs.

The purpose of this paper is to discuss various conjoint models and explore their potential application in consumer choice studies for the update on conjoint analysis, including marketing use and issues of reliability and validity, see Green and Srinivasan (1990). Following this we demonstrate an application in the selection of hotel weekend packages. We do not intend a "how-to" of conjoint analysis, which can be found in various research books, but rather hope to stimulate interest in this powerful tool for developing hospitality products.

Why Conjoint Measurement is Useful in Hospitality Research

Marketing the hospitality product frequently involves understanding the consumer's reaction to multiattribute product alternatives which are difficult to measure on interval or ratio scales. The consumer's evaluation of these attributes are often subjective ratings or categorical judgements as shown in Exhibit 1. These characteristics make many conventional quantitative methods ineffective or cumbersome to apply. Conjoint analysis is designed for situations where multiple non-metric (or metric) independent variables are interdependent and affect the ordering of a dependent variable. In other words, if the consumer's preference of a product is set as the dependent variable and selected product attributes as the independent variables, conjoint analysis can measure the degree of importance of each selected product attribute and its influence on the consumer's choice of the product.

As illustrated in Exhibit 1, a majority of these hospitality product attributes are non-metric in form. Conceivably, the consumer's judgments of these attributes are dependent on subjective estimation. Even though consumers may be able to rank these attributes in order of preference, it is unlikely that they would be capable of assigning meaningful mathematical values to them for further analysis. Therefore, such ranking would generate little more information than just ordinal classification. Furthermore, as a single product can rarely combine all desired characteristics in reality, and offering more of one attribute (say full service and a swimming pool) often involves sacrificing another attribute (price may increase), it is insufficient to know just which attributes are preferred. Rather, we need to find out how the consumer trades off among different product attributes, and this is exactly the information conjoint analysis can supply (Fenwick, 1975). Finally, asking consumers what is important in a hospitality product often reveals highly skewed data difficult to analyze; i.e., everything is important because these judgments are made in the abstract. Conjoint analysis overcomes this by calculating relative importance on the basis of trade-offs.

Since conjoint analysis was first introduced in marketing research in the early 1970's, various models have been developed to deal with different kinds of research problems. While generally comparable in term of validity and predicting power, these models differ in regard to model structure, data collecting procedure, simplicity, and generality.

Exhibit 1. Non-metric and Metric Attributes of Some Hospitality Products

	Non-metric	Metric
Hotel:	Cleanliness, location, physical condition, corporate name and image, amenities,	Price

	food and beverage facilities, ambiance, friendliness of staff, access to reservation (toll-free telephone number), availability of health and recreational facilities.	
Tour Package:	Destination selection, availability of escort/ tour guide, transportation, accommodation.	Length of stay, cost
Airline:	Direct flight availability, in-flight service, airport service, type of aircraft, company name,image.	Safety record, on-time record, flight frequency, age of carrier, price
Restaurant:	Location, menu selection, atmosphere, friendliness of staff.	Service time, price

DIFFERENT CONJOINT MODELS

The Pairwise Trade-off Model

The pairwise trade-off model considers selected product attributes on a two-at-a-time basis. The respondent is asked to rank pairs of attributes at different levels from the most preferred to the least preferred. Exhibit 2 presents an illustration of this method, as applied to a hypothetical respondent’s evaluations of hotel location and service level.

Exhibit 2. Response to a Pairwise Trade-off Stimulus

Hotel Service Level	Distance from Downtown (in miles)			
	15	10	5	2
Four-star	(12)	(8)	(4)	(1)*
Three-star	(13)	(9)	(5)	(2)
Two-star	(15)	(11)	(7)	(3)

One-star	(16)	(14)	(10)	(6)

* The numbers in parentheses indicate the rank ordering of each given combination, with (1) representing the most preferred and (16) the least preferred.

If these attributes were examined one at a time, a very simple conclusion would have been reached that this respondent merely prefers four-star service level as compared to one-star, and close to downtown rather than far away. However, more valuable information can be obtained when these attributes are examined jointly. For example, in the fourth preference of this respondent, when service level dropped to one-star, the respondent chooses the hotel that is farther away from downtown but has a higher service level. Again, in his sixth choice, between a two-star hotel five miles away from downtown and a one-star hotel within two miles from downtown, he would rather stay at the one-star hotel that is closer to downtown. In other words, to this respondent, an increase in distance of three miles away from downtown can be justified if the service level can be at four-star; and a drop in service level from two-star to one-star can be justified as long as the hotel is located within two miles from downtown.

The respondent's evaluation of different attribute combinations are measured by utility scores in conjoint analysis. Higher utility scores indicate higher levels of preference (Johnson, 1974). Computation of utility scores is more fully discussed later under the full profile model. However, it should be noted here that the pairwise model can only use rank order data, whereas the full profile model can use either rank ordered or rated data. The computing method to generate utility scores is an iterative procedure that generates numerical scales approximating the respondent's original rating or ranking data. Since only rank ordered data is provided by the pairwise respondent, two statistical measures, Kendall's tau and phi, are used to indicate the extent to which the computed utility scores approximate the original data (Johnson, 1974).

The pairwise trade-off model is simple and easy to apply. It generates

valuable information about the consumer's trade-off among different product attributes without information overload on the part of the respondent. Provided with its rank-order methods, the pairwise trade-off model enjoys a relaxed assumption based upon ordinality free from the constraints of having to assume that the respondent is using strict equal-interval scales. However, since this model decomposes the product into two attributes at a time, it also has some self-imposed restrictions, one of them being that the selected attributes should not be correlated with other relevant factors not included in the test. In a situation as illustrated in Exhibit 2, for instance, it is unclear what should be assumed about other attributes that may be relevant in the respondent's choice making but not included in the test. In this case it seems reasonable to assume that as the service level increases, or as the location is approaching downtown, the price per night for the hotel should also increase. When it is questionable if the selected attributes are correlated with some excluded factor, such as price, it becomes unexplicit what the resulting rank orders should really mean.

Suppose more than two attributes need to be considered in the above mentioned situation. The simple four by four table shown in Exhibit 2 becomes one like that in Exhibit 3.

Exhibit 3. An Example of a Four-attribute Pairwise Trade-off Model

	Service Level (in # of stars) 4	3	2	1	Distance from Downtown (in miles) 2	5	10	15	Swimming Pool Yes	No
Rate/night										
$70	1*	3	5	9	1	2	5	6	1	3
$100	2	4	6	10	3	4	8	10	2	4
$150	7	8	11	14	7	9	11	13	5	6
$200	12	13	15	16	12	14	15	16	7	8
Service Level (in stars)										
4					1	4	8	12	1	4
3					2	5	9	13	2	5
2					3	6	11	15	3	7
1					7	10	14	16	6	8
Distance from Downtown (in miles)										
2									1	3
5									2	4
10									5	6
15									7	8

* The numbers in the table represent the respondent's rank ordering of all combinations, with 1 indicating "the most preferred" and 16 "the least preferred."

As the number of attributes and the different levels of these attributes continue to increase, the number of possible two-way combinations becomes accelerated. It becomes very burdensome for the respondent to fill out numerous two-way tables without eventually getting tired or confused. Furthermore, it becomes more and more difficult to isolate relevant attributes without the entanglement of unwanted correlations. While procedures such as partially balanced incomplete block designs (Green, 1974) can be used to tackle the correlation problem and reduce the number of two-way tables, in many cases it may be more efficient to consider a different conjoint design such as the full profile model.

The Full Profile Conjoint Model

In contrast with the pairwise trade-off model, the full profile conjoint model examines a product several attributes at a time. The same experiment as displayed in Exhibit 2 can now be redesigned to include more attributes at once. A set of full profile stimuli, completely different from the two-attribute-at-a-time method, can include several attributes at various levels. Exhibit 4 shows a selection of six attributes at a total of twenty different levels to be included in a full profile conjoint design.

Exhibit 4. A Set of Attributes at Different Levels to Be Included in a Full Profile Conjoint Model*

Attribute	Attribute Levels				Total # Levels
1. Hotel	Sheraton	Comfort Inn	Hampton Inn	Bordeaux Inn	(4)
2. Price Per Night	$60	$48	$37	$25	(4)
3. Service Level	Full/ Convention	Full	Limited	Budget	(4)
4. Location	I-95 Exits, US 13 & HWY 53	Cross Creek Mall Vicinity	Airport Vicinity	Central Fayetteville	(4)
5. All-suite	Yes	No	No	No	(2)
6. Swimming Pool	Yes	No	Yes	NO	(2)
6 attributes					20 levels

* The attributes used in Exhibit 4 and Exhibit 6 are chosen from "Fayetteville Travel Study," part of a property acquisition feasibility study conducted by Constat, Inc., 450 Sansome Street, Suite 1100, San Francisco, California 94111, in 1990. The attributes are slightly modified for easy illustration.

Based upon selected attributes as listed above, a full profile conjoint stimulus may look like Exhibit 5.

Exhibit 5. A Full Profile Conjoint Stimulus

Hotel	Sheraton
Price per night	$60
Service Level	Full
Location	Central Fayetteville
All-suite	No
Swimming pool	Available

Your ranking(or rating) of this combination is __________

In a full profile conjoint test, a respondent views a series of stimuli as the one shown in Exhibit 5. He/she is then asked to either rank or rate each stimulus in terms of desirability. A set of utility values that indicate the degree of preference of each level of an attribute are then computed from the respondent's ranking or rating of each stimulus. Each of these stimuli is called a "card" in the conjoint design. The number of cards included in a given conjoint design depends upon the number of attributes selected and their levels allowed.

It may become problematic when the number of attributes and/or levels selected is large. In the situation in Exhibit 4, with six attributes at twenty different levels, a total of 1024 possible combinations can be found (4x4x4x4x2x2=1024). Furthermore, as the number of attributes increases, the number of main effects increases linearly, but the number of inter-attribute interactions increases exponentially. As a result, most conjoint tests rely on some kind of fractional factorial design. The single most commonly used technique is orthogonal array.

An orthogonal array is an experimental design which assumes away most (sometimes all) interactions among the independent variables. In other words, the effects of each selected attribute and attribute level are well balanced and kept separate from those of another. (A detailed and non-technical discussion of this type of design appears in Green, 1974) Most importantly, an orthogonal array can also reduce the size of a set of full profile stimuli to a much more manageable level without sacrificing the predicting power contained in the original design. It is really the use of orthogonal arrays that

has transformed the full profile conjoint analysis into a powerful and practical tool applicable in real life marketing research situations. As an illustration, the full profile design as shown in Exhibit 4 can now be modeled into 16 cards instead of 1024. This new design via orthogonal array is shown in Exhibit 6. Once the utility scores have been derived, any of the 1024 combinations can be reconstructed and a value assigned.

Computing Utilities: Respondents are asked to view each of these cards separately and rank them in order of preference or rate them on a numerical scale according to the degree of desirability. A set of utility values is then computed in order to determine how influential each attribute is in the consumer's evaluation. Computing utility values can be done through various computer algorithms, including canned programs (see appendix), with MONotonic ANalysis of VAriance (MONANOVA) and regression being the most frequently used methods. MONANOVA (Kruskal, 1965) was originally developed through an iterative algorithm to generate estimates of attribute partworths (or utilities of attribute levels) in such a way that the rank order of the partworths' sum for each attribute combination (or utility score of a test card) correlates as closely as possible to that combination's observed rank order (namely, the respondent's ranking of that card). Because of its capacity for generating rank orders for the dependent variable through the iteration procedure involving non-metric independent variables, MONANOVA became an extremely powerful tool in the early stages of conjoint analysis development. Some of today's most commonly used computer conjoint packages are designed with MONANOVA procedures, as they are also suitable when input data is rated. In the latter case, however, regression analysis is more efficient, because when input data is rated in form, regression analysis generates utility scores much faster.

When the ranked or rated data from a respondent, the dependent variable, are entered into the program, the computer searches for a set of scale values for every level of each attribute included in the experimental design. These scale values are designed to approximate the original ranking or rating data as closely as possible. When these scale values are summed together, we have the utility value of this stimulus (or this card). Attribute utility values directly correspond to the strength of relationships between each non-metric, or metric, independent variable and the rank ordering or rating of a dependent variable. The larger the utility score range, the stronger the influence of an independent variable (Green and Wind, 1975). As explained earlier, most (or all) of the possible inter-attribute interactions are assumed away by the use of orthogonal array.

Compared with the pairwise trade-off model, the full profile model can test more attributes at more levels in a given period of test time. As several attributes have to be considered at once, the full profile model bears more resemblance to the decision making situations in reality. While the pairwise trade-off model only accepts ranking responses, the full profile model offers

Exhibit 6. Orthogonal Array Resulting in 16 Cards

Card#	Hotel Name	Price Per Night	Service Level	Location	All-suite	Pool
1.	Sheraton	$60	Full	I-95 exits, US13&HWY53	Yes	Yes
2.	Hampton INN	$25	Full/ Convention	Cross Creek Mall Vicinity	Yes	Yes
3.	Bordeaux Inn	$48	Limited	Airport Vicinity	Yes	Yes
4.	Comfort INN	$37	Budget	Central Fayetteville	Yes	Yes
5.	Comfort INN	$48	Full	Cross Creek Mall Vicinity	No	No
6.	Bordeaux Inn	$37	Full/ Convention	I-95 Exits, US13&HWY53	No	No
7.	Hampton Inn	$60	Limited	Central Fayetteville	No	No
8.	Sheraton	$25	Budget	Airport Vicinity	No	No

9. Hampton Inn	$37	Full	Airport Vicinity	Yes	No
10.Sheraton	$48	Full/ Convention	Central Fayetteville	Yes	No
11.Comfort Inn	$25	Limited	I-95 Exits, US13&hwy53	Yes	No
12.Bordeaux Inn	$60	Budget	Cross Creek Mall Vicinity	Yes	No
13.Bordeaux Inn	$25	Full	Central Fayetteville	No	Yes
14.Comfort Inn	$60	Full/ Convention	Airport Vicinity	No	Yes
15.Sheraton	$37	Limited	Cross Creek Mall Vicinity	No	Yes
16.Hampton Inn	$48	Budget	I-95 Exits, US13&HWY53	No	Yes

the flexibility of allowing either ranking or rating in its test design. The full profile model is also robust to the environmental correlations of the attributes. Generally speaking, if the correlation between the attributes is high and the number of attributes included in the stimulus is relatively small, the full profile model is likely to perform better in terms of predictive validity; on the other hand, if the correlation between attributes is low and the number of attributes included in the design is large, the pairwise trade-off model is likely to be better (Green and Srinivasan, 1978).

The Hybrid Conjoint Model

Hybrid conjoint models were developed in the early 1980s, ten years after conjoint analysis was first introduced into market research, expressly for the purpose of reducing the complexity of the data collection process of the traditional conjoint model. Since the traditional conjoint model requires a relatively large amount of data to estimate individual utilities, the respondent often has to bear the burden of reviewing and rating up to 25 to 30 stimuli in a given conjoint task. The hybrid conjoint model was therefore designed as a data collection procedure that could retain the individual differences in utility estimation without information overload on the part of the respondent. While several types of hybrid models were designed through different statistical approaches, they share a central notion of combining the simplicity of the self-explicated weight approach (Huber, Sahney and Ford, 1969; Huber, 1974) with the greater generality of the traditional conjoint model. The hybrid conjoint model discussed here is the one presented by Paul E. Green in 1984 and the one used to develop Courtyard by Marriott (Wind, et al, 1989). The Courtyard study considered 50 attributes, each ranging from two to eight levels.

The hybrid conjoint model entails two steps in application: the first step, the self-explicated weight of all attribute levels and each individual attribute, and the second step, the traditional conjoint stimuli rating.

Step 1. Self-explicated Weight of All Attribute Levels and Each Individual Attribute: A respondent is shown J sets of attribute levels, one set of attribute levels at a time. For instance, one attribute could be hotel name with attribute levels of Marriott, Sheraton, Holiday Inns, and Hyatt. The respondent is asked to rate each attribute level on a ten-point scale and assign the most preferred attribute level a weight of 10. He/she is then asked to weight the remaining attribute levels according to their desirability relative to the most preferred level. After rating all the J sets of attribute levels, the respondent is asked to rate the relative importance of each particular attribute, for example, hotel name, location, service level, room rate per night. The respondent’s self-explicated utility for the h^{th} stimulus profile, or the overall preference for a given alternative, is then determined by combining both attribute level desirability values and the relative importance of each attribute, in a weighted manner as given in the

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additive model shown in Equation 1 (Green, 1984). The task is relatively simple and direct in this stage as compared to the traditional conjoint test, as the respondent is only asked to rate one set of attributes at a time.

$$U_h = \sum_{j=1}^{j} W_j \; U_{ij} \; (h)$$

where U_h is the total utility of alternative h, w_j is the self-explicated importance weight of attribute j, and u_{ij} (h) indicates the fact that alternative h has a desirability score of u on the level of i of attribute j.

Step 2. The Conjoint Stimuli Rating: After the first step of self-explicated weights is completed, the respondent is shown limited sets (usually 8 or 9) of all attribute stimuli selected from a much larger set of full-profile master conjoint design that permits orthogonal estimation of all main effects and selected two-way interactions. The respondent views each stimulus and rates it on a numerical scale indicating the desirability of each stimulus. The hybrid model’s parameters are then estimated by means of Ordinary Least Squares dummy regression.

Generally speaking, hybrid conjoint models represent an attempt to cope with an important practical problem in industry applications of conjoint technique: simplifying the data collection procedure. However, the hybrid models also entail a number of untested assumptions requiring further theoretical analysis and empirical research. For instance, one of the underlying rationales of the hybrid conjoint model is that respondents who give similar responses on the first stage, self-explicated weights, are also likely to give similar responses on the second stage, overall profile evaluation. This assumption needs further testing. Some preliminary conjectures suggest that hybrid models perform relatively better than the traditional conjoint model when the numbers of attributes and attribute levels are extremely large, and respondents' partworths become more homogeneous (Green, 1984). Whether to use the traditional conjoint model, the hybrid models, or other statistical methods along with a conjoint test, really depends upon the different research problems, and should be carefully considered by the researcher.

The Multinomial Logit Model (or MNL Model)

The multinomial logit model, a relatively recent development in conjoint measurement, was designed to especially study discrete choice behavior, such as single purchase decision and brand choice, in contrast with continuous decisions such as quantity of purchase or time lag between purchases. The MNL

model has a unique design structure that distinguishes it from other conjoint models we have discussed so far: a test card consists of a choice set that typically includes two or more multi-attribute alternatives, rather than a single profile containing selected attributes at different levels. A MNL choice set is presented in Exhibit 8. The respondent is asked to make a choice among the provided choice set rather than rate the stimuli one-at-a-time. Instead of simulating choice data, therefore, the MNL model generates choice data directly. The MNL model has a number of varieties in terms of model design and method of parameter estimation. A rich source of research papers on choice models can be found in Manski and McFadden (1981), an excellent review of different choice models appears in Amemiya (1981), and a text book is available in Hensher and Johnson (1981). The MNL model introduced in this paper is that proposed by Louviere and Woodworth (1983).

The design of the MNL model involves two steps. The first step, similar to that of the traditional model, is to create full profiles containing selected attributes at different levels. The second step is to develop choice sets that include two or more different full profile stimuli. To better illustrate the design task consider, for example, a simple problem that involves seven two-level attributes. A total of 2x2x2x2x2x2x2 = 128 different combinations are possible. A minimum number of eight main-effect-only profiles are generated by orthogonal array. Distinct from the traditional conjoint model, the MNL model takes into consideration the fact that all of the main effects are now confounded with many possible and unobserved interactions. In order to avoid the potential bias in the part-worth utility estimation that may result if one fails to control for any unobserved interactions, the MNL model creates sixteen profiles in a set in which selected two-way interactions can be estimated (Louviere and Gaeth, 1988). Two sets of the sixteen profile design are displayed in Exhibit 7.

The design illustrated in Exhibit 7 requires the respondent to view a total of 32 profiles, two at a time, and choose one of the two profiles each time according to his/her preference. As an option, a third alternative may be added to include delay of purchase or choice of neither one. The column labeled RDM# (random number) in Exhibit 7 indicates the random numbers assigned to each profile, and these numbers are used to pair the profiles into choice (Louviere and Gaeth, 1988). For example, profile 1 in set 1 and profile 12 in set 2 are paired because they have the same random number of 16. To further illustrate the application of the MNL design, Exhibit 8 shows an example of a real four choice set appearing in a research project on hotel choice options.

Exhibit 7. Two Sets of a Sixteen Profile Choice Design

Attribute Name: A B C D E F G

Attribute Level: 0 1

PROFILE #	PROFILE SET 1								PROFILE SET 2							
	A	B	C	D	E	F	G	RDM#	A	B	C	D	E	F	G	RDM#
1	1	1	1	1	1	1	1	16	1	1	1	1	0	0	0	10
2	1	1	1	0	0	1	1	13	1	1	1	0	1	0	0	9
3	1	1	0	1	1	0	0	4	1	1	0	1	0	1	1	7
4	1	1	0	0	0	0	0	14	1	1	0	0	1	1	1	2
5	1	0	1	1	0	1	0	6	1	0	1	1	1	0	1	1
6	1	0	1	0	1	1	0	5	1	0	1	0	0	0	1	15
7	1	0	0	1	0	0	1	15	1	0	0	1	1	1	0	6
8	1	0	0	0	1	0	1	8	1	0	0	0	0	1	0	14
9	0	1	0	0	0	1	0	1	0	1	1	1	0	1	0	12
10	0	1	1	0	0	0	1	12	0	1	1	0	1	1	0	11
11	0	1	0	1	1	1	0	10	0	1	0	1	0	0	1	5
12	0	1	0	0	0	1	0	11	0	1	0	0	1	0	1	16
13	0	0	1	1	0	0	0	7	0	0	1	1	1	1	1	3
14	0	0	1	0	1	0	0	2	0	0	1	0	0	1	1	8
15	0	0	0	1	0	1	1	3	0	0	0	1	1	0	0	13
16	0	0	0	0	1	1	1	9	0	0	0	0	0	0	0	4

Exhibit 8. A MNL Choice Set of Hotel Choice Options*

"Which one of these four hotels or motels would you choose?"
(Check blank below your choice)

Name:	Howard Johnson	Bordeaux Inn	Knights Inn	Budgetel
Price Per Night	$48	$48	$37	$37
Service Level	Limited	Full	Full/ Convention	Budget
Location	Central Fayetteville	Cross Creek Mall Vicinity	I-95 Exits US13&HWY53	I-95 Exits US13&HWY53

All Suite	Yes	Yes	No	No
Swimming Pool	No	No	No	Yes
Check one and only one	____	____	____	____

* From the Participant Questionnaire Booklet of "Fayetteville Travel Study," Constat, Inc., 1990. The survey consists of 15 cards in total.

The data collected in the MNL model are discrete (choice or non-choice), in contrast to rating or ranking in other conjoint models. These data are aggregated into choice frequencies for analysis (depending upon the research requirements, the data can also be treated to obtain choice analysis for each individual). The MNL model assumes that the probability, or frequency, of a multi-attribute alternative being selected is a function of the utility score derived from that alternative. In other words, an alternative with higher utility score is more likely to be chosen. According to this model, the probability, or choice frequency, of a given multi-attribute alternative being chosen equals the utility of this alternative divided by the sum of utilities of all alternatives included in the choice set (a constant). Utility score of a given alternative in the MNL model can be derived by using generalized, weighted, least square regression, where the dependent variable is the total utility of a given alternative, and the independent variables are each of the attributes associated with that alternative. Each generated regression coefficient represents the utility of an independent variable (e.g., a service feature) and indicates its effect on the total utility score of the alternative. Derived utility scores are then transformed by using logits in order to minimize any possible bias effect caused by approximation based upon the frequency data, such as under-estimate of popular alternatives and over-estimate of unpopular choices. The test results are validated through a modified chi square method testing for goodness-of-fit between the predicted and observed choice frequencies. The task of generalized, weighted, least-square-regression can be accomplished with many readily available software packages, e.g., SPSS or SAS, that have a weighting option. Detailed introduction and discussion of this method can be found in Louviere and Woodworth (1983), Nakanishi and Cooper (1974, 1982), and Louviere and Hensher (1982).

Based upon choice frequency analysis of aggregated data, the MNL model places more of its focus on the consumer choice behavior itself rather than simulated choice data. The MNL model can be designed to test considerably more profiles per respondent than the traditional conjoint model. There is empirical evidence that the predicting power of the MNL model closely approximates that of the traditional conjoint model (Louviere and Gaeth, 1988). While under the other name of "the Strategic Choice", it is rather straight forward and relatively easy to explain to the management, as it tells the managers whether or not to implement a strategy, such as market entry of new products or property acquisition, and if so, what proportion of consumers will try the new product under competition from existing products.

CONCLUSION

Conjoint analysis is a unique method for predicting consumers' choice among multiattribute product alternatives. Since it was first introduced into the field of market research in the early 1970's, conjoint analysis has changed the perspective of professional consumer choice studies and added a new dimension to the techniques for decision analysis. We should always realize, however, that consumer decision making is a rather complex process.

This is especially true for consumers of hospitality services. Influential factors on consumers' selection of a hospitality product can be multitudinous; many of these factors may be difficult or impossible to measure by conjoint analysis. Situational factors, as well, can make a consumer's choice deviate from a predicted pattern. For example, a customer's choice of a restaurant or hotel could be entirely different depending upon whether or not he or she is on an expense account.

Preference for some hospitality products may be somewhat determined by perceptual dimensions that are difficult to relate to physical attributes included in a conjoint design. Conjoint analysis can only predict the consumer's choice based upon selected attributes; it will not detect any missing factors that may be unknown to the researcher but which may influence the consumer's decision making process. Moreover, a flawed conjoint design may even misleadingly allocate the effects from the missing factors on the included attributes. When this happens, a proper interpretation of the conjoint findings would become extremely difficult. On the other hand, if some tested attributes are unimportant all levels of these attributes will have similar scale values, i.e., changes in these attributes will have little effect on overall scores.

It is recommended, therefore, that conjoint analysis be used only after careful analysis of the research problem. In order to preserve the validity and predicting power of a conjoint test, attribute selection should be exhaustive to the greatest possible extent. The researcher should select the most appropriate conjoint model that best suits the research problem. Situational factors and other influential forces should be carefully considered and thoroughly analyzed (Filiatrault and Ritchie, 1988), through statistical techniques other than conjoint, if necessary. Conjoint analysis, itself, does not have valid conventional tests of statistical significance.

AN APPLICATION OF CONJOINT ANALYSIS

The Yankee Sailor Weekend Package of the Sheraton Hotel and Towers in Stamford, CT was offered to bring about desired levels of weekend occupancy. Response, however, was minimal. Moreover, a nearby Marriott was having considerable success with its "Two for Breakfast" weekend packages. The research purpose was to develop a weekend package that worked. Research objectives were to determine the determinant attributes in choosing a weekend package, the amount of money customers are willing to pay for such packages, and the weekend packages best suited for meeting the needs and wants of the Sheraton Stamford weekend package user.

Design

The study was conducted on weekends at the Sheraton Stamford. The sample frame was defined as current weekend users at the hotel. The sample was

selected as randomly as possible.

Respondents willing to take part in the survey were given a brief synopsis of how the questionnaire should be filled out. The questionnaire consisted of 16 cards, each card representing a possible weekend package (e.g., see Exhibit 9). Each card was rated individually on a scale of 1 to 99 on likelihood to purchase. This is the full profile conjoint model. A demographics page was also included. The respondents averaged ten to fifteen minutes to complete the questionnaire. Upon completion of the data collection the sample consisted of 102 respondents, an adequate number when the sample is relatively homogeneous, as this one was.

Exhibit 9 A Sample Card

ROOM City view
FOOD AND BEVERAGE $20 meal credit
AMENITIES Reception and fruit basket
SIGHTSEEING TOUR Maritime Museum tickets
PRICE $95.00
LENGTH OF STAY One day

The researchers, in consultation with management, assumed that the most important features of a weekend package at this hotel are the type of room offered, food and beverage attributes, price, amenities, sightseeing, and length of stay. Manipulation of these attributes was assumed to lead to an optimal weekend package for the Sheraton customer.

Levels were assigned to each attribute, based on a range of possible attributes offered:

* Room: City view
  Sound view
  Tower
* Price: $95 (1 night only)
  $131
  $175 (2 nights only)
* F&B: $20.00 Meal Credit ($20Credit)
  Either Saturday breakfast Or Sunday brunch (E/O) (1 or 2 night stays)
  Both Saturday breakfast And Sunday brunch (Both - 2 day stays)
  No food or beverage (None)
* Amenities: Breakfast in Bed (Bed)
  Reception and a Basket (R&B)
  No amenities (None)
* Sightseeing: Maritime tickets given at no extra charge (Tkts)
  No Maritime tickets given (None)
* Length of Stay: 1 night
  2 nights

Using Bretton Clark's Conjoint Designer software (see appendix) an orthogonal array was produced indicating how many product profiles, or cards (in this case possible weekend package combinations) would be necessary to arrive at an equal relative weight between different product attributes, i.e., each card, level and feature has an equal relative weight compared to all others. No one attribute dominates another and all have an equal chance of "winning." A total of sixteen cards were generated in this case, each representing a viable weekend package. Each card was reviewed in order to ensure it to be realistic and consistent with the price indicated as the package cost.

Prices were determined using the relative value, per management, of each feature at each level. The following is a listing of the prices assumed for each feature:

Room type:	City	$61
	Sound	$72
	Tower	$83
F&B:	Both	$45
	E/O	$23
	$20 Credit	$20
Amenities:	R&B	$10
	Breakfast in bed	$5 (with breakfast in package)
Sightseeing:	Maritime tickets	$10
Length of stay:	One night	room price
	Two nights	room price X 2

Prices were based on double occupancy and allocated for the levels on each card and summed to the total price. The total price of each attribute was rounded up or down to the nearest of the three price levels used ($95, $131, or $175). After the changes had been made, efficiency was confirmed by a close to perfect orthogonal array (Exhibit 10).

Exhibit 10 Orthogonal Array Correlation Matrix

1.	1.0					
2.	0.0	1.0				
3.	0.0	0.0	1.0			
4.	0.0	0.2	0.0	1.0		
5.	0.0	0.0	0.1	0.0	1.0	
6.	0.1	0.0	0.0	0.0	0.0	1.0

Analysis

For purposes of analysis, using Bretton Clark's Conjoint Analyzer software (see appendix), which utilizes the full profile conjoint model, price and length of stay were assigned quantitative features, all other features were qualitative. The values assigned to price were $95.00 - 1.000, $131.00 - 2.000, $175.00 - 3.000.

The quantitative value of price was prompted to be rank ordered with 1.000 being the most preferred and 3.000 the least. A vector model was chosen to depict price under the assumption that higher prices will result in lower utilities, i.e., consumers will always obtain higher satisfaction from lower prices. The vector model assumes that the utility value of price, or any other continuous variable, is linear. Thus the utility for prices not included can be obtained by interpolation.

Some qualitative features were also rank ordered, i.e., if all else remained constant, what features would be preferred over others. We chose to order room type as Tower - 1, Sound - 2, City - 3 and Food and Beverage as Both - 1 (if two day stay), E/O - 2, $20 Credit - 2, None - 3, the value of 1 being most preferred and the value of 3 least preferred.

The computer program calculated group statistics, utility scores, and a distribution of preferred levels from the data file. The model uses an ordinary least squares dummy regression, with the preference rating of the cards as the dependent variable, to derive utility scores. Exhibit 11 shows the results.

Exhibit 11 Full Profile Results

Overall Group Statistics

	Utility Score	Distribution of Preferred Levels	
Room 16.44%			
City	-4.638	City	16.16%
Sound	-0.707	Sound	22.22
Tower	5.345	Tower	61.62
F&B 24.65%			
E/O	-0.821	E/O	11.11
Both	6.644	Both	43.43
None	-8.328	None	10.10
$20Credit	2.505	$20 Credit	35.35
Amenities 6.79%			
Bed	1.070	Bed	45.45
R&B	1.527	R&B	33.33
None	-2.597	None	21.21
Sightseeing 4.63%			
Maritime	1.406	Maritime	56.57
None	-1.406	None	43.43
Price 26.20%			
vector	-7.957	95.00	77.78
		131.00	0.00
		175.00	22.22
Length 21.29%			
1 Night	-6.466	1 Night	4.04
2 Nights	6.466	2 Nights	95.96

Conjoint analysis arrives at utility scores for each feature. Utility is what the product does for the customer, or the individual amount of satisfaction it provides. Overall group statistics show the relative importance of all features compared with each other. Price was the most attribute (26.2%) in choosing a weekend package, closely followed by the food and beverage offering (24.65%). Length of stay followed closely, then type of room. These four attributes make up the most determinant factors in consumer choice of weekend packages. Amenities (6.79%) and sightseeing (4.63%) are of relative low importance compared to the other attributes. Changes in these attributes will have little effect on overall scores so we can ignore them in further analysis. By adding the other utility scores together we get a preference rating like that in Exhibits 2 and 3. These are shown in Exhibit 12.

Exhibit 12 Preference Ratings of Packages

ONE NIGHT STAY

	ROOM: CITY			SOUND			TOWER		
	FOOD & BEVERAGE: None	Breakfast	$20	None	Breakfast	$20	None	Breakfast	$20
$ 95	16	10	6	12	5	3	8	2	1
	61*	84*	81*	72*	95*	92*	83*	106*	103*
$131	18	15	13	17	11	9	14	7	4
	61*	84*	81*	72*	95*	92*	83*	106*	103*

TWO NIGHT STAY

	ROOM: CITY				SOUND				TOWER			
	FOOD & BEVERAGE: None	E/0	Both	$20	None	E/0	Both	$20	None	E/0	Both	$20
$131	22	16	6	11	18	10	3	7	13	5	1	2
	122*	145*	167*	142*	144*	167*	189*	164*	166*	189*	211*	186*
$175	24	21	14	19	23	17	9	15	20	12	4	8
	122*	145*	167*	142	144*	167*	189*	164*	166*	189*	211*	186*

*Figures with asterisks are management's price computation for each package. It is clear that the sample, by its overall preference rating, is well aware of the value of the various combinations.

End of Page 21

The distribution of preferred levels (right hand column in Exhibit 11) and the preference ratings in Exhibit 12 show preference for tower rooms and, as would be expected, the best of everything at the lowest price. For example, in the F&B category, it is clear that both breakfast and brunch are preferred on a two night stay, and that a $20 meal credit is the choice over a breakfast for a one night stay.

Management, of course, cannot afford such a package but by examining Exhibits 11 and 12 it can easily see where the tradeoffs are occurring. To determine the optimal package at a "doable" price, we now use the various utility scores in simulations of different product combinations to forecast shares of choice for competing market offerings. This simulated consumer response is based on a first-choice model, i.e., the respondent selects the one alternative with the highest utility. Respondent preferences for any combination can be estimated and prices not tested but between end points ($95, $131, $175) can be included by interpolation.

Analysis of respondents by age, sex, income, and marital status showed no significant differences except for the following: sightseeing was more important for those over 35; F & B was more important for females, and length of stay was more important for males (two nights). Because the differences were minimal the sample was judged to be homogeneous and was used in its entirety in the analyses.

Simulations & Price Elasticity

Economists use price elasticities to indicate how price affects the quantity of goods sold. Elasticity is defined as the percentage change in quantity divided by the percentage change in price. In using conjoint analysis, instead of studying changes in quantity we measure changes in share, i.e., we measure the changes that take place within respondent choices of one product to another reflected by changes in price. These measures are somewhat different than economists' elasticity since shares always sum up to 100%.

The measure of elasticity changes depending on the particular attribute level and price studied. In this study, we worked within a range of a price value of 1.000 to 3.000 in order to determine the cut-off points. The original weekend package was used to find one price most suited for a particular room type. Price was then continually manipulated (raising and lowering it while keeping other comparisons constant) to find a point of equality, i.e., the point at which respondents were indifferent between, for example, a Tower room at $70 or a City room at $60. At this point, if the price were lowered or raised again, the relationship changed. For example, instead of preferring the cheaper room, the consumer now opts to spend more money in order to obtain the upgraded product. The point at which the consumer actually changes his/her buying decision is the cut-off point.

The first simulation involved three packages, all attributes being held constant except for room type and price, for example,

Room:	Sound	Tower	City
F&B:	E/O	E/O	E/O
Sightsee:	Maritime	Maritime	Maritime

Amenities:	R&B	R&B	R&B
Stay:	2 Nights	2 Nights	2 Nights
Price Value:	2.0	3.0	1.0
Utility Score:	20.20	26.26	53.54

At these price combinations, the city view room was clearly the first choice. The next simulation's objective was to change this relationship in any way, i.e., to make either the sound or Tower rooms more preferred. In lowering the price value of the Tower room from 3.0 to 2.5, and keeping all other attributes the same, utility scores now indicated the Tower room as the one preferred. Within the 0.5 spread of the price value, something happened that made respondents decide to choose the Tower room over the City room. The next objective was to find the exact cut-off price value. The exact change occurred at the Tower room value of 2.65.

The following conclusion can be drawn: If the City room is equal to 1.0 and the Tower room is at a value of 2.65, customers will be indifferent as to which room to choose. At the City room value of 1.0 ($165 package above), Sheraton clientele will choose the cheaper room if the price value of the Tower room is greater than 2.65 ($201.30); or will choose the more expensive room if the price value of the Tower room is less than 2.65 ($201.30).

Another way to state this relationship to apply it to pricing strategies, is to say that if the value difference between a cheaper room and a more expensive room is greater than 1.65 on a scale of two, i.e., if the difference between a better and a cheaper room is 82.5% (1.65/2 = 82.5%) less than the better room's price, travelers will choose cheaper rooms. If the value difference is more than 82.5% of the better room, more expensive rooms become more attractive and will be considered during the choice process of Sheraton's weekend traveler.

Example: There is a need to sell more better rooms. The price set for a City room is, for example, $80.00 at the price value of 1.00. To increase the likelihood of better room purchase, set the price value difference below 1.65/2 = .825. Therefore, $80.00/.825 = $97.00. Setting the price above $97.00 will not sell any more better rooms. Setting the price below $97.00 will increase the tendency to upgrade.

From the conjoint analysis, we have found that respondents looked primarily at the difference in prices to make their decision as to which room

to choose. It was also found, using the same simulation process, that the less the differences in price, the less price elasticity is demonstrated between cheaper and more expensive rooms. This somewhat intuitive relationship can be applied in a variety of ways. For example, if the difference in price between the City and Sound room is smaller than the difference in price between the Sound and Tower rooms, customers will prefer Sound rooms over Tower rooms. Even though a customer may have a set room in mind, the difference in price of the rooms will have an impact on his/her decision making. For example, a couple comes to stay wanting a Sound view room for the weekend. If the price difference between the Tower room and the Sound room is lower than the price difference between the City and the Sound room, they may want to consider an upgrade. This knowledge can be implemented in pricing strategies.

The same method was used to determine the cut-off points on how much Sheraton weekend travelers are willing to pay for Food and Beverage attributes. As Exhibits 11 and 12 show, Food and Beverage plays a determinant role in the weekend package decision process. Concentrating on when people are willing to spend more and move from either Breakfast or Brunch to both Breakfast and Brunch, on a two night stay, we found that the price value difference, keeping the type of room constant, is less than 0.7. If the price value difference is less than 0.7, weekend customers will choose the cheaper of the two, i.e., just one of the meals. The same application can be used as in the example above, i.e., $23.00/.7 = $33.00. Above $33.00 for both meals, consumers will opt for only one.

The $20 Credit attribute deserves special attention because no relationship was found when compared to the different levels of Food and Beverage, i.e., manipulations in price showed no changes that could form a relationship of any kind. F&B attributes were separated into E/O and Both for two days and $20 Credit and None for one day in order to find some relationship. In isolating the two time frames and separating the attributes, the relationship previously stated between E/O and Both was found, as well as a relationship between the Credit and None. Considering one day, if the price value difference between None and $20 Credit is less than 1.0, the Credit will be preferred. If the price value difference is greater than 1.0, None with the cheaper price will be preferred.

In sum, price differences between available options should be considered in pricing strategies. In developing guidelines, as set forth here, management can better predict buying behavior of its customers.

Conclusions and Recommendations

The findings in this research show that the optimal weekend packages for the Sheraton Hotel and Towers, Stamford have a variety of price ranges depending on the length of stay, the F&B offer, the type of room, and the

objectives of management in encouraging upgrades. Pricing strategies should reflect the cut-off points indicated in the simulations section of this paper.

Neither Maritime tickets nor added amenities such as a reception and a fruit basket are of great importance to these prospective Sheraton weekend package users. These added incentives should not be stressed because they do not contribute in the decision making process. After a package has been bought, these attributes may play a role in increasing overall utility, yet they are not determinant. The better tactic is to keep the price down as this is a very price sensitive market.

Sheraton management was recommended to consider giving their clientele a choice among different room types with food and beverage attributes only. These almost "bare bones" packages, without other features that would raise the price, were the most attractive to this market and have proven to be more successful.

An upgraded room is a definite want among some Sheraton weekend package users. If, however, the price differences between a city room and an upgraded room is too large, clientele will see this as a hindrance when making the purchasing decision.

For all of these reasons, the research showed the following optimal packages at prices slightly below the values management placed on them.

One night stays: room plus $20.00 meal credit

Room Type	City	Sound	Tower	
A	$79	$89	$99	(to discourage upgrade)
B	79	87	95	(to encourage upgrade)

Two night stays: room plus both breakfast and brunch

A	159	179	199	(to discourage upgrade)
B	159	175	195	(to encourage upgrade)

APPENDIX

Software Available for Conjoint Studies

Adaptive Conjoint Analysis (ACA) published by Sawtooth Software, 1007 Church St., Suite 302, Evanston, IL 60201

Conjoint Designer, Conjoint Analyzer, Simgraf, Bridger, Linmap IV published by Bretton Clark, 516 Fifth Avenue, Suite 507, New York, NY 10036

PC-MDS published by Scott Smith, Brigham Young University, Department of Marketing, 666TNRB, Provo, UT 84602

RxCON, RxPrice published by Data Logics, Rt. 263 at Greenhill, PO Box 287, Solebury, PA 18963

SPSS Categories published by SPSS, Inc., 444 North Michigan Avenue, Chicago, IL 60611

REFERENCES

Amemiya, T. (1981), "Qualitative Response Models: A Survey," Journal of Economic Literature, 19, 1483-1536.

Fenwick, Ian (1975), "A User's Guide to Conjoint Measurement in Marketing," European Journal of Marketing, 12,2, 203-211.

Filiatrault, Pierre and J.R. Brent Ritchie, (1988), "The Impact of Situational

Factors on the Evaluation of Hospitality Services," Journal of Travel Research, (Spring), 29-37.

Fishbein, Martin (1967), "A Behavior Theory Approach to the Relations between Beliefs about an Object and the Attitudes towards the Object," Readings in Attitude and Theory Measurement, ed. M. Fishbein, New York John Wiley & Sons, Inc., 389-99.

Green, Paul E. (1974), "On the Design of Experiments Involving Multifactor Alternatives," Journal of Consumer Research, 1, (September), 61-68.

Green, Paul E. (1984), "Hybrid Models for Conjoint Analysis: An Expository Review," Journal of Marketing Research, Vol. XXI (May), 155-169.

Green, Paul E. and V. Srinivasan (1978), "Conjoint Analysis in Consumer research: Issues and Outlook," Journal of Consumer Research, Vol. 5, (September), 103-123.

Green, Paul E. and V. Srinivasan (1990), "Conjoint Analysis in Marketing: New Developments with Implications for Research and Practice," Journal of Marketing, 54 (4), (October), 3-19.

Green, Paul E. and Yoram Wind (1975), "New Way to Measure Consumers' Judgements," Harvard Business Review, Vol. 53, No. 4, (July-August), 107-115.

Hensher, David A. and Johnson, Lester W. (1981), Applied Discrete Choice Modeling, London: Croom-Helm, New York: John Wiley.

Huber, G.P. (1974), "Multiattribute Utility Models: A Review of Field and Field-like Studies." Management Science, 20, (June), 1393-1402.

Huber, G.P., V.K. Sahney, and D.H. Ford (1969), "A Study of Subjective Evaluation Models." Behavioral Science, 14, (November), 483-489.

Johnson, Richard M. (1974), "Tradeoff Analysis of Consumer Values," Journal of Marketing Research, (May), 121-127.

Kruskal, Joseph B. (1965), "Analysis of Factorial Experiments by Estimating Monotone Transformations of the Data," Journal of the Royal Statistical Society, Series B, March 1965, p.251.

Louviere, Jordan J. (1984), "Using Discrete Choice Experiments and Multinomial Logit Choice Models to Forecast Trial in a Competitive Retail Environment: A Fast Food Restaurant Illustration," Journal of Retailing, Vol.60, Number 4, (Winter), 81-107.

Louviere, Jordan J. and Gary J. Gaeth (1988), "A Comparison of Rating and Choice Responses in Conjoint Tasks," Proceedings of the Sawtooth Software Conference on Perceptual Mapping, Conjoint Analysis, and Computer Interviewing, 59-73.

Louviere, Jordan J. and David A. Hensher (1982), "On the Design and Analysis of Simulated Choice or Allocation Experiments in Travel Choice Modeling," Transportation Research Record, No.890, 11-17.

Louviere, Jordan J. and George G. Woodworth (1983), "Design and Analysis of Simulated Consumer Choice or Allocation Experiments: An Approach Based on Aggregated Data." Journal of Marketing Research, 20 (November), 350-367.

Manski, C. F. and Daniel McFadden, eds. (1981), Structural Analysis with Discrete Data with Ecometric Applications, Cambridge, Massachusetts: MIT Press.

Muhlbacher, Hans and Gunther Botschen, (1988), "The Use of Trade-off Analysis for the Design of Holiday Travel Packages," Journal of Business Research, 17, 117-131.

Nakanishi, M. and L. G. Cooper (1974), "Parameter Estimation for a Multiplicative Competitive Interaction Model--Least Squares Approach," Journal of Marketing Research, 11, 303-311.

Nakanishi, M. and L. G. Copper (1982), "Simplified Estimation Procedures for MCI Models," Marketing Science, 1(3), 314-322.

Renaghan, Leo M. and Michael Z. Kay (1987), "What Meeting Planners Want: The Conjoint Analysis Approach," The Cornell H.R.A. Quarterly,(May), 67-76.

Wind, Jerry, Paul E. Green, Douglas Shifflet, and Marsha Scarbrough (1989), Courtyard by Marriott: Designing a Hotel Facility with Consumer Based Marketing Models," Interfaces, 19 (January-February), 25-47.

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PUBLISHER'S NOTE

The long delay between the first issue of JIAHR and this, the second issue, was not anticipated, but it has been time well used.

The time lag has allowed us to work on countless little problems that many subscribers experienced in getting used to JIAHR, which is is the first electronic journal for many of them. We, too, had our share of problems. One by one, over past weeks, we have worked on these problems and have resolved many of them. Not all, but many.

The need for this kind of work became evident when the first issue went out via Bitnet and the Internet. Fewer than a half dozen subscribers received it in good, readable form! No two of them experienced the same problems. Now, the evidence is that subscribers all over the world will receive this issue of the journal electronically in good, readable form. That's progress, even if it is slow.

We anticipate more of that kind of development in the future: discovering through experience what the problems are, working to resolve them, finding what works best for subscribers, building on the positive experiences, eliminating or minimizing the negative ones. Gradually, we will develop an electronic journal that will serve the field of hospitality research to greatest advantage.

There were other reasons for the delay in this second issue. The editors have been quite selective in their review of papers, preferring not to publish rather than to publish material that fails to meet their standards. The delay also occurred because of our inability at this time to transmit graphics; publication of one excellent paper was postponed because it included essential charts that cannot be readily transmitted to our subscribers electronically (without causing most of them enormous frustrations). We are working on that very tough problem of sending graphics via the networks, and we hope, within a year or so, to be able to do so to the satisfaction of both subscribers and authors.

A gratifying development is the increasing number of subscriptions from libraries. They include many libraries that are building us into their operations as the vanguard of what they hope will be many electronic journals in the future. They, too, are experimenting with new ways to handle our journal to meet the needs of their clientele.

The Cornell School of Hotel Administration, for example, is distributing the JIAHR to faculty and staff via an internal e-mail system. The library at Virginia Tech, our home institution, is planning

to distribute it on a local area network. At least one library which is on Bitnet is trying to help interested, individual faculty who have no direct access to the network. Other libraries are printing it and placing it on shelves. Many, probably most, are working out several ways of offering the journal to their clients.

As the result of one library’s suggestion, we have tried to improve the journal’s paging, for better printing, by instituting a consistent 55-line, single-spaced page. We’ll be interested in reactions.

There have been questions about archiving. Subscribing libraries are authorized to archive the issues, themselves, of course. In the meantime, we have instituted a system of electronic archiving, which is now in place. Subscribers may retrieve back issues by sending e-mail to LISTSERV@VTVM1 (Bitnet) or LISTSERV@VTVM1.CC.VT.EDU (Internet) saying: GET JIAHR HELP. If done correctly, you will receive in response instructions on how to order any and all back issues, as they develop. These instructions are carried, and will continue to be carried, in the information at the end of each issue. Later, we expect to institute subscriber search capability of the back issues.

Moreover, we plan to introduce soon a moderated discussion capability -- a form of electronic "letters to the editors." This will allow subscribers to send electronically any comments they may have about issues presented in the journal to the managing editor, who will review them and, using appropriate discretion, send them on to the total subscription list. The device will allow immediate and quick discussion and/or comment on the issues of concern to subscribers.

Together, we -- subscribing libraries, subscribing individuals and editors and publishers of JIAHR -- are helping to put an infrastructure in place for what may well become a new system of scholarly communication.

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