MEASURING INTEREST & PRICE FOR SENSORY EXPERIENCE
APPLICATION TO HOTELS

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ABSTRACT

Our study looked at the interest and expected price one would pay for a variety of experiences in a hotel. These experiences covered four different aspects of each of four of the five senses (seeing, touching, smelling, hearing). A total of 315 respondents evaluated experimentally designed vignettes, comprising a different combination of positive, pleasant sensory experiences that a hotel might offer its guests as a point of differentiation. Each respondent evaluated a unique set of these vignettes. The ratings to the vignettes were deconstructed into the contribution of each sensory experience as a driver both of interest in the hotel, and of relative amount of money one was willing to pay, versus a standard one night hotel cost. It is not the particular sense, but the particular experience that drives interest and amount willing to pay. Three mind-set segments emerged; Sensory seekers, Fragrance & touch, Design & relaxation.. These groups are interspersed in the population; we provide a screening test of five questions which is 65% accurate in classifying a prospect, and in turn which shows what to offer the prospective guest to produce a very desirable experience that might command a higher price.

Keywords: conjoint analysis, senses, mind-set

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1. INTRODUCTION

Experimental psychologists, specifically psychophysicists, mesure sensory experience, and relate it to physical measures. Once the bonds of psychophysics are relaxed, one can work with *descriptions* of these experiences, as marketers do, measuring the interest in such experiences. This advance over traditional sensory science can be made even more powerful by attaching economic considerations to the measures. The investigator can now measure both interest in the experience (an attitudinal measure), and amount of money willing to pay (a surrogate econometric measure).

The study of sensory experience becomes even more interesting and productive when, in turn, the test stimuli are systematically varied according to an experimental design (conjoint analysis), so that the stimuli comprise several stimuli conjoined in a vignette. Consumers rarely experience one message. Marketers don't promote only one feature of a product or service, such as a hotel, but rather present a combination of features in an advertisement. In such combinations the different elements compete with each other to drive the response. When these elements compete it is impossible for the respondent evaluating the combination to be *'politically correct'*. In a study of several vignettes, when these vignettes change rapidly, one after another, the respondent relaxes, and evaluates the vignette as a 'whole', much as one evaluates advertising and real-world offerings. In such cases the truly best elements emerge after the deconstruction of the response into the contribution generated by each element in the vignette.

2. WHAT TO LOOK FOR IN DESIGNED EXPERIMENTS

We approach the issue of sensory wishes in a systematic way. Our objective is to put numbers onto the desirability of sensory experiences, such that these numbers reflect the private wish of the respondents. As note above, by presenting the experiences as a vignette, we force the consumer respondent to integrate the information. We then use standard statistical procedures, typically ordinary least-squares regression analysis (OLS), to estimate the part-worth contribution of every element. When each respondent evaluates a variety of different vignettes, and when the elements in the vignettes vary independently of each other, OLS estimates the contribution of each element, even if the consumer is unable to tell us what is important. The same appraoch applies to dollar value. When the respondent rates dollar value of the vignette, or some equivalent (e.g., % of the standard price willing to pay), OLS estimates the dollar contribution of each element.

3. METHOD

The elements are mixed and matched to create vignettes, such as the vignette shown in Figure 1. Consumer respondents are invited to participate by an email invitation. They read an orientation screen (Figure 1).

Figure 1: The orientation page

We worked with 20 elements, allocated to five silos, each with four elements. The file silos are hotel name, then four elements each for touch, sight, smell, and sound, respectively.

The elements are mixed and then evaluated in small, easy to read combinations of the elements (Figure 2). Every respondent evaluates each element three times, in totally unique sets of combinations [1]. By having every respondent evaluate totally unique combinations of the same element, it becomes possible to avoid any possible bias due to unsuspected interactions among elements that could bias the results. It further becomes possible to partial out all pairwise interactions among elements of different silos, an analysis that we will do at the end of this paper, when we look at the interaction between hotels and sensory offerings.

The elements appear independently of each other. [2] In some cases the concept is absent one or two sensory silos. This 'incompleteness', while seeming a problem, actually is not a burden to the respondent who simply does the evaluation. The incompleteness permits OLs to estimate the absolute contribution of every element, an important database capability which will become increasingly valuable when the results from one study are combined with the results from other studies, with other elements, done in different places and at different times.

Themed hotel restaurant coordinated with the deco of the lobby

Soundproof room offers quiet stay

Bathroom ambiance included with an aromatic effect for relaxation

Showers have an aromatic steam option to stimulate relaxation ... the ultimate experience

Figure 2: Example of a test concept

4.   RESULTS

We begin by estimating the part-worth contribution of each element. The analysis is fairly straightforward, but involves one simple transormation. We focus on the whether or not a respondent is interested in the sensory experience described by the concept. Although the respondents used a nine-point category scale, the convention of consumer researchers is to look at more absolute judgments; interested or not interested. Following this 'all or none' way of looking at the data, we recode ratings 1-6 to '0' in order to represent *not interested*. We

recode ratings of 7-9 to '100' in order to represent '*interested*'. Then we run the ordinary least squares regression, relating the presence/absence of the elements to the binary (0/100). The result is an 'interest model'. For this analysis we combine all the data into one large file and run one general regression. We do not show the contributions of the four hotel names to interest, although they were included in the actual regression modeling. These results appear in the first data column in Table 1.

Table 1: How elements drive interest (% rating 7-9 on a 9-point scale), and relative value (% willing to pay for the sensory experience, above the standard room rate)

	Total	Int	Price
Sense element	Constant	24	93
Feeling1	Rich, lush and soft ... uniquely crafted bed and pillows in your room for a comfortable sleep	14	3
Feeling3	Rooms equipped with a massage chair	13	4
Hearing4	Soundproof room offers quiet stay	12	3
Feeling4	Showers have an aromatic steam option to stimulate relaxation ... the ultimate experience	11	3
Smelling2	All rooms equipped with an air purifier that has an aromatic function	9	2
Smelling3	Bathroom ambiance included with an aromatic effect for relaxation	7	2
Hearing3	Sound on demand system in every room ... choose from a variety of music	5	2
Feeling2	Natural selected linen and towel with pleasant texture and colors	5	2
Seeing2	The lobby elevator color schemes are carefully selected for peace and comfort	4	1
Seeing3	Hotel rooms color schemes carefully selected for peace and comfort	4	1
Hearing1	Unique background music in the lobby developed ... for warm welcoming	4	1
Seeing1	Know what to expect inside just by looking at the exterior of the hotel	3	1
Seeing4	Themed hotel restaurant coordinated with the deco of the lobby	2	1
Hearing2	Unique background music in each room ... for a comfortable sleep and fresh awakening	2	1
Smelling1	At lobby, guests welcomed by a pleasant fragrance	1	0
Smelling4	Hotel features a "Fragrance Bar" ... test many fragrances ... choose best fragrance for your room	-1	0

The results tell us:

1. It is clear from Table 1, that there is only modest basic interest in the hotel without the specification of the sensory experience. The additive constant is 24, meaning about 24% or one-person-in-four would be interested. This is the baseline.

2. Each element has an associated utility, which for the rating of interest shows the percent of respondents who would rate the concept as 7-9 (i.e., be interested in the sensory experience) if the sensory experience were to be part of the concept.

3. Specific sensory experineces drive interest, but not all of them. Paint a word picture of the kinaesthetics and touch, and you're likely to get people interested. The notion of 'rich lush and soft…bed and pillows..' is very strong, with a coefficient of +14, meaning that an additional 14% of the respondents would be interested in staying at the hotel if the hotel were to feature the richly crafted, lush and soft bed and pillows. The same goes for a massage chair, sound proof room, and showers with an aromatic steam option.

4. Not everything works, however. Feature a fragrance bar, and no one is interested, at least based on the average.

The same deconstruction analysis can be done for the ratings of amount one would pay. The analysis is straightforward. We begin by replacing the numerical rating of price with the percent that a person is willing to pay. Thus paying 20% more is replaced by the value 120, etc. The analysis then proceeds by OLS, estimating the part-worth contribution of each of the 16 sensory phrases, as well as the four hotel names (latter not shown).

1. Looking at the right hand column of Table 1, we should be struck by the fact that people don't want to pay for what they get. The additive constant is 93, meaning that without any elements, on the average people are willing to pay about 93% of the standard room rate.

2. The elements that are most interesting are also those that the respondents would pay extra for, but the key here is only slightly extra. We're talking about 3% to 4% extra, over the normal room rate.

3. Homo economicus, economic man or economic considerations, are far more conservative than interest. One might make the wrong decision by looking at interest alone. Interest values can swing far more positive, and lead to false expectations. Tacking on amount of payment as a second rating question shows the strength of the element in far greater clarity.

5. DIFFERENT STROKES – THE ROLE OF MIND-SET

Thus far we have dealt with the data as if the respondents comprised one homogeneous group of prospective customers. The reality of the matter is that people differ from each other, sometimes in small ways, sometimes in large ways. We are not talking here about the conventional differents in gender, market, income. Nor are we talking about the so-called behavioral differences that we can measure today with tracking systems that show differences in web-behavior. Rather, we are talking about more profound, deeper, structural differences in what people truly like. Marketers recognized that people differed profoundly, and developed different psychographic testing systems to put people into neat and tidy buckets. People in a bucket were presumed to share the same values. The goal was to market to these individuals in a similar manner, because, the thinking was, individuals in the same psychographic group should have the same mind-set to many different categories of offerings.

The general psychographic approach did not work, because people differ when it comes to specific products and services, despite the fact that they fall into the same general psycographic group. In other books and papers [3], one author (HRM) has proposed a much simpler approach. The approach posits that there are individual mind-set segments in each specific area, including of course hotel prferences.

At a practical level these segments distribute in the population, and are hard to discover with standard data-mining methods. Rather, an active intervention test must be used. These

segments can best be uncovered through a short 'test' which presents the individuals with test stimuli, such as our vignettes, obtains their responses (our 9-point ratings), and then builds a model for each individual showing how the individual elements 'drive' the response. Then, individuals are cluster togethered, based upon the pattern of utilities or coefficients in this model. The approach does not require that individuals who fall into the same cluster or segment be linked together for other products or services.

Following this notion, we segmented the 315 respondents, based upon the pattern of coefficients from the regression equation (see Table 2). It is important only to note that the number of segments and the name of the segment is left to the investigator. The segmentation methods, called k-mean clustering, are well defined, objective, and outside the control of the investigator [4]. The operating rule is that there should be as few clusters as possible (parsimony), and that the elements in the cluster should tell a simple story which convinces (coherence).

Table 2: Percent of respondents interested in the hotel, based on the elements in the vignettes, and relative amount each segment would pay for the most important sensory experiences for that segment.

	Interest in hotel based			Relative price willing to		
	Seg1	Seg2	Seg3	Seg1	Seg2	Seg3
	84	147	84	84	147	84
Additive Constant	29	20	26	94	92	95
Segment 1 – Sensory luxury						
Rooms equipped with a massage chair	15	11	13	4	5	2
Showers have an aromatic steam option to stimulate	13	11	10	4	4	2
Rich, lush and soft ... uniquely crafted bed and pillows in	13	14	14	3	4	2
Soundproof room offers quiet stay	10	16	8	3	4	2
Segment 2 – fragrance and touch						
Soundproof room offers quiet stay	10	16	8	3	4	2
All rooms equipped with an air purifier that has an aromatic	-4	15	10	0	3	2
Rich, lush and soft ... uniquely crafted bed and pillows in	13	14	14	3	4	2
Bathroom ambiance included with an aromatic effect for	-2	14	5	-1	3	2
Rooms equipped with a massage chair	15	11	13	4	5	2
Showers have an aromatic steam option to stimulate	13	11	10	4	4	2
Hotel features a "Fragrance Bar" ... test many fragrances ...	-11	11	-11	-2	3	-1
At lobby, guests welcomed by a pleasant fragrance	-7	9	-4	-2	2	0
Sound on demand system in every room ... choose from a	7	8	-1	2	3	1
Segment 3 – design and relaxation						
Rich, lush and soft ... uniquely crafted bed and pillows in	13	14	14	3	4	2
Rooms equipped with a massage chair	15	11	13	4	5	2
The lobby elevator color schemes are carefully selected for	2	1	11	1	0	1
Hotel rooms color schemes carefully selected for peace and	1	2	11	1	1	2
Showers have an aromatic steam option to stimulate	13	11	10	4	4	2
All rooms equipped with an air purifier that has an aromatic	-4	15	10	0	3	2
Themed hotel restaurant coordinated with the deco of the	1	-2	9	1	1	1
Know what to expect inside just by looking at the exterior of	2	1	9	0	1	1

The results suggest three segments, two small, one large. It's important to recogize that segments don't fall into nice, neat, tractable patterns. Nor do people.

1. The first segment, comprising 84 of the 315 respondent is modestly interested in the hotel stay (additive constant of 29). What's important here is luxurious relaxation. Relaxation comes in the form of the rich, lush and soft bed and pillows; the message chair, even the sound proof room, and the aromatic steam option. But, don't try to

attract this first segment with fragrance; it doesn't work, except if the fragrance is embedded in the shower, and only to promote relaxation.

2. The second segment, by far the biggest, comprises 147 of the 315 respondents. They are not particularly interested in the hotel, with an additive constant of 20, the lowest of the four segments. However, this second segment wants 'sensory experience', primarily fragrance and touch. They really like the lush pillows, the message chair, but also the sound proof room. They want touch, they want smell, and also a quiet room.

3. The third segment, comprising 84 respondents, respond to design, and relaxation. Unlike the other segments, they are visually oriented.

4. What we see from the segmentation is that the hotels should not offer one experience, but several. The segments aren't opposite to each other, but rather comprise people who react to the positives, but to different degrees. It is possible to turn off these segments, primarily with fragrance, but also with sound. Thus fragrance could turn out to be a polarizing factor.

6. SEGMENTS

In Table 1, showing results for the total panel, we saw that ***homo economicus*** was very conservative. The large effects that we observed for ratings of interest disappeared, to be replaced by rather small changes in the relative amount of money one would pay. That makes sense, since interest isn't the same thing as putting out money.

But what about the segments? Do we see the same conservatism with our segment results. The simple answer is 'yes', the conservatism remains. There are a number of sensory features that might command an additional 4% to 5%. It may just be the case that there is a built in conservatism to pricing that doesn't affect interest. Figure 3 suggests, however, that prospective guests are likely to pay more for sensory experiences that they like, no matter the segment to which they belong. Thus it pays to give the prospect a positive, desired sensory experience; it's more likely that they'll pay more, just not as much more as one might hope!
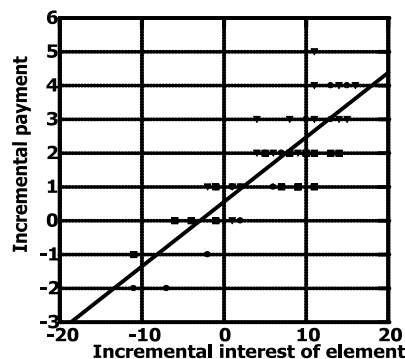
Figure 3: Relation between element utility (abscissa) and incremental/decremental payment (in %). The plotted data show the interest-payment relation for all three segments, and for the 16 sensory experiences, or a total of 48 points.

6.1.

7. HOTEL CHAINS 'INTERACTION' WITH DESIRED SENSORY EXPERIENCES

Hotels attempt to create an 'image' through advertising in mass media, and through the experiences they create when the guest actually stays in one of the rooms. One of the most important questions is whether a specific sensory experience 'goes with' a hotel. That is, up to now we have been dealing with sensory experiences independent of hotels. Although we have worked with 20 test elements in our vignettes, we have concentrated only on the 16 sensory elements, and not paid attention to the four hotel names. These four appear in the model, totally independently of the 16 sensory elements.

What happens, however, when we look for synergistic combinations of a hotel name and a sensory experience. That is, suppose we stratify the *7875* different combinations that respondents evaluated. Since there are 315 respondents, each of whom evaluated a relatively unique 25 combinations, the total number of combination is *7,875*. Let us sort those into the concepts having no hotel name, and the four layers of concepts, with each of the actual hotel names (Ritz-Carlton; Hilton; Marriott; Sheraton). For each of these five 'layers' or strata, we can run the same model relating the presence/absence of the 16 sensory experiences verus interest in staying at the hotel.

Putting the analysis in perspective, all we want to establish is whether adding the name of the hotel to the basic sensory experience changes the desirability of the experience. The analysis is straightforward by OLS. We merely run the model witth each of the five separate strata, shown as the five data columns in Table 3.

It becomes clear from Table 3 that there are interactions between hotels and sensory experiences. The general pattern seems to be slight suppression of sensory experiences by the different brand names. That is, in the absence of a hotel brand name, the strongest sensory experiences do quite well, as we see in the first data column labelled 'No Hotel Name'. For the three strongest elements (massage chair; soundproof room; rich lush and soft bed and pillows) hotel brand name and sensory experience shows a slight drop with some hotels. For the less powerful sensory experiences, such as an air purifier with an aromatic function, for the most part the effect of hotel name is to diminish the impact of the sensory offerings.

The bottom line here is that there is an interaction between hotel brand name and sensory experience. Putting a hotel brand name on the offering reduces the impact of the sensory experience. We don't know whether this reduction comes from a clash between the hotel brand name and the sensory experience, or whether brand names simply suppress the contribution of the elements.

Table 3: Performance of strongest sensory experiences in concepts with no brand name, and in concepts with one of four well-known hotel brand names

	No Hotel Name	The Ritz Carlton Hotels	The Hilton Hotels	The Marriott Hotels	The Sheraton Hotels
CONSTANT	19	22	26	26	28
Rooms equipped with a massage chair	16	10	13	11	12
Soundproof room offers quiet stay	14	15	12	9	8
Rich, lush and soft ... uniquely crafted bed and pillows in your room for a comfortable sleep	13	15	18	9	15
Bathroom ambiance included with an aromatic effect for relaxation	12	7	4	9	3
Showers have an aromatic steam option to stimulate relaxation ... the ultimate experience	12	10	14	9	12
All rooms equipped with an air purifier that has an aromatic function	10	12	5	8	6
Hotel rooms color schemes carefully selected for peace and comfort	9	4	1	4	3
Sound on demand system in every room ... choose from a variety of music	7	6	5	4	5

8. FINDING, DESIGNING, COMMUNICATING – THE NOTION OF ADDRESSABLE MINDS™

It is clear from these data that individuals differ in what they seek in a hotel. There are at least three different mind-set segments. A hotel which is interested simply in non-differentiated messaging need only look at the five elements which do best among the total sample. It is quite likely that with these five elements one will attract a great many individuals.

However, a lot of today's zeitgeist focuses on the right or relevant message, to the right or appropriate audience (so-called targeted/relevant messaging). Certainly the enterprising hotelier could construct a melange of winning ideas, and broadcast these combinations to the public, promoting the hotel as providing the best general experience. Yet, there may be an even more promising approach, albeit one that breaks today's general approach. This is narrowcast, sending the right person the right message.

Data miners in hotel chains try to find the appropriate message for each customer by keeping records of that customer's behavior; what the customer ordered, any stated preferences, and so forth. It is not unusual for the customer to be greeted by name, by a warmly stated (if not necessarily really felt) 'hello, welcome back, Mr/Ms So & So', etc. The hotel management attempts to project a warm, knowing, personalized image to the individual who is about to spend a night or more in the hotel.

Given this movement towards personalization, it makes sense to move forward on several dimensions, as suggested in this paper:

1. Deeper knowledge about everyone: Move beyond simply information about the guest's previous behavior, to a knowledge of the guest's sensory preference. To date this information can be obtained only for a small cadre of loyal, high spending customers, and generally only as 'exceptions' (e.g., Ms XYZ always asks for fluffy pillows, in a very well air conditioned room, that is abolutely away from any noise, whatsover') How does one move away from that relying on that information, available only from a

few guests, to information about preferences available even from prospects who have never before stayed at the hotel?

2. Identify easy to execute, sensory-based solutions. Rather than changing the architecture of the hotel, adding costly improvements, changing features that are difficult, instead look for experiences that can be modularized, incorporated into easy-to-buy, easy-to-use equipment. For example, linens can be purchased to fit the idea of natural, with pleasing textures and colors.

3. With a modular solution, look for factors that can be delivered to specific individuals, on a customized basis (e.g. certain types of equipment), or which can be put into the room as a standard offering. If the feature is highly desired by a segment, perhaps offer this feature as a 'special' available in only a few room. But, if the feature is going to be special, then develop a method for identifying individuals in the segment which values the feature.

9. IDENTIFYING MINDSET SEGMENTS

We don't come imprinted with our mindset segment on our forehead. Furthermore, although many hotels maintain good records about their guests, it's not clear how profound their information may be about the preferences of guests for offerings that never have been made before. One might discover what people want, but not necessarily know what any specific individual wants. . Hotels can buy information about prospective guests from a variety of sources. But, information about sensory preferences is not typically part of the hotel's information about individuals, unless perhaps the guest has previously complained about some sensory defect, and the hotel manager was sufficient wise to record that unhappy incident. Not exactly the kind of information upon which one wants to build a business.

When the hotel knows the segment to which a prospect belong, its possible to personalize the interaction with the prospect. The interaction may be as a distant as the prospective guest investigating different hotels, or may be as proximal as the guest who is just checking in, or who has checked in and is exploring the hotel.

In any of these situations, how can the hotel better understand the prospect, assuming that it does not know the prospect, or that it knows the prospect but does not have the appropriate data? Is there a way to identify the segment membership of a new individual.

Data miners try to understand more about an individual through look-alike analysis, a colloquial description of assigning individuals to groups based upon the resemblance of individuals to already-known members of the groups. Thus the data miner looks for matching patterns, and guesses that people in the same goup 'look alike'. The art of data mining is to identify the specific features on which to match people.

In this paper we offer a different approach, one taken from the world of medicine. Today, physicians 'profoundly' understand the medical condition and prognosis of patients through tests of body function. For example, the standard blood test is used to measure different organ functionining by subjecting the blood to a variety of tests, making the measurements,

and then comparing the results to norms created for that test. Many of these tests are rapid, done in parallel, and put the patient into specific risk categories depending on how the tests turn out.

10. CREATING A 'SCRATCH TEST' TO IDENTIFY THE PROSPECT'S MINDSET

The data suggest three segments. The segments do not divide nicely by easy-to-acquire data. However, from the data, we do know the utility value of each of the 16 sensory elements, as well as the additive constant. Therefore, by simple arithmetic we can estimate how each of the 16 sensory elements would score on the 9-point scale if it were rated alone, rather than in combination.

We follow these six steps to create the scratch test:

1. Create the persuasion model for each person. The persuasion model relates the 9-point scale value as the dependent variable to the presence/absence of the 16 sensory elements, and the four hotel elements.

2. With the persuasion model, estimate how each of the 16 sensory elements would perform, as single concepts with only one element. Make this estimation for each of the 315 respondents, creating a total of 315 x 16 estimations.

3. The data matrix comprises 315 rows, one row per respondent. The data matrix comprises 17 columns, 16 columns for the 16 sensory elements, and one column for the segment assignment. Each person corresponds to one row.

4. Using the statistical method of discriminant function analysis (DFA), identify those 4-6 elements which suffice to classify the respondents into the different segments. DFA attemps to classify as many people as possible into the correct segments, using a set of equations.

5. Once DFA identifies the set of elements which together perform correctly, DFA creates a classification function, comprising one equation for each segment. The equations appear in Table 4, under the colums which say 'classification functions'.

Table 4: The classification functions to assign a new person (Per) into one of the three mindset segments for sensory experience in a hotel. The table shows the functions and their values for three people assigning different profiles in the 'scratch test'.

	Classification functions			Example of three persons who assign ratings in the 'scratch test'		
	S1	S2	S3	Per1	Per2	Per3
Additive constant	-3.11	-4.01	-4.30			
Rich, lush and soft ... uniquely crafted bed and pillows in your room for a comfortable sleep	0.19	-0.62	0.45	3	8	9
Natural selected linen and towel with pleasant texture and colors	0.14	-0.24	0.79	4	6	9
The lobby elevator color schemes are carefully selected for peace and comfort	0.60	0.48	-0.53	5	4	3
Bathroom ambiance included with an aromatic effect for relaxation	0.36	1.28	1.23	6	2	8
Hotel features a "Fragrance Bar" ... test many fragrances ... choose best fragrance for your room	-0.34	0.23	-0.90	8	4	5
Seg1				0.4	1.0	2.8
Seg2				5.1	-5.0	1.0
Seg3				-2.3	0.8	10.6

6. A new individual, e.g., Per1, Per2, or Per3 takes the 'scratch test' shown in Figure 4. Based on the value of the classification functions, one for each segment, DFA assigns the person into the segment showing the highest positive value.

> **Rich, lush and soft ... uniquely crafted bed and pillows in your room for a comfortable sleep** — 3
>
> **Natural selected linen and towel with pleasant texture and colors** — 4
>
> **The lobby elevator color schemes are carefully selected for peace and comfort** — 5
>
> **Bathroom ambiance included with an aromatic effect for relaxation** — 6
>
> **Hotel features a "Fragrance Bar" ... test many fragrances ... choose best fragrance for your room** — 8
>
> *How interested are you in staying in a hotel with EACH SPECIFICFEATURE?*
> *1 = Not at all...9 = Very Likely*

Figure 4: The five question 'scratch test'. The ratings assigned to one-element 'concepts' are transformed by the classification functions into single estimates, one for each segment. The person is then assigned to the segment whose classification function achieves the highest positive value based on the five ratings.

11. DISCUSSION AND CONCLUSIONS

11.1. Using the data

Research using text questionnaires gets to the heart of the mind; what is important. Without the tools of experimental design and conjoint analysis, one could not really know what is important. One might show the prospective customer pictures of rooms, and get responses. Yet, it is apparent that such pictures are by their very nature incomplete. There are the other senses to consider. These senses cannot be presented to the prospective guest, other than by words. And, furthermore, we see that the visual aspect of the hotel is only one part, and a relatively small part in terms of what drives consumer interest.

The important next step is to design the communication piece. How does the hotel communicate fragrance, lushness of the pillows, special showers with aroma, massage chairs. It may be possible to communicate some of these benefits and attractants by pictures. Otherwise will have to be word-smithed in th advertisements. The communication of such benefits is not part of this study, but is a natural next step.

Beyond the communication is the use of the data to create the offerings. By itself, the study here provides guidance only in text form. There are no pictures, and even if there were, pictures work primarily for visual design. They may communicate equipment, but they cannot take the place of sensory experience. It is at sensory experience where we stop in this paper, waiting for the next installment, to be contributed by psychophysics

11.2. Back to psychophysics – beyond concepts to sensations

In his seminal book on psychophysics, Stevens [5] talked about the role of psychophysics in understanding perception, neural functioning, and finally social prospects. To Stevens' three major classes of applications, we should now add a fourth, sensory experience.

Psychophysics is the branch of science that relates perception of sensory experience to physical stimulus variables. Much of this paper has been inspired by the psychophysical way of thinking. We began the paper with a systematic exploration of how to understand what sensory experiences are valued by the hotel customer, both in terms of interest and then in terms of willingness to pay. Our analysis stopped at identifying what types of experiences, on a described basis, seem to work best, how people differ from each other in mindset segments, and how to identify the segments. This approach is conceptual, dealing with the psychophysics of the mind, of evocative description. We have to move forward now.

Beyond the concept is the actual sensory experience, the realm in which psychophysics performs best, and indeed the world where psychophysics began more than a century and a half ago. If you read the psychophysics literature, you will be struck by the wealth of studies on perception, but with stimuli that have little emotional meaning. These studies focus on the world of sensory experience as a scientist would perceived that world; how the senses work. If you look a bit further, you will see psychophysics studies on more ecologically meaningful stimuli, such as the smells in the environment for pollution control, or the loudness of traffic and of airplanes.

There is now the opportunity to move psychophysics to yet another dimension, that of designing complex sensory experiences. Psychophysics can incorporate experiences of a relevant nature, such as those encountered in hotels. Experimental design, not only of concepts, but of actual experiences, of actual stimuli arranged in different combinations, will provide the new opportunity for psychophysics, for business, and for design engineering. And that will be the new frontier, where visions and opportunities will grow and be realized.

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